Joint CASE Report on Cooperation between higher education institutions and companies and Evaluation of regional pilots

Including an Executive summary

Deliverable of Work Package 5 (WP5) – Cooperation: Cooperation between higher education institutions and companies

Deliverable of Work Package 6 (WP6) – Pilots: Preparation and implementation of the transdisciplinary pilots: the regional sustainability challenges

Authors: Johanna Bernhardt (Terra Institute, Brixen, Italy), Gabriela Schaad and Johan Boman (University of Gothenburg, Sweden), Michael Ambros (University of Natural Resources and Life Science, Vienna, Austria), Jan Činčera (Masaryk University, Brno, Czech Republic), Petra Biberhofer (Vienna University of Economics and Business, Vienna, Austria)

Further Contributors: Christian Rammel (Vienna University of Economics and Business, Vienna, Austria), Lisa Bockwoldt, Marco Rieckmann and Mara Bauer (University of Vechta, Germany), Claudia Lintner and Susanne Elsen (Free University of Bolzano, Italy), Petra Bernatíková, Bohuslav Binka, Eva Fraňková and Ester Koňařová (Masaryk University, Brno, Czech Republic), Mikael Olsson (University of Gothenburg, Sweden), Eva Lundgren (Ekocentrum Foundation, Gothenburg, Sweden), Kathrin Brunner (Wiener Stadtwerke Holding AG, Vienna, Austria), Michal Medek (Environment Centre Krapaluv, Brno, Czech Republic)

December 21st, 2017

Table of Contents

List of tables

List of figures

List of acronyms

CASE	Competencies for A sustainable Socio-Economic development
CSR	Corporate Social Responsibility
ECTS	European Credit Transfer and Accumulation System
EE	Entrepreneurship education / Education for entrepreneurship
ESD	Education for sustainable development
GRI	Global Reporting Initiative
HEE	Higher education for entrepreneurship
HEI	Higher education institutions
HESD	Higher education for sustainable development
KA	Knowledge alliance
NGO	Non-governmental organization
NPO	Non-profit organization
RCE Vienna	Regional Centre of Expertise on Education for Sustainable Development Vienna
RIS3	Research and innovation strategies for smart specialization
RTDI	Research, technological development and innovation
SDE	Sustainability-driven entrepreneurship
SDG	Sustainable Development Goals
SEE	Sustainability-driven entrepreneurship education
SEEP	Socio-Ecological Economics and Policy
SES	Socio-ecological system
UN	United Nations
UN-DESD	United Nations Decade on Education for Sustainable Development
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCED	World Commission on Environment and Development
WP	Work package
WU Vienna	Vienna University of Economics and Business

Executive summary

The overall aim of this cohesive report is to, in a structured way, describe identified and tested cooperation formats between academia, business partners and students to succeed in sustainability-driven entrepreneurship together with tools to aid the cooperation process.

Teachers, students as well as researchers in higher education institutes (HEI) together with business representatives can benefit from reading the report to develop sustainability-driven entrepreneurship.

To facilitate the reading of the report it consists of an introduction (chapter 1, page 8) to the challenges involved in cooperation between HEI and business partners, followed by three main sections, whose aims are summarized below.

- Cooperation between higher education institutions and companies (chapter 2, page 17) aims at better understanding and applying pedagogical concepts and innovative methods to stimulate university-business cooperation and simultaneously position teaching towards the real-life problems of enterprises and organizations.
- The sustainability performance and competencies tools (chapters 2.3, page 39 and 2.4, page 55, respectively) are qualitative tools aimed at recording and developing sustainability in companies or in non-profit organizations and to make the development of competencies for sustainable development visible and comprehensible.
- Chapter 3, page 64, describes the preparation and implementation of the transdisciplinary pilots with the aim to exemplify the preparation, implementation and evaluation of regional pilot courses that contain new ways of teaching and learning for a sustainable socio-economic development by implementing previously identified cooperation formats between higher education institutions and enterprises.

The content of the report comes from the Erasmus+ Knowledge Alliance Competencies for a sustainable socio-economic development (CASE). CASE developed innovative ways of teaching, learning and research for tackling the recent challenges of a sustainable socio-economic development. Ten partners of the CASE project, Box ES:1, contributed to the development of the new joint European Master Program on Sustainability-driven Entrepreneurship.

Box ES:1 CASE partners

For preparing cooperation and the transdisciplinary piloting an integrated approach was followed.

The Challenge – Connecting the classroom with reality

If change towards sustainable development should be achieved, students need to be better prepared for real-life challenges. Higher education institutions (HEI) have a central role in enabling the decision-

makers of tomorrow to develop competencies that can foster sustainable socio-economic development. To change unsustainable entrepreneurial behavior, effective strategies for cooperation between HEI and business partners are crucial.

The growing need to deal with complex, ambiguous real-world sustainability problems makes a transdisciplinary approach essential (while integrating mono- and interdisciplinary work). Such an approach allows students to develop robust, practice-oriented knowledge and skills.

Thus, universities need to intensify university-business collaboration to bridge the theory-practice gap. Communication must be improved to spread good practices of transdisciplinary learning strategies, enabling students to develop diverse sustainability competencies and fostering sustainability-driven entrepreneurship.

Box ES:2 The interrelated process of joint work for the common goal.
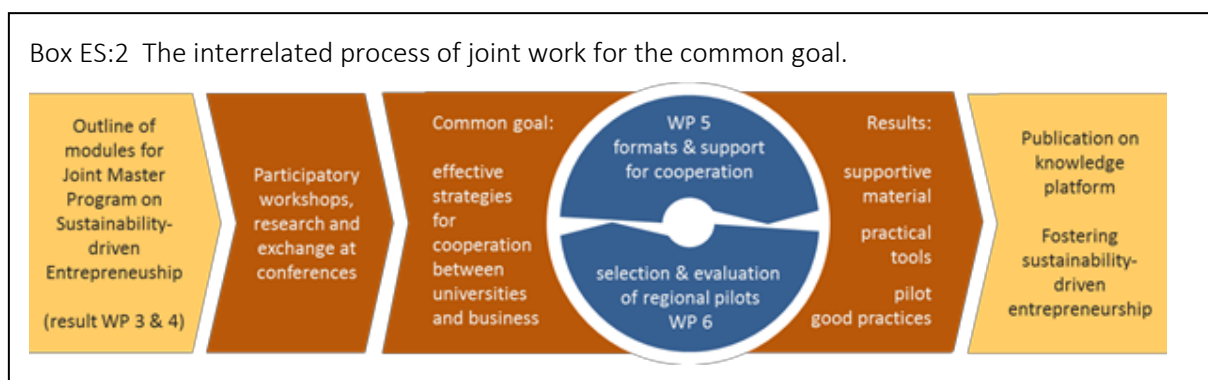
Collaboration for sustainable socio-economic development

The development process followed a **multi-stakeholder approach**, involving the members of the project consortium as well as external stakeholders. For WP 5, the participation of relevant stakeholders focused on continuous feedback during development of the practical support for university-business cooperation in education. In WP 6, the relevant actors were involved in the regional piloting of transdisciplinary university courses. The perspective of key parties involved in the collaboration, i.e. students, teachers, and cooperation partners, was evaluated based on a qualitative-explorative research approach. Nine different cooperation formats, as outlined in Box ES 3 and in chapter 3.2, page 72, were evaluated based on 21 course formats from the five EU-regions of the CASE consortium.

Box ES:3 Cooperation formats investigated in the project				
Project-based formats				
Service learning	Participatory research project	Entrepreneurial projects	Sustainable Development Case Study	Sustainability Screening
In the field				
Internship	Field trip complemented by case study	Excursion		
In the classroom				
Guest lecture				

WP 5: Cooperation between higher education institutions and companies

WP 5 (Chapter 2, page 17) aims at better understanding and applying pedagogical concepts and innovative methods to stimulate the cooperation between higher education institutions and companies and simultaneously stronger position teaching towards the real-life problems of enterprises and organizations. This is done by preparing and implementing regional service learning projects (Tasks 5.1, 5.2 in the project proposal), holding workshops focusing on cooperation (T5.3), develop tools for analyzing sustainability issues in companies (T5.5) and a practical guide for the implementation of cooperation formats (T5.6)

Fostering mutual learning between students and practical partners needs appropriate formats of cooperation embedded in an educational setting.

"It was very inspiring to see companies that deeply implement the three dimensions of sustainability [ecological, social and economic] into their strategic agenda." (student, University of Gothenburg, Sweden)

A practical guide for implementation of cooperation formats

To stimulate spreading of good practice, an implementation guide (chapter 2.2, page 18) was developed, with the main objective to inspire and to facilitate a successful implementation of cooperation between universities, students, and practical partners. The online solution follows a clear structure that is adopted for all cooperation formats presented. Depending on the complexity and the piloted courses within CASE, support structures are provided accordingly. The framework is presented in Box ES:4. The compiled recommendations may be used for the integration of cooperation in existing courses or for the design and development of new educational offers.

Box ES:4 Framework for the online guide

What is it about? *definition and objectives*	Testimonial
	Benefits
Guidance through phases *step-by-step instructions*	Success factors
	Challenges
Pilot examples *good practice*	Supporting material
	Contacts & experts
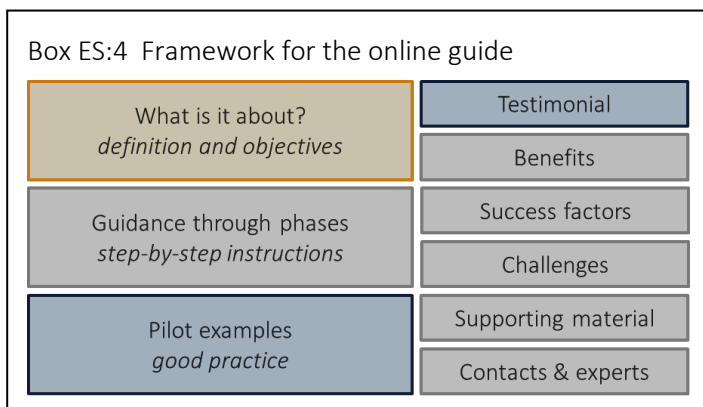
Sustainability Performance Tool and Sustainability Competencies Tool

To further support the processes of establishing current sustainability efforts and to envision future processes by investigating acquired and needed competencies for sustainability-driven entrepreneurship, two online tools were developed.

The **Sustainability Performance Tool** (Chapter 2.3, page 39) is a qualitative tool for recording and developing sustainability in companies and non-profit organizations by providing a holistic overview of the interplay between business areas within enterprises. It also reveals opportunities to systematically identify and further develop sustainability potentials and challenges. The Sustainability Performance Tool is well-embedded in the entire CASE project frame.

The tool was primarily designed for teaching, to support collaborative learning within the frame of transdisciplinary projects between universities and business partners. It builds on interlinking academic and business realities and setting in action a process of mutual understanding of mind-sets,

terms and working routines. Accordingly, the tool and the analysis process of using the tool, create added value simultaneously for university teaching and entrepreneurial practice.

The development of the tool was structured as a collaborative process to co-create knowledge, integrating members of the CASE team, students, and teachers from the participating universities and external partners as well. It was developed in several learning steps, containing feedback loops and improvement opportunities (Figure 2.6, page 42).

The fundamental principles for the understanding of a sustainable economy and sustainability-oriented entrepreneurship embedded in the Sustainability Performance Tool (chapter 2.3, page 39) are based on

- A holistic perspective
- Systemic understanding of organizations
- Transdisciplinary understanding
- Transformation orientation

By using the tool, the sustainability profile of the whole enterprise is visualized in a radar chart were the performance of the analyzed enterprise is shown for each category. In the same chart the results can be compared to a benchmark or average (Figure 2.9, on page 46).

The second tool developed in the frame of the CASE project, the **Sustainability Competencies Tool** (Chapter 2.4, page 55), was also designed in a collaborative process, involving the project partners, students, and external partners. The aim of the Sustainability Competencies Tool is to make the development of competencies for sustainability-driven entrepreneurship visible and comprehensible. It focuses on qualitative reflection and dialogue processes, which are initiated by using the tool in various forms of self- and external evaluation.

Primarily, the tool is meant to be used by students in the context of sustainability-oriented courses at tertiary level. But it can be transferred to sustainability-oriented enterprises and non-profit organizations as well, or used in a modified form to support processes of employee- and organization development. Its benefits and flexible use is clearly described in this report. The Sustainability Competencies Tool underpins the transdisciplinary process, which has the aim to improve the dialogue between the academic and the business world and to better understand not only mutual needs, but also boundaries.

The sustainability competencies identified for sustainability-driven entrepreneurship (chapter 2.4.4, page 58) and scrutinized by the tool are

- Systemic competence
- Anticipatory competence
- Normative competence
- Strategic competence
- Interpersonal competence

Summary of WP 5 – cooperation between higher education institutions and companies

In summary, WP 5 (chapter 2.5, page 63) aim at lowering the barriers to cooperate, reducing the risk of failure and providing inspiration and support for sustainability-driven entrepreneurship. The Sustainability Competencies Tool and the Sustainability Performance Tool together with the practical guide for the implementation of cooperation formats developed in WP 5 have the potential to enhance the mutual learning experiences between students, external partners and teachers.

WP 6: The transdisciplinary pilots: regional sustainability challenges

Cooperation between university and business is important to strengthen science-society interfaces that can create an arena for transdisciplinary learning and facilitate sustainability-driven entrepreneurship education. The objective of WP 6 (Chapter 3, page 64) was to prepare, implement, test and evaluate regional pilot courses that use different formats for cooperation between higher education institutions and enterprises to foster a sustainable socio-economic development (Tasks 6.1 – 6.4 in the proposal). Through the testing and evaluation of new cooperation formats, the pilot courses provide important lessons for the planned joint Master Program on Sustainability-Driven Entrepreneurship.

The main research question addressed by WP 6 reads as follows: "What strategies are effective in cooperation between universities and cooperating partners in the field of sustainability-driven entrepreneurship education?" The research followed a predominantly qualitative design. The following sub-questions were addressed:

- What are success factors of such cooperation strategies?
- What are the effects of the cooperation strategies on students, teachers, and cooperation partners?
- What are the challenges to be addressed?

Due to the variety of collaboration formats identified, the courses that were piloted where categorized as "Big Foot experiences" and "Small Foot experiences", reflecting differences in duration, intensity, and complexity of the collaboration. The division into Big Foot and Small Foot Experiences allowed for the adaptation of a systematic and uniform data collection procedure to the characteristics of the cooperation format. For the Big Foot experience, focus group interviews, semi-structured interviews and qualitative surveys were the main methods for data collection, whereas for the Small Foot experience, qualitative surveys adapted to each target group were used. In total, 214 respondents participated in the evaluation of the 21 courses piloted.

In a first analysis step, each course was analyzed separately. To identify success factors, learnings, and challenges, the responses from students, teachers and partners were analyzed jointly. Triangulating the data from the different respondent groups gave information on how the experiences differed in-between the groups. The analysis of the empirical material from each course aimed at identifying key aspects for the successful implementation of the specific cooperation format as well as documenting the outcome from the cooperation from both a student and a partner perspective. The key aspects for the successful implementation are presented as "Success factors". The analysis of the pilot courses evaluated followed the data analysis categories, Box ES:5, as applicable. The same framework was used in the subsequent analysis of each cooperation format.

Box ES:5 Main data analysis categories for the transdisciplinary pilots.

- Success factors
- Student experiences and benefits
- Teacher learning
- Partner benefits and experiences
- Challenges

The data collection instruments were suitable for the evaluation at hand. Only minor adjustments were made after the first courses had been piloted. The instruments were general enough to allow for a broad variety of courses to be piloted and specific enough to evaluate the concrete issues of

interest. The design of the data collection was also experienced as well-functioning, despite the broad variety of courses from different faculties and countries. The material collected was of good quality and contained in most instances rich qualitative data. Naturally, courses with intense long-term collaboration offered more substantial insights than courses with shorter, less intense interaction. Answers collected from students and teachers were generally abundant, whereas answers from partners frequently were rather scant. However, overall satisfactory answers from all categories of respondents were received.

In Chapter 3.2, all courses evaluated by the six HEI of CASE, containing a collaboration between students and partners from five different regions, are listed and their main features are presented. To further specify the outcomes from the cooperation between students and partners, examples of 20-25 service learning and other innovative projects are presented on the Knowledge Platform, https://www.case-ka.eu/knowledge-platform/.

During the piloting phase, the different collaboration formats introduced in Box ES:3 and in Chapter 2 were evaluated. In the results chapter 3.3, highlights from the collaboration formats are presented. First, the most important conclusions as to the effectiveness of each format for sustainability-driven entrepreneurship education are summarized. This is followed by a discussion of the potential of the format to foster the development of sustainability-driven entrepreneurship competencies with students. Subsequently, each course piloted for the respective format is introduced, providing basic information on its set-up and implementation. Thereafter, accounts of the experiences made by students, teachers, and collaboration partners in connection with the collaboration, are provided. Testimonials from the participants provide a lively picture of the experiences and good practice examples are highlighted. The below statement exemplifies the reaction from a partner in one of the service learning courses.

"There is a very clear process and a very appealing way of creating knowledge. A playful, free handling of the global task. Independent thinking is thereby very much encouraged. Very open, inspiring framework with a lot of communication possibilities, which was used with incredibly much joy." Partner

Conclusions regarding the effectiveness of different teaching strategies and cooperation formats in the piloting phase

The analysis of the empirical material from the three target groups (chapter 3.3, page 74) is discussed in view of the five pillars of the pedagogical framework of the CASE master program; competence orientation, learning to learn, real-world orientation, role models, and coaching (Figure 1.3 , page 10). The summarized results (chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**, page **Fehler! Textmarke nicht definiert.**) show that such pedagogical approaches and corresponding formats, built on relevant theoretical knowledge and applied by competent teachers, not only foster the desired competencies with students but also create inspiration and support partners in finding solutions to real-world sustainability challenges. Hence, such approaches seem to hold a strong potential to change entrepreneurial behavior towards sustainable socio-economic development.

It was also observed that formats, methods, and tools can ideally be combined to enhance their effectiveness and provide a more multi-faceted learning experience. The variety in combination of formats offers a wide range of possibilities how to implement learning processes integrating transdisciplinarity in the sustainability-driven entrepreneurial education, formal or informal.

The collaboratively elaborated CASE tools address two core processes in the context of entrepreneurial education. First, the development of competencies relevant for sustainability-driven

entrepreneurship is supported by the CASE Sustainability Competencies Tool, page 55. A tool that combines a comprehensive self-assessment with the opportunity of including external feedback. Second, the CASE Sustainability Performance Tool, page 39, allows for a structured analysis of enterprises regarding their ecological, social, and economic dimension of sustainability.

The pedagogical framework developed for the CASE master program offers a holistic learning experience for students having a keen interest to engage in sustainability-driven entrepreneurship. In sum, the CASE approach seems to reflect adequate forms of teaching and learning in the light of the grand sustainability challenges that need to be urgently addressed by future change agents.

We have identified a number of implications for study programmes in higher education institutions aiming at developing student competencies and fostering performance for sustainability-driven entrepreneurship. The work packages found appropriate solutions to facilitate and improve the quality of learning settings supporting cooperation in between HEI and companies. Open-mindedness and holistic thinking with a problem-oriented approach having local relevance integrates a diversity in disciplines and methods in a participatory solution development process that can lead to behavioral and normative changes fostering performance for sustainability-driven entrepreneurship according to changing socio-economic needs.

The main objective of transdisciplinary cooperation in the context of sustainability-driven entrepreneurship education is to promote long-term change of the students' behavior to tackle the Global Challenges and to actively contribute to the SDGs. The evaluated forms of cooperation enable exchange and enhance mutual learning between the actors, notably students, partners from business, nonprofit sector, administration, and teachers to empower the joint goal to contribute and create a sustainable socio-economic development.

1   Introduction

1.1   The Challenge – Connecting the classroom with reality

Students need to be better prepared for real-life challenges, if change towards sustainable development should be achieved (Wiek et al., 2011, 2016). This was clearly highlighted by both academics and practitioners during the Needs Analysis conducted in the initial phase of the CASE research (Bernhardt, et al., 2015). It is also widely acknowledged that Higher Education Institutions (HEI) have a central role in enabling the decision-makers of tomorrow to develop competencies that can foster sustainable socio-economic development. The future calls for innovative, self-responsible and entrepreneurial graduates from every discipline. Education for sustainability-driven entrepreneurship requires different teaching methods in which real-life experience with sustainability problems is one of the core aspects. The growing need to deal with complex, ambiguous real-world sustainability problems and the emergence of new modes of science (see Mode 2 science, Nowotny, 2003) makes a transdisciplinary approach essential (while integrating mono- and interdisciplinary work), allowing students to develop robust, practice-oriented knowledge and skills.

Transdisciplinary processes represent a new collaboration among science and society, able to emphasize joint problem definition and knowledge integration. (Bernhardt et al., 2015)

To cater for these future needs, academic education faces a double challenge: Firstly, universities need to intensify university-business collaboration in order to bridge the theory-practice gap (Biberhofer & Rammel, 2017); secondly, communication has to be improved to spread good practices of innovative teaching programs built on transdisciplinary learning, enabling students to develop diverse sustainability competencies and fostering sustainability-driven entrepreneurship (Bernhard et al., 2015). This approach entails using methods that allow students to "practice" theoretical knowledge and co-create new knowledge with practitioners. These challenges constitute the backdrop of the work conducted in Work Packages 5 and 6 and outline the area where this joint report intends to contribute to knowledge and practice.

The development of competencies for sustainability-driven entrepreneurship is a continuous, life-long process. Interlinking formal and informal learning settings also creates opportunities to foster sustainable entrepreneurship.

1.2   Tackling the socio-economic sustainability challenges

The Knowledge Alliance project CASE had the aim to develop innovative ways of teaching, learning and research to make universities, students and enterprises better equipped to tackle the recent challenges of a sustainable socio-economic development. Amongst other objectives, the project contributes to the development of a new European joint master program on sustainability-driven entrepreneurship that builds on university-business collaboration. The necessary knowledge for its transfer and implementation at other European universities is provided through an open access modular structure and a Knowledge Platform, https://www.case-ka.eu/knowledge-platform/.

While WP 3 was focused on relevant content areas for the master program, WP 4 analyzed innovative methods to foster competencies of sustainability-driven entrepreneurship. As can be seen in Figure 1.1, this resulted in an outline of modules for the master program (Biberhofer and Bockwoldt, 2016, p.18).

CASE-Master program on Sustainability-driven Entrepreneurship				
Target: Fostering competencies for sustainability-driven Enterpreneurship to support a sustainable socio-economic transformation in society				
Target Group: All students interested in Sustainability-driven Entrepreneurship/Intrapreneurship				
Bridging courses				ECTS
Semester 1	1.1 Transformation and Sustainability	1.2 Sustainable Economy	1.3 Interactions in multi-scales	5.1 Personal Development and coaching 1	30
	Transformation and Sustainability	Sustainable Economy	Interactions in multi-scales		
	First Week Challenge - Defining 'Sustainability-driven Entrepreneurship'	Excursions to Pioneers	Regional Sustainability Challenge - 1/2		
		Methodology and Tools 1	Methodology and Tools	Creativity and opportunity detection	
Semester 2	3.1 Pioneers of Sustainability: Intra- and Entrepreneurship	3.2 Sustainable Organisation and Management	2.1 Processes and Managment of Innovation	5.2 Personal Development and coaching 2	30
	Pioneers of Sustainability: Intra- and Entrepreneurship	Sustainable Organisation and Management	Processes and Managment of Innovation		
			Methods on innovation management	Development of sustainable business idea and model	
	Impact	Finance	2.2 Regional Sustainability Challenge 2/2		
Semester 3	4.1 New institutional settings and Mulistakeholder networks	6.1 Elective Courses for specialization	6.2 Regional Hot Spots and thematic challenges	5.3 Personal Development and coaching 3	30
	New institutional settings and Mulistakeholder networks	Elective Courses for specialization OR Internship	Regional Hot Spots and thematic challenges	A week of fear and failure	
				Developing a Sustainable Business Plan	
Semester 4	4.2 Mulistakeholder conference	6.3 Internship	5.4 Master Thesis		30
	Mulistakeholder conference	Internship OR Elective Courses for specialization	Master Thesis		

Figure 1.1: Overview of the modules and courses of the six thematic blocks in the master program (Biberhofer and Bockwoldt, 2016, p.18).

To develop the CASE master program from the outline in the Joint CASE Report on Content and Methods for the Joint Master Program on Sustainability-driven Entrepreneurship (Biberhofer and Bockwoldt, 2016), WP 5 and WP 6 address the pros and cons of sustainability-driven entrepreneurship, by preparing for cooperation and subsequently testing particular modules with innovative teaching and learning approaches as regional pilots, Figure 1.2. Of special interest were courses or modules that have a transdisciplinary orientation and foster university-business cooperation. This should result in new knowledge as to what strategies are effective in cooperation between universities and cooperation partners in the field of sustainability-driven entrepreneurship. The results from the piloting phase can come to use in several ways. Knowledge about effective strategies, methods and collaboration formats can be integrated into the modules for the master program. Experiences and best practices can be broadly disseminated to teachers and interested business partners with the help of the knowledge platform (https://www.case-ka.eu/knowledge-platform/), forming the basis for new transdisciplinary university courses or as a complement and upgrading of existing courses that could benefit from a transdisciplinary approach.
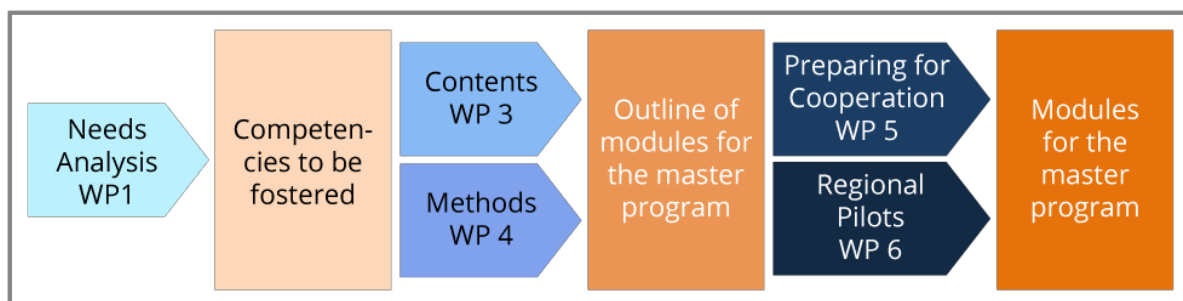
Figure 1.2: Process of developing the joint master program on sustainability-driven entrepreneurship

Furthermore, by collecting experiences from a wide range of collaboration formats, methods, and tools, as well as providing good practice examples, collaboration between universities and cooperating partners can be facilitated more effectively. Bringing the vast benefits to light should lead to broader

interest in collaborating, bringing the transdisciplinary approach closer within reach. An increased use of transdisciplinary teaching and learning in university-business cooperation is not only beneficial to fostering sustainability competencies. Simultaneously, the entrepreneurial spirit of the students is animated which, given the right conditions, should lead to more sustainability-driven start-ups being developed.

1.3   Theoretical background

The theoretical framework that WP 5 and WP 6 build on are mostly derived from earlier work conducted in the project, especially the competencies framework prepared during the Needs Analysis (Bernhardt, J. et al., 2015), WP1.as well as the work on contents and methods for the Joint Master Program on Sustainability-driven Entrepreneurship conducted in WP 3 and WP 4 program (Biberhofer and Bockwoldt, 2016). The **competence orientation** is one of the most central pillars of the pedagogical framework recommended for the program. It draws on beyond others active, student-centered and experimental learning approaches. The development of the framework comprising five sustainability-driven entrepreneurship competencies as well as the specifics of each competency are explained more in depth in section 1.3.1.

A further element of the recommended pedagogical framework depicted in Figure 1.3 is to develop students' capacity of **learning to learn**. This approach has been identified as central to entrepreneurship, which can be defined as a process of continuous, self-organized learning (Biberhofer & Bockwoldt, 2016). It is recommended that students reflect on and better organize their learning process on a meta-level. Two settings that can foster self-directed and reflective learning processes are learning in and from peer groups as well as learning with mentors. A further central pedagogical point is the **real-world orientation**. This point refers to various types of project work in various inter- and transdisciplinary settings, which is, in a nutshell, where WP 5 and WP 6 want to make their main contribution through the testing of various cooperation formats. Moreover, role models are very important for students' learning for sustainability-driven entrepreneurship. The rational for presenting **role models** is that many aspects of an entrepreneurial identity or mindset are difficult to develop on one's own. By watching role models, however, such aspects can be internalized and adopted instead, for instance by observing entrepreneurs' attitudes towards risk or how they handle failures. Last but not least, **coaching** is a very useful method to guide and support students in developing their own sustainability-driven start-up already during the program. This reflects the fact that the decision to create a start-up and to become a sustainability-driven entrepreneur affects all other areas of life and is a question of identity management. Both individual and group coaching can be used to provide feedback and support. Individual **coaching** can cater for students' personal needs, whereas group coaching enables students to learn from each other.

Figure 1.3: Advanced pedagogical framework for the master program (Biberhofer and Bockwoldt, 2016, p.66)

1.3.1 Sustainability competencies

The framework for sustainability competencies, defined by Arnim Wiek (Wiek et al. 2011 and 2014) coupled with Lans` sustainability-driven entrepreneurship competencies framework (2016) served as an orientation framework for the CASE project. The CASE Needs Analysis, which analyzes competencies for sustainability-driven entrepreneurship in the context of 73 interviews with sustainability-oriented enterprises and university partners (Bernhardt et al., 2015), provided the empirical basis. Cooperation between higher education institutions (HEI) and practical partners, complemented by supportive material such as the *CASE Sustainability Competencies Tool*, foster the development of competencies in the context of sustainability-driven entrepreneurship education.

Competencies refer to dispositions needed by individuals to act in an environment and organize themselves to handle diverse complex situations and contexts (Rieckmann, 2012). Rieckmann characterizes competencies as "individual dispositions to self-organization, which include cognitive, affective, volitional (with deliberate intention) and motivational elements" (p. 129). Competencies are not determined a priori but have a process-oriented character. Following Rieckmann (2012), competencies can be developed and are acquired during action, based on experience and reflection.

According to Wiek et al (2011) competencies for sustainable development are essential for promoting sustainability. However, they have not been the focus of traditional education so far and hence require special attention. Competencies for sustainable development need to be integrated in a context characterized by high complexity, insecurity, rapid social change, and diversity. Therefore, it is crucial that sustainability competencies are considered as those competencies that enable people to successfully solve problems regarding real sustainability-problems, challenges and possibilities (Wiek et al., 2011). For the project, in particular competencies for sustainability-driven entrepreneurship were at the center of attention. These competencies should be fostered in potential sustainability-driven entrepreneurs, allowing to respond more effectively to the demand for a sustainable socio-economic development. During the initial Needs Analysis (Bernhardt, J. et al., 2015), five overarching competencies for sustainability-driven entrepreneurship were identified in a collaborative process between enterprises and university partners.

Systemic Competence

In an increasingly complex environment a different kind of thinking than the conventional linear one is required. Systemic competence is the ability to understand complex systems and to deal with complexity at the same time. That includes the ability to think beyond the boundaries of disciplines and to link different domains (society, environment and economy), as well as different levels (local, regional, global). It requires the ability to analyze structures within systems and subsystems, but also the ability to identify key actors and relationships between them.

Anticipatory Competence

Anticipatory competence is the ability to think in long-term time horizons and thus to anticipate possible future developments. It requires intergenerational thinking and therefore involving and considering different generations in the present and in the future. It includes foresight and the ability to cope with uncertainty and risks. The ability to design sustainable scenarios is just as much a part of it as the targeted development of capabilities and opportunities.

Normative Competence

Values and mindsets are motors of behavior. Normative competence is the ability to reflect, to name own values and to understand and accept the values of others at the same time. It means to have a

concept of basic values of sustainability, such as responsibility, respect, tolerance and ethics, and to center own behavior around this axis. Normative competence includes the ability to identify and address value-conflicts and dilemmas that arise in achieving sometimes conflicting sustainability goals. It requires an attitude of inner independence and the freedom to hold against the mainstream.

Strategic Competence

Strategic competence means the ability to design and shape change processes towards sustainability. It is connected to a sense for reality and practical understanding to bring ideas and concepts "down to earth". Management skills, such as the ability to structure processes, organize resources, and deploy them in the right way at the right time, as well as leadership skills, are an essential part of this competence. It becomes evident when problems and challenges in implementing strategies arise. For this, creativity, innovative power and "out of the box" thinking is needed, to be able to strike fundamentally new paths. In addition, it is essential to know how to control effectiveness and efficiency of solutions to repeat success and to reduce the repetition of failure.

Interpersonal Competence

As complex systems require a different kind of communication, interpersonal competencies should be re-defined in the context of sustainability. The prerequisite is an attitude based on diversity, transcultural and pluralistic thinking. The ability to develop interconnections between different stakeholders and to overcome "language barriers" is key. That calls for translation competence, hence, the ability to find a consensus for common terms and to develop a common language. Interpersonal competence further contains the ability to build, shape and maintain (multi-stakeholder) networks in the long term. At the same time, it includes the ability to cooperate successfully in heterogeneous teams. That means to know the success factors and barriers of teamwork and to apply this knowledge in real-world contexts. Ultimately, communicative skills are of utmost importance, like dialogue- and conflict skills, but also presentation-, moderation- and rhetorical skills.

The five competencies for sustainability-driven entrepreneur-ship, Figure 1.4, were used as a framework to evaluate student learning in the piloting courses. By aggregating the findings for all courses using the same cooperation format, conclusions could be drawn on the competencies fostered by each format. It was also possible to explain more concretely in what context the competencies were developed, allowing to identify particularly beneficial settings.

Figure 1.4: The five competencies for sustainability-driven entrepreneur-ship

1.4   Collaboration for sustainable socio-economic development

For preparing cooperation and the transdisciplinary piloting an integrated approach was followed. Based on the results of the Needs Analysis, WP 5 and 6 were implemented simultaneously to WP 3 on Content and WP 4 on Methods. This allowed the project team to adapt the specific measures within the work packages according to the requirements of the final knowledge platform and in accordance with the design of the master curriculum.

The development process followed a **multi-stakeholder approach**, involving the members of the project consortium as well as external stakeholders. In WP 6, the relevant actors were considered within the regional piloting processes. The perspective of all parties involved in the collaboration, i.e. students, teachers, and cooperation partners were evaluated during the qualitative research as described in chapter 3.1. For WP 5, the participation of relevant stakeholders focused on the continuous feedback during the development of the practical support for university-business cooperation in education, notably the guide on cooperation formats (see chapter 2.2) and the tools (see chapters 2.3 and 2.4). On a regional level, workshops, bilateral meetings, and other interactive formats were (co-)organized. International exchange was further realized through participation at conferences, symposiums and forums focusing on (sustainability-driven) entrepreneurship education, sustainable development, transdisciplinarity and university-business cooperation. This participatory approach integrated multiple perspectives, not only from students, teachers, and entrepreneurs, but also from curriculum developers, interested representatives in business and sustainable development, or actors in the non-profit and governmental sector.

Implemented workshops on collaboration formats

The **first workshop dedicated to cooperation** between higher education institutions and companies took place at the University of Natural Resources and Life Sciences, Vienna on October 19th, 2015. The outline of WP 5 comprised a presentation of planned activities and phases. Regional "service learning" projects were implemented and a practical guide for cooperation as well as two tools for analysis of companies' sustainability and coaching of cooperation were developed. The preparation phase concentrated on the results of the Needs Analysis (WP 1), Contents (WP 3) and Methods (WP 4), sharing experiences and exchanging knowledge. The second phase comprised the regional implementation and testing of service learning projects. In parallel, the tools and guide were developed. Results from the regional implementation of service-learning and other forms of corporation were integrated into guide and tools development.

As a starting point, aspects concerning cooperation in general were addressed: the two levels of cooperation to consider, the human and organizational relationship between the partners and the common activities; the importance for a fruitful and persistent cooperation to clarify the benefits for the partners as well as to identify challenges and critical factors, be it hindering or facilitating ones.

In particular, the form of cooperating through "service learning", as described in section 2.1, was discussed in an open dialogue following the "fishbowl[1]" method. Project partners shared their

---

[1] The Fishbowl method is a tool for facilitating dialogue between experts in a way that exposes others to their knowledge while expanding the collective understanding of a subject. Knowledgeable people (the fish) sit in circle to discuss a series of directional questions, surrounded by a larger group of observers in an outer circle (the bowl). The inner circle is the stage for

experiences with this cooperation method and learned how to implement it successfully. The good practice example "Sustainability Challenge", coordinated by the Regional Centre of Expertise on Education for Sustainable Development Vienna, was explained in detail and gave insight into learning outcomes and into specific obstacles to overcome when implementing cooperation between university and practice partners. The shared knowledge was summarized in a matrix of strengths, weaknesses, opportunities, and threats (SWOT).

In a second session, participants had to mentally walk through the regional implementation of service learning projects. Regarding the introduction of new courses or cooperation with practice partners, regional particularities came into the discussion. Besides hindering factors, diversity within the forms of integration of practice partners into teaching and learning gave an idea of possible aspects of the implementation in the five regions.

This workshop was also the starting point for the tools' development. For both, the sustainability performance and the sustainability competencies tool, key questions arose: Who are the future users? What is the specific aim? and What is the expected outcome? The intended objectives were specified and a proposal for milestones of the detailed development process of the tools and guide was made.

At the following **workshop in January 2016** at the University of Vechta, Germany, focusing on the master on sustainability-driven entrepreneurship, some relevant topics for WP 5 were treated. It was also the starting point for WP 6. On the first workshop day, the draft curriculum was discussed internally in the morning, and together with local actors – business representatives, teachers, and students – in the afternoon. This exchange with stakeholders outside the project consortium brought valuable inspiration and highlighted the significance of the manner of cooperation. The statements below illustrate the fruitful exchange between different stakeholder groups.

Testimonial of workshop participants showing the value of exchange between representatives of industry in rural areas and young entrepreneurs from urban areas:

"It is difficult to find sufficient suppliers of local resources in vegan quality." Founder of a start-up in food services in Berlin

"Producing vegan opens up new business opportunities that we would not identify in our region otherwise." Regional stakeholder from agricultural industry, Oldenburger Münsterland

Given a first draft of the joint master's structure, general considerations were raised, like the differentiation of intra- and entrepreneurship. The project team agreed on the aim of the master curriculum to foster the evolution of sustainability-driven entrepreneurship mindsets. They concluded to focus on entrepreneurship, being aware of participants working in enterprises after their studies, but doing it with the mindset of an entrepreneur – as an intrapreneur – and not of a sustainability manager only. Sustainability-driven entrepreneurs take responsibility and perceive challenges in sustainable development as opportunities.

Initiating WP 6, the meaning of "pilots" needed to be clarified. In a discussion, pilots were defined to be real courses for testing parts of the designed master curriculum. The project team found various

speaking and contributing. Those in the outer circle must listen actively and move into the role of fish when they wish to participate in the conversation. *http://slitoolkit.ohchr.org/data/downloads/fishbowl.pdf*

possibilities of course settings, from existing courses with relevance for the master over enhanced courses testing new elements to newly introduced courses. The possible pilots came out of the master draft after they had been attributed to specific subject focuses of the curriculum by the project partners.

A crucial decision for work packages 5 and 6 was made at the **workshop at Kapral's Mill** in March 2016. The general logic of testing courses as pilots was specified through focusing on university-business cooperation in educational contexts for sustainability-driven entrepreneurship. Consequently, the research question for piloting was specified:

What strategies, e.g. concerning tools and methods implementation, are effective in cooperation between universities and companies relevant for sustainability-driven entrepreneurship?

The results of this research were the input for the practical guide on cooperation formats published at the knowledge platform together with good practice examples from the piloted courses. This decision marked a turning point, putting the focus on tangible outputs at the knowledge platform and applying a logic of mutual benefit and closer tying together of activities within work packages 5 and 6. The interrelated process of joint work for the common goal of WP 5 and WP 6 is demonstrated in Figure 1.5.
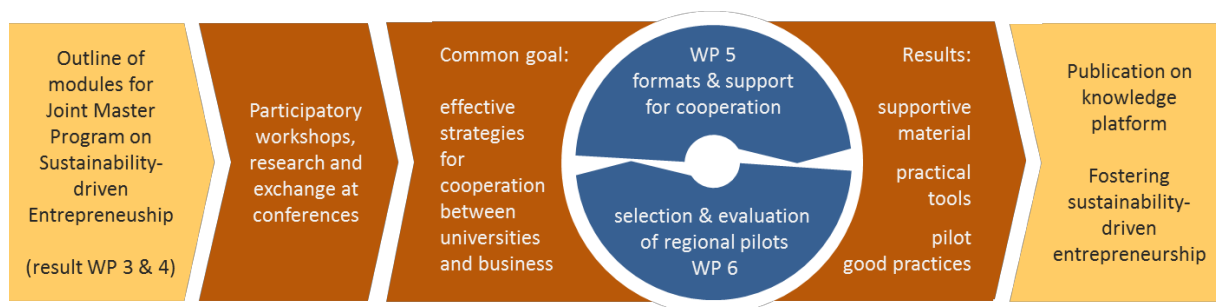
Figure 1.5: Interrelated work process of WP 5 and 6

In detail, this approach was further developed at the subsequent **workshop in Vienna** in July 2016. A team member from each region presented that possible pilots as elevator pitches, a very short form and communicating the essential aspects. Based on the question, what kind of results would be needed for the knowledge platform and more precisely for the guide on corporation, the research plan was set up in detail. Respecting the variety in the courses to be piloted, specifically developed guidelines and a common schedule were agreed upon. This was the starting point of the core research and development activities within work packages 5 and 6. The continuous work followed a structured process of development for the planned results, notably the pilots, the guide, and the two tools. A constant improvement could be achieved through regular exchange between the work package leaders on preliminary results. Thus, not only the quality of the output could be raised, but additional elements (e.g. testimonials) were identified and could be integrated into the final presentation at the knowledge platform. Intermediate meetings, via teleconference or the **workshop in Brno** in February 2017, ensured the involvement of all partners into relevant process decisions and to remain consistent with the overall objectives of the project.

Special attention was put on the parallel common development of the knowledge platform, it's mission, specific goals, and strategy. The close coordination between work packages 5, 6 and 9 on dissemination aimed at perfectly integrating the results of WP 5 and 6 into the knowledge platform. A first beta version of the platform and the two CASE tools were published at a **public event in Brixen**,

Italy, in May 2017. Entrepreneurs and business consultants could experience first good practice examples and guiding support for implementing cooperation with partners in higher education. Additionally, they had the opportunity to discover the tools and their potential for different fields of application, also outside university-business cooperation. Internally, the beta versions of the online results were tested extensively for the final phase of improvement that took place until the official launch of the knowledge platform in autumn 2017.

Complementary activities contributing to work packages 5 and 6

Further regional workshops, e.g. in March 2016 in Brixen on learning in multi-stakeholder networks, brought new perspectives and aspects. General success factors for such learning environments were considered, like a common vision and values, integrating unconventional thinkers, or the ability to translate between the business and the academic world. Competitive thinking, short-term economic objectives, or a missing culture of discussion were identified as possible hindering factors.

In November 2016, a **workshop on teaching** was organized by work package leaders on methods (WP 4). Together with experts and promoters of ESD and EE, experiences were shared on how to successfully implement praxis-oriented and transdisciplinary teaching and learning. The event further focused on teacher training in competence-oriented teaching and learning approaches for project-based cooperation with practice partners.

The **constant exchange on regional, national and international level** was also nurtured through participation at university-business forums, in Vienna 2016 and in Brussels in 2017, at other relevant conferences and events, e.g. at the coneeect Symposium on Educating Entrepreneurship Educators in Berlin 2015 or with a workshop at the Copernicus Conference in Vienna 2016, and on a bilateral basis, e.g. with members of the project on Public Participation in Developing a Common Framework for Assessment and Management of Sustainable Innovation (CASI). In April 2016, together with associate partner Ashoka, a module of the Ashoka Leadership (Visionary) Program was organized as hackathon on system change with special focus on partnerships and co-creation. The variety of participants included both, the perspectives of social impact investors and pioneers of social innovation as entrepreneurs, and of executives in the private and public sector as intrapreneurs. The presentation and sharing of the results in the final stage of development, allowed fine adjustments to be made.

More information on the workshops and an overview of the presentations at conferences and relevant events can be found at https://www.case-ka.eu/results/workshops-presentations/.

The integrated approach of WP 5 and 6 is broken down on the level of each work package in the following chapters. They describe the activities and development of the results of work package 5 (chapter 2) and 6 (chapter 3) in detail.

2 WP 5: Cooperation between higher education institutions and companies

2.1 Objectives and activities

Effective university-business cooperation enables transdisciplinary learning that strengthens the education for sustainability-driven entrepreneurship. Thus, WP 5 aimed at better understanding and applying pedagogical concepts and innovative methods to stimulate the cooperation between higher education institutions (HEI) and companies and simultaneously orientate teaching more strongly towards the real-life problems of enterprises and organizations. Table 2.1: . The WP targeted inspiration and support primarily for teachers at HEI for implementing various innovative cooperation methods such as service learning to foster sustainability-driven entrepreneurship. The result-driven approach of WP 5 put the focus on tangible outputs summarized in Table 2.1 that are available as online and printable version at the CASE Knowledge Platform (https://www.case-ka.eu/). Besides teachers, the results equally address students and representatives from business for initiating a common collaboration or application in a broader context than cooperation between HEI and companies.

Table 2.1: Key results published within WP 5

Practical guide	Based on the evaluation of the pilot courses in WP 6, experiences and learnings were consolidated and published as **inspiring good practices for implementation of university-business cooperation** in learning environments. The different formats of cooperation are presented in chapter 0.
Tools	Within CASE, two tools were developed. The **Sustainability Performance Tool** (see chapter 2) can be used to evaluate to what extent an enterprise operates in an ecological, social, and economic sustainable way.
	The **Sustainability Competencies Tool** (see chapter 2.4) assists the development process of competencies for a sustainable socio-economic development.
Supportive material	The piloting phase of WP 6 also included the collection of material that supports the respective course formats, especially the practical cooperation between partners and students, the learning process and the competencies' development. **Templates** are available for adaptation according to individual requirements or immediate use.

Preceding WP 5 were the findings of the previous working packages, notably from WP 3 on content and WP 4 on methods. The developed Master curriculum for sustainability-driven entrepreneurship provides a structure that implies different foci within the learning process of the students. Therefore, appropriate forms of interaction with partners from practice and accompanying support were considered within CASE. In close coordination with WP 6, the courses to be piloted were carefully specified. They had to demonstrate a broad spectrum of involvement of practice partners and to be relevant for learning in the context of sustainability-driven entrepreneurship. Thus, the focus was not limited on service-learning, but extended to a variety of cooperation forms between higher education institutions and practice partners as described in the following chapter. The developed guide on good practices for cooperation was generated out of the results of the piloting process (described in detail in chapter 3.1 of WP 6).

2.2 Practical guide for implementation of cooperation

2.2.1 Background and objectives

Fostering mutual learning between students and practice partners needs effective forms of cooperation embedded in an educational setting. Depending on the learning objective, specific types of interaction are suitable, at an intensity of cooperation that best meets the requirements e.g. to tackle real-life challenges for a sustainable business development. Carefully setting up the framework for such a learning environment is a crucial task for meeting respective objectives. Presumed details can make a significant difference as the piloting during WP 6 has demonstrated.

Based on these findings, the guide's main objective is to **inspire and** to help teachers to **facilitate** a **successful implementation of cooperation** between students and practice partners. The compiled recommendations may be used for the integration of cooperation in existing courses or for the design and development of new educational offers. As main target groups, the guide addresses teachers, course coordinators, and curriculum developers. For prospective participants, e.g. business representatives, the guide also offers support for decision processes, for instance when it comes to negotiations for resources within a company. During the development process of the guide, it became evident that three main actors contribute to a successful implementation of cooperation: teachers or coordinators at the higher education institution, the students, and representatives from business or organizations. Every participant can benefit in multiple ways, from exchange of knowledge to real-life experience or development of competencies for SDE, as shown in Figure 2.1. Furthermore, the experiences from the tested pilots underlined the importance of clarifying the expectations of all cooperating partners. Consequently, the presentation of the guide does not address the various target groups in a customized way, but demonstrates a holistic picture of how to set up and contribute to a fruitful cooperation in the educational context, Figure 2.1: Multiple benefits for actors in educational cooperation.
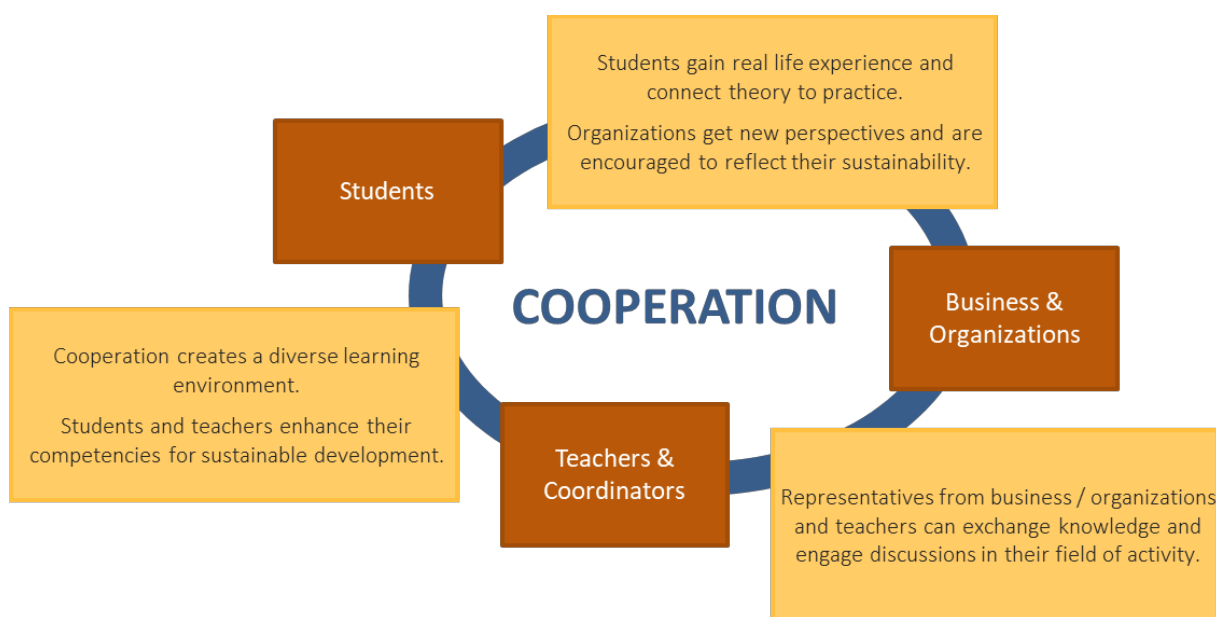
Figure 2.1: Multiple benefits for actors in educational cooperation

As a result of the multi-stakeholder approach, the **common understanding** of educational cooperation generated within the CASE project focusses on mutual learning processes among all partners. The actors meet at eye level, **characterized by respect and openness**, and they are ready to build a **trustful relationship**. This was also positively highlighted quite frequently in the piloting process. To promote and cultivate this understanding and quality of cooperation, all forms of cooperation may be supported by an offer of **coaching or mentoring**. This not only enhances learning effectiveness, but also can prevent conflicts or have a mediatory function in critical situations in the collaboration between students and practice partners.

2.2.2   Elements of the guide

Following the main objectives, inspiration and facilitation support, the guide provides a richness of information and guidance material. The online solution follows a clear structure that is adopted for every single cooperation format presented. Depending on the complexity and the piloted courses within CASE, available support (e.g. templates or contact to experts) is presented according to this structure. The framework for the online guide is presented in Figure 2.2 below.

What is it about? *definition and objectives*	Testimonial
	Benefits
Guidance through phases *step-by-step instructions*	Success factors
	Challenges
Pilot examples *good practice*	Supporting material
	Contacts & experts
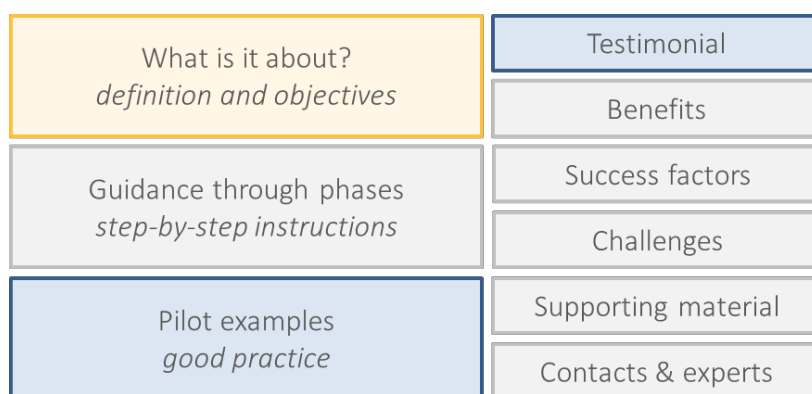
Figure 2.2: Framework for the online guide

The introductory section "**What is it about?**" gives an overview of the respective form of cooperation, including a definition and outlining the major learning objectives. The language tries to be specific, overcoming disciplinary barriers, and yet at a comprehensive level for people with different backgrounds, notably business and academics. Its purpose is to **inform and provide orientation**. For four formats videos have been produced, aiming to strengthen tangibility of content and motivate key target groups to engage and implement cooperation formats.

The introduction is followed by the **core guiding element**, the **step-by-step instructions**. They explain how to implement the cooperation in detail, divided into distinctive phases. The phases vary according to the relevant activities; typically, they comprise time for planning and preparation, a central activity or action, a process of reflection and criteria for evaluation.

The attractiveness of the format to the main actors of the cooperation itself, students and practice partners, is increased by highlighting the **benefits** that are typically related to the format. Especially for companies, it is essential to argue for investing employees' working time and potentially financial resources into educational activities. Students are looking for criteria when selecting optional courses, specialization modules or a whole master. Their personal benefits may be outlined in the syllabus of the course or curriculum of the (master) program.

Designing the process of integrating formats with the practice partner should not be limited to a theoretical process considering eventualities. Based on the practical experience of the pilots,

challenges and **success factors** have been extracted to improve the implementation from the beginning on. Some of the pilot courses have evolved over several years, showing the results of a multi-stage learning process.

To support the implementation, relevant material is summarized in a dedicated section, "**Supporting material**", divided into tools, templates, literature, and general. It is based on good practice examples used within the piloted courses that have been collected during the evaluation process of WP 6. For further questions or sharing experiences concerning the implementation, the pilot coordinators or teachers and other helpful contacts are referenced under "**Contacts and experts**".

Besides providing information, the guide intends to generate motivation for cooperation between teachers, students, and practice partners. The presentation of the pilots as **good practice examples** underpins the informative elements. **Testimonials** give a voice to the people who participated in the pilots. Their perspective and authentic experiences make the cooperation more tangible.

2.2.3   Cooperation formats

Following the requirements of CASE to foster competencies for a sustainable socio-economic development, diversity in cooperative learning environments between theory and practice plays a crucial role. The pedagogical approach of the Master curriculum on sustainability-driven entrepreneurship demands for specific types of exchange and learning corresponding to the content of each module. Hence, different forms of cooperation were identified on the basis of the respective core aspects or predominant part and classified following multiple criteria. First, three groups were formed – project-based, in the field, and in the classroom – as described in 2.2.4 and subsequent sections.

Second, the formats were related to their intensity and complexity of cooperation. This assignment originates primarily from the pilot evaluation and is subject to variation depending on the manner and quality of implementation. Figure 2.3 gives an estimation where to situate the different formats.
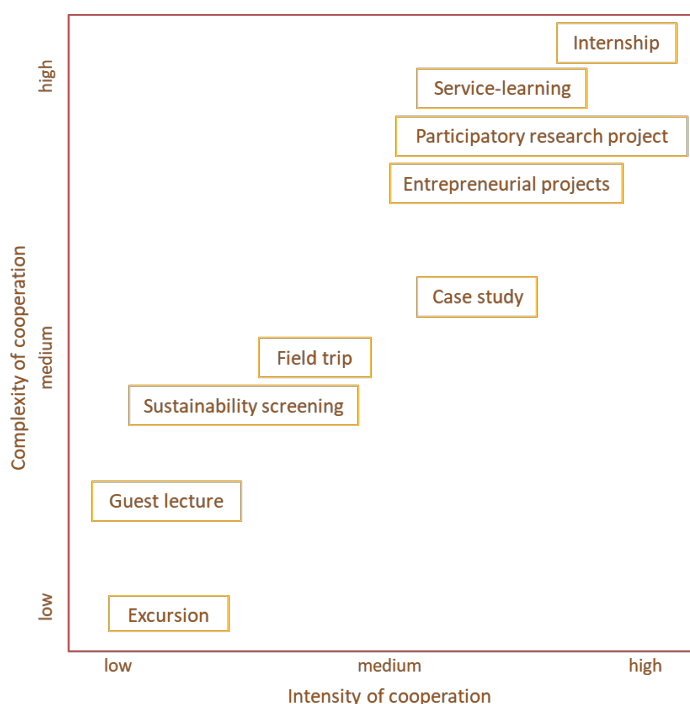
Figure 2.3: Formats according to complexity and intensity of the cooperation

The most interesting attribution was made to the competencies' framework for SDE introduced in section 1.3.1. The pilot testing revealed learning situations where the development of specific competencies was particularly fostered. These observations allow a rough attribution of the involved cooperation format to a competence-field. However, a general rule cannot be derived from this mapping as the learning situations highly depend on many factors such as the detailed course design or the involved personalities. **Fehler! Verweisquelle konnte nicht gefunden werden.**TablesTable 2.2 – Table 2.6 provide examples for each competence-field and describe, how specific cooperation formats and contents of courses help to improve and develop certain competencies.

Table 2.2: Fostering the development of systemic competencies in the context of cooperation

Format	Learning situation fostering systemic competencies
Service Learning	Improved capacity to cope with complexity. Students were able to navigate in complicated and confusing settings and developed the ability to deal with information deficits.
Entrepreneurial projects	Using the Business Model Canvas tool and testing assumptions about the business model for their sustainable business idea, students learned to see the whole and realized that all the parts are needed for successful entrepreneurship (e.g. product or service, potential customers and their needs).
Participatory Research Project	Inter- and transdisciplinary thinking and acting is fostered to co-create knowledge between students from different disciplines and practice partners.
Case Study in Sustainable Development	Working hands-on with a complex sustainability-oriented task requires interaction with various stakeholders. Thereby, students learn to handle different viewpoints and conflicts.
Internship	Students' capacity to analyze complex real-world issues, to evaluate difficult situations, and to deal with contradictions and uncertainty is fostered.
Excursion	Learning about complex issues and their interlinkages. For instance, awareness was created about the interrelatedness of sustainability challenges.
Guest lecture	From the interaction with the guest, students gain a wide range of experiences from the real world, learning that reality is more complex than theory.

Table 2.3: Fostering the development of anticipatory competencies in the context of cooperation

Format	Learning situation fostering anticipatory competencies
Service Learning	Learning to plan for mitigating the future impact of the company. Students were able to better assess possible changes and their impact.
Entrepreneurial projects	Students learned to work with and understand risks on a deeper level. Although still aware of the risks, they see the possibilities and learned to think new and differently.

Table 2.4: Fostering the development of normative competencies in the context of cooperation

Format	Learning situation fostering normative competencies
Service Learning	Developing the courage and ability to ask critical questions with partners. Building a sense of responsibility and being honest with the partner about problems experienced. Learning about future work life and the importance of a good work-life balance. Developing an understanding of what is meaningful for themselves and for society.
Entrepreneurial projects	Student groups' common goal to make a positive societal impact with their venture shows that normative competencies underlie the entrepreneurial intentions. Students were seeking cooperation instead of competition (cooperative thinking), for instance when their idea was based on the principle of a circular economy.
Participatory Research Project	Learning to act in accordance with own values in case of discrepancies between corporate attitudes and own understanding.
Sustainability Screening	Learning how to deal with different dilemmas in the sustainability area, particularly related to business practices. Inspiration was gained from companies acting as role models. Recognizing that there often is a gap between academic knowledge and reality.
Internship	Students applied critical thinking and learned to question complex concepts.
Excursion	Critical reflection on prior theoretical knowledge and assumptions was encouraged. Students developed a critical attitude and became more self-reflective as a result of the experiences shared by role models.
Guest lecture	Students are given the opportunities to discuss important topics in a respectful but critical environment.

Table 2.5: Fostering the development of strategic competencies in the context of cooperation

Format	Learning situation fostering strategic competencies
Service Learning	Learning how to set up a project, balancing between freedom and the preset frame. Applying solution-oriented thinking, e.g. making sense of ambiguous demands and condensing ideas into a workable core topic. Plan and work productively and independently. Action competence, assertiveness towards partner to be able to focus on a concrete project and its implementation. Making mistakes can be a special learning experience.
Participatory Research Project, Internship, Field trip complemented by case study, guest lecture	Applying the theoretical knowledge acquired in both a scientific and a practical context within the student project. Connecting what was learned at university with how things work in the real world.

Participatory Research Project	Students planned and conducted a participatory research project related to a real sustainability challenge of the partner in a new environment (development of research question, research design, collecting and analyzing data).
Case Study in Sustainable Development	Project management skills are fostered. Students are granted large freedom in designing their project, determining problem definition, limitations, and subsequently planning and running the project in an independent and self-directed matter.
Sustainability Screening	Students were able to tie the theory from the course to a real case company, which deepened their understanding of how sustainability issues play out in practice. Students learned to source relevant information (from annual reports, homepage, interview), how to thoroughly examine a company (business plan, operational levels etc.), and how corporate sustainability performance can be evaluated
Internship	Students plan and realize their project in collaboration with a practice partner while carrying the responsibility for the whole life-cycle of the project from idea to realization. In this process, they deal with complex information in a real learning situation, training their problem-solving competence (e.g. ability to reflect, analyze and solve possible emerging problems). Further, the project work developed students' time- and project management skills and generally improved their action-competence and solution-oriented thinking.
Guest lecture	Gaining a wide range of experiences from the real world, students can link their own ideas directly to the input of the practice actors.

Table 2.6: Fostering the development of interpersonal competencies in the context of cooperation

Format	Learning situation fostering interpersonal competencies
Service Learning, Entrepreneurial projects, Participatory Research Project	Working in interdisciplinary groups required relating different disciplinary perspectives to each other, which developed students' teamwork skills. Students learned to accept different opinions and ideas, coordinate different approaches, and apply a respectful and appreciative approach in mixed teams. Working together with a partner, students could practice and improve their communication and collaboration skills.
Service Learning	Managing group processes. Experiencing both the positive and the negative side of group dynamics. Intercultural learning: students worked in culturally blended teams. Understanding the frame of the cooperation and setting the right focus. Learning about different roles and the dynamics within companies. Stakeholder interaction provided an understanding of people's background and why the act in a certain way.
Entrepreneurial projects	From the frequent interaction with their external coach, students learned about and developed skills to navigate in networks.

Case Study in Sustainable Development	Given that the experiences and the understanding of practitioners and locals were the focus of the investigation, students interacted with a wide range of societal actors, collecting data and getting close insights into their work.
Excursion	Excursions fostered the personal and emotional engagement of the students.
Guest lecture	Making new contacts and having to deal with different opinions and points of view, communication and discussion skills were fostered. Students' learned to have a dialogue at the personal level and contribute to a larger discourse at an abstract level.

2.2.4   Project-based formats

The highly transdisciplinary forms of cooperation build mainly on project-based learning with the purpose of understanding a specific problem and creating realistic solutions. This learning approach, described by A. Wiek et al. (2014), attributes to the teacher the role of a coach, who provides guidance and tools to implement a professional project management. A further characteristic of cooperation forms in this category is the problem-orientation in the learning process. The students work primarily in interdisciplinary teams, ideally composed by participants from different universities. It is their task to frame the problem and to research relevant information for the solution development (Dobson & Tomkinson, 2012). The formats show quite high complexity due to the strong intensity in corporation and the simultaneous focus on comprehensive content and ambitious methods.

The category of project-based formats comprises the following types of collaborations: service learning, participatory research projects, entrepreneurial projects, sustainable development case study, and sustainability screening (Figure 2.4: Project-based formats). The detailed description of the piloted regional good practices in this category can be found in section 3.3.1.
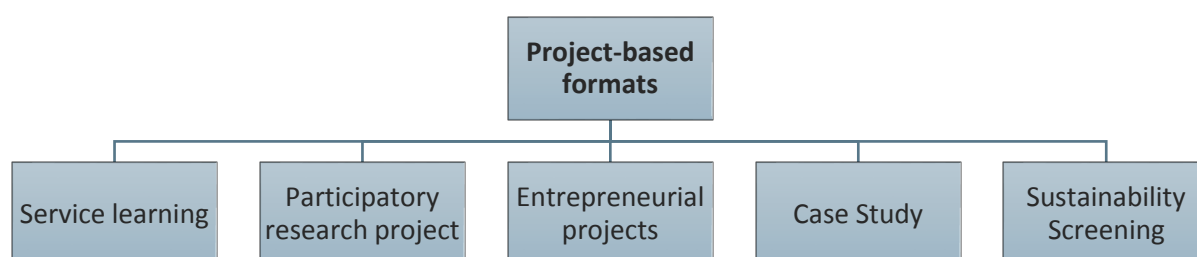
Figure 2.4: Project-based formats

2.2.4.1   Service Learning

Service Learning or learning by engagement represents one of the most promising methods promoting Education for Sustainable Development (ESD) but also Entrepreneurial Education (EE). It is an alternative teaching approach where students are confronted with real-world problems and try to find solutions cooperating with partners such as communities, NGOs, and companies.

Students learn and develop through engaging in concrete projects by meeting the needs of communities and making personal experiences, embedded in an academic learning environment where they can reflect upon their actions.

Phase 1 – Planning

Involvement of communities, NGOs or companies demands a well-organized preparation process. Individual consultations to introduce the purpose and design of service learning to project partners are vital. **Getting to know concrete project examples**, tasks, and possible impact of service learning projects helps to better understand, plan, and implement projects in practice.

Most important is the **creation of an inclusive space**, based on trust and continuous feedback processes between all involved stakeholders: Be open about different organizational infrastructures, resources and time frames between practice partners and lecturers. Try to communicate transparently and link different involvement of capacities into the learning process.

Phase 2 – Preparation

Invite students, practitioners and university partners for a kick-off event encouraging an inclusive, open atmosphere in the beginning of the course. Student groups (4-5 persons) and partners get to know each other personally and discuss their backgrounds as well as the partners' challenges. Plan such spaces for deliberation processes during all project phases and offer **coaching sessions** to foster critical dialogue between students and partners. In-class sessions should integrate scientific and non-scientific perspectives and foster co-creation processes of new knowledge.

The service learning approach often challenges students as they must **develop the project aim**, which collides with traditional educational concepts often oriented towards reproduction of knowledge. Ideally there is a reasonable balance between framing the project challenge, in terms of structuring, and leaving enough space for students' own experiences.

Phase 3 – Action

Innovative potential and creativity of project work is encouraged by interdisciplinary group settings in collaboration with reliable partners, supervised by lecturers. Meetings between students and stakeholders – ideally **at the partner's site** – are recommended on a regular basis and stimulate students' engagement during project work. This independent working atmosphere allows students to apply and test academic knowledge in real life settings. Learning Diaries help to **promote continuous reflection** about project experiences.

Phase 4 – Reflection & Evaluation

To bring the projects to a close the implementation/learning process and the **results of the projects** should be presented. A **public event** format involving all stakeholders supports dissemination purposes and outreach in a broader context. Critical reflection and open discussions are central for the closing event.

Finally, students should submit project outputs as well as a **reflection paper** about their project. Evaluation of the process and development is recommended accordingly to participant needs and wishes, experiences of the organization team, lecturers and, especially important, the service learning partners. Particularly valuable is the continuous involvement of partners over a longer period as all stakeholders get more experienced and implementation of the format gets less complex.

"These projects are the ones that create value, not only within your studies, but also beyond. You can try out, test your skills, get introduced to working life and develop your own projects." Master student in Social Design, University of Applied Arts, Vienna

Benefits

- *Creating impact with engagement*
- *Joyful and creative working atmospheres*
- *Promoting innovative potential via visionary thinking*
- *Personal development by taking over responsibility*
- *Critical reflection with community*

Success factors

- *Design projects for real implementation*
- *Ensure interactive and creative projects*
- *Create projects with visibility*
- *Offer coaching and feedback sessions*
- *Be aware of peoples' needs*

Challenges

- *Balance between service and learning*
- *Lack of transparency and communication*
- *Joint expectation management*
- *Ability to deal with failures*
- *Task assessment leaving enough room for creativity*

Supporting material

General overview

- Introduction Presentation of Service Learning Format (pptx)

Tools

- CASE Sustainability Performance Tool
- CASE Sustainability Competencies Tool

Templates

- Project Concept (doc)
- Learning Diary (doc)
- Project Reflection (doc)
- Invitation to cooperation partners
- Cooperation Agreement Template

Literature

- Article about Austrian Pilot Sustainability Challenge
- Article about Promoting sustainable consumption via service-learning

Pilot examples

- Sustainability Challenge – Service Learning Track
- Service Learning I + II (Socio-Ecological Economics and Policy – SEEP)
- Corporate Sustainability Communication

Project examples

- Implemented project examples

2.2.4.2   Participatory Research Project

Participatory research projects can be a very suitable course format for strengthening transdisciplinary learning and for exploring community-based research. The idea derives from the need for more responsible research and innovation and addresses the dual challenge of doing "good" research and working with partners outside of academia to respond to research needs that are considered relevant by them.

At the same time, this format enables students to gain (sometimes first) research skills, e.g. to develop research questions, to choose an adequate research design and apply research methods like conducting interviews, participatory observation, writing research journals, etc., and train their personal communication skills.

The overall goal of the format is to promote responsible research in close contact with societal needs and to contribute to local and regional sustainable development.

Phase 1 – Preparation

As preparation for the later project work, students get theoretical input to responsible, participatory research and innovation as well as more generally regarding sustainable development and transdisciplinarity.

This series of theoretic course units is concluded with the presentation of current sustainability-related challenges by the local project partners.

Phase 2 – Research Project

First, the students have to choose a specific challenge to work on. Subsequently, they work in teams together with the local partner where they can apply their theoretical knowledge gained concerning research processes. Regular communication and collaboration with the project partner supports the participatory approach and makes it perceptible.

Phase 3 – Final Presentation

In a joint seminar at the end of the course, the student teams present their project results for the partners. This offers the opportunity for feedback from both perspectives, practice and theory.

"No one wanted to answer our questionnaire, but when a district manager asked to do so, it suddenly worked." Student, University of Vechta, Germany

Benefits	Success factors	Challenges
• Improvement of problem-solving competencies	• Students and partners get to know each other personally and early	• To be taken seriously as a student by the partner
• Provision of solutions to partner's problems	• Communication support by teachers providing guides and experience	• Providing viable solutions to the problem of the partner
• Learning how to handle frustration	• Clear guidelines for cooperation partners	• Authoritative attitude by the partner
• Growing students' awareness about the company	• Providing material concerning participative and responsible research methods	• Students' lack of experience in interacting with public for research
• Establishing relationships for future collaboration, e.g. internships or thesis-writing	• Mutual trust between students and partner	• Time as scarce resource for research process
• Providing university insights for companies		• Students' lack of authority towards partners' employees
• New concrete ideas for business		

Supporting material

Tools

- CASE Sustainability Performance Tool

Templates

- Syllabus "Outside the University Box" (pdf)

Pilot examples

- Outside the University Box – Participatory research with people of the region

2.2.4.3   Entrepreneurial projects

Developing an idea into a business model is the core concept of entrepreneurial projects. Students can experience what it means to become an entrepreneur in a protected, playful, and realistic environment. In – ideally interdisciplinary – teams, they strive for tackling real-life problems through a business approach.

During this incubation process, they are accompanied by experts acting as mentors or coaches. The format allows the participants to decide whether they pursue their idea into realization or see the course only as a valuable learning experience.

Phase 1 – Planning & Preparation

Define the entry conditions for students – reliable criteria are e.g. with a specific idea, as a team. A careful selection of participants can be achieved through a motivation letter including their idea or field of interest.

The integration of practitioners may be realized either by choosing relevant personalities from you network or by collaborating with an external partner providing start-up support, e.g. an incubator. The format may vary depending on availability, field of activity, location and could be inspired by e.g. guest lectures or excursions.

Phase 2 – Starting Phase

The starting phase is crucial for the atmosphere and dynamics of the whole group. Ideally, start with a kick-off event that brings the participants together and makes the present ideas visible. It is the moment of clarification where to start from and what to aim for. For the final goal of the course there are multiple options: a viable business model (minimum requirement), a solid business plan, a documented prototype or a detailed proposal for funding.

Leaving the usual (university) environment for 3-5 days to work e.g. in a rural area raises the attention and puts the focus on the entrepreneurial project. Besides intensifying the learning process, such a "Start-up Camp" creates a special atmosphere, builds trust and strengthens the commitment of the participants.

Phase 3 – Business Model Development

The path from idea to business is marked by an iterative process of development. The Business Model Canvas by Osterwalder and Pigneur (2010) is a popular tool to support this process; it has been adapted by integrating ecological and social impact to the Sustainable Business Model Canvas by Ambros and Schmitz in 2015.

Students work on all elements of the business model simultaneously, considering interrelations and maintaining coherence. The holistic view on the business activity includes reflections on the ecological

and social impact. These can be analyzed and demonstrated with the help of the CASE Sustainability Performance Tool or the input-output-outcome-impact (iooi) method[2].

Testing the hypotheses within the business model is an essential step. Depending on the time resources available, a reality-check is made in the form of short interviews or prototyping. A prototype is a small-scale realistic example of the core product and/or service. The tested aspects are evaluated and serve for improvement of the business model.

Phase 4 – Business Planning

A viable business model should be the minimum result of entrepreneurial projects. The potential consecutive step is the transformation of the model into a more detailed and operational business plan. In accordance with the elements of the business model, it further includes concrete milestones, a solid financial planning and a clear communication strategy.

Phase 5 – Final Presentation

A highlight of the course usually is the final presentation. It makes all the efforts visible and offers another possibility to receive feedback from a broader audience. Therefore, a public event represents the ideal solution, also to attract external guests (e.g. investors) and potential future participants.

"The students realize that entrepreneurship is emotional. It is not just calculating numbers or seeing if it is profitable." Teacher, University of Gothenburg

Benefits	Success factors	Challenges
• *Discovering, evaluating and realizing innovative business ideas* • *Fostering entrepreneurial mindset* • *Learning to understand and handle risks* • *Promotes creativity and resourcefulness* • *Contagious enthusiasm between students and coaches*	• *Orientation towards implementation of students' own ideas* • *Creativity-promoting open space within a clear framework* • *Diversity of knowledge and competences of partners/coaches* • *Entrepreneurial spirit of the cooperation partners*	• *Matching student projects with relevant cooperation partners* • *Determination of course limits and extracurricular activities* • *Embedding of sustainability and related concepts* • *Integrating a "start-up camp" (several days off-university site)*

Supporting material

Tools

- CASE Sustainability Performance Tool
- CASE Sustainability Competencies Tool
- Sustainable Business Model Canvas

Templates

- Project Concept (doc)
- Learning Diary (doc)
- Project Reflection (doc)

---

[2] Method to measure societal impact developed by Riess, Birgit (ed.) (2010). Using the iooi Method to Plan and Benchmark Corporate Citizenship, Bertelsmann Stiftung.

Pilot examples

- Sustainability Challenge – Start-up Track
- Methods for Practical Entrepreneurship
- Garage

Project examples

- Implemented project examples

2.2.4.4   Case Study in Sustainable Development

The format Case Study in Sustainable Development was developed by Professor Roland Scholz (e.g. Scholz et al., 2006) and is based on transdisciplinary project work addressing relevant and complex societal problems in a local pre-defined context. Each year, a new location for the case study is chosen. Working in interdisciplinary groups, students identify and frame a specific current environmental problem in the focal area which they subsequently map and analyze with appropriate research methods, e.g. interviews and surveys. Students are granted a large degree of freedom in designing their project. For ten weeks, student groups plan, carry out and evaluate their project based on the problem identified in close collaboration with authorities and other relevant stakeholders. Students bring in experiences and competencies from their diverse fields of study, whereas supervisors from academia contribute with subject knowledge.

The format allows students not only to create transdisciplinary knowledge, they also gain valuable experiences in interacting with diverse actors and stakeholders in society. Students get to practice project management skills, evaluate different types of knowledge and work in an independent, self-directed manner. Furthermore, the format gives students the opportunity to work intensely with the concept of sustainable development in a local context, dealing with opportunities and challenges of the phenomenon in both theory and practice. Students gain an advanced and critical understanding of the notion of sustainable development as a complex phenomenon and strategic tool.

Phase 1 – Planning

Identify a topic for thematic and geographic focus of the case study. The participating students should come from different disciplines and form groups of three to four people.

Phase 2 – Start

First, students execute literature studies and participate at initial lectures on theoretical background.

Second, an excursion is organized to the area under study. The student teams identify and frame a specific problem which they want to address.

Phase 3 – Project development

Over a definite period, the students plan, implement and evaluate a project based on the problem identified in close collaboration with relevant stakeholders, such as authorities, companies, NGOs, and citizens.

Phase 4 – Reflection & evaluation

Each student writes a personal project diary throughout the process to keep track of his/her work progress of himself/herself and within the team.

The work results in a written report, which is presented orally and discussed in class at the end of the course. Depending on the topic chosen, an additional presentation e.g. at a relevant conference can be an opportunity.

"We provided information to one of the cooperation partners that they had an opportunity that they were not aware of. If that will work out, that would make me very happy." Master Student, Environmental Sciences, University of Gothenburg, Sweden

Benefits	*Success factors*	*Challenges*
• *Working hands-on with consultant-like sustainability-oriented assignments* • *Gain experience in interacting with wide range of stakeholders* • *Opportunity for teachers to develop and improve coaching competencies* • *Career opportunities and contacts* • *Learn to define a problem, about focus and limitations of a project*	• *Students are granted freedom in designing their project* • *Excursion, introducing students to the area under study* • *Teachers as coaches instead of experts* • *Students acquire in-depth knowledge about local challenges before deciding on project*	• *Partners' high expectations on communication skills of students* • *Coaching to help students to handle problems and stress* • *Handle diversity and differences in prior knowledge of students in the introductory part* • *Raising resources for a high quality transdisciplinary course*

Supporting material

Tools

- CASE Sustainability Performance Tool

Pilot examples

- Sustainable Development – A case study approach

Project examples

- Implemented project examples

2.2.4.5   Sustainability Screening

Sustainability Screening is based on a case study allowing student groups to investigate and evaluate the sustainability performance of a medium to large-sized company. Companies from different sectors are recruited (e.g. energy, transportation, housing, manufacturing, consulting) allowing students to maximize their aggregated learning experience.

Phase 1 – Preparation

Students are prepared for the task through several workshops where they are familiarized with different frameworks and tools that could be useful for the assessment and analysis of sustainability performance.

They study the sustainability challenges of the company's industry more broadly and, in a first step, collect company data with the help of publicly available information.

Phase 2 – Guided interview

Based on the challenges identified and the company information gathered, students then prepare an interview guide for their pre-arranged meeting with the company's CEO, Corporate Sustainability Officer, or Environmental Manager.

Before conducting the interview, the interview guide is presented in class, enabling students to sharpen their questions.

Phase 3 – Performance analysis and results

Following the interview, students analyze the sustainability performance of their company and prepare suggestions for improvement.

The results of the investigation are summarized in a report that is presented both in class and to the company representative on site.

"It was very inspiring to see companies that deeply implement the three dimensions of sustainability into their strategic agenda." Student, University of Gothenburg, Sweden

Benefits

- *Students learn how to source relevant information*
- *Learning how to deal with dilemmas in sustainability*
- *Acquiring skills in corporate sustainability evaluation*
- *Reflective and eye-opening process for companies*
- *Confirmation of results of companies' internal investigations*

Success factors

- *Thorough preparation for the screening*
- *Pre-selection of companies*
- *Pre-arrangement of the interview*
- *Timeframe at company for questions*
- *Mobility solution for distant companies*

Challenges

- *Gaining a critical perspective on sustainability challenges of companies' industry*
- *Overcoming language barriers (foreign students)*

Supporting material

Tools

- CASE Sustainability Performance Tool
- CASE Sustainability Competencies Tool
- Sustainable Business Model Canvas

Pilot examples

- Sustainable Management

Project examples

- Implemented project examples

2.2.5   In the field

The next category of cooperation formats are higher educational offers characterized by a setting with a significant amount of time outside the usual environment such as the university lecture hall. Their main purpose is to not only talk about, but show and make perceptible the practice partners' place of activity. Transdisciplinary learning opportunities are quite important as the proximity to "real-life" typically offers augmented authenticity. Representatives of the cooperating organization act in their

"natural" working environment and thus may deepen the students' experience. A possible inconvenience could be a lower readiness to openly reflect upon their work.

Three different cooperation formats are based on experiences gained in the field: internship, field trip complemented by case study as well as excursion, Figure 2.5: Formats in the field. The detailed description of the piloted regional good practices in this category can be found in section 3.3.2.

```
                    ┌─────────────────┐
                    │  In the field   │
                    └────────┬────────┘
         ┌──────────────────┼──────────────────┐
  ┌──────┴──────┐    ┌──────┴──────┐    ┌──────┴──────┐
  │  Internship │    │  Field trip │    │  Excursion  │
  └─────────────┘    └─────────────┘    └─────────────┘
```
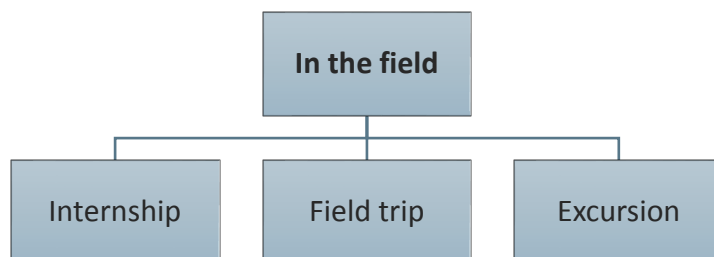
Figure 2.5: Formats in the field

2.2.5.1   Internship/Practice

Internships relate to the provision of practical experience or training in a specific professional field and shall help linking theory and praxis. Internships can be broadly used in diverse thematic areas and are furthermore excellent opportunities for strengthening cooperation with partners. The overall goal can therefore be described as twofold: 1. Internships intend to provide real-life learning opportunities where students can acquire a variety of useful skills and get an orientation what their future field of action might be; 2. from the perspective of the internship provider the goals might be to offer training to a possible future work force, to engage with young and motivated people and ideally adopt a learning attitude by the institution/organization itself where interns are seen as people with fresh ideas and new looks on procedures or processes.

Internships therefore offer real-life experiences and the possibility to deepen knowledge within an organization – from start-ups to established companies. Providing training on the job, the format is practice- and action-oriented. Internships can either be done in a block, lasting from a few weeks up to six months, or they can be done intermittently, lasting some hours or days per week, in parallel to lectures or seminars during the semester.

The challenge is to link academic knowledge with the practical experiences. Students should be able to apply the theoretical knowledge gained at the university while experiencing the challenges and conditions of the world of practice.

Phase 1 – Planning

Define selection criteria for internship providers (e.g. start-ups) and start scouting the partners, considering variety. Consult the partners when designing the course to best integrate their expectations. Plan enough time for attracting students after having contracted the partners. A well-prepared promotion campaign using e.g. social media or newsletters helps to find the "right" participants, especially when you aim at mingling disciplines from different universities. Students must apply by sending a motivation letter, their curriculum vitae (CV), and a partner preference.

Phase 2 – Preparation

The partner must find a suitable challenge with clearly defined tasks, responsibilities and roles as they give orientation. The objective is to receive tangible results in the end. Matching the organizational

partners needs and students' (preferably as teams of 2-5) profiles is a crucial step. Both receive an extensive briefing concerning expectations and procedures. These two aspects decide substantially on the success of the internship. It is recommended to sign a confidential disclosure agreement for the partners' protection.

Phase 3 – Starting

A common starting event (e.g. "kick-off") brings partners and students together. The matching couples get to know each other and the representatives from the organizations make their final choice, based on but not limited to the proposition from the coordinator.

Phase 4 – Internship

During the internship itself, an agreement between the respective students and the partner on working conditions – like working hours and remuneration – is essential. The presence at the work place and ways of communication must be clarified. Ideally, there is a contact person responsible and available for questions. Regular meetings and a supportive (not lecturing) attitude of the partner will improve the cooperating atmosphere and eventually the results.

A midterm meeting of all participants allows a presentation of interim results, exchange of learnings and experiences, reflection and thus mutual learning. Teambuilding and dealing with conflicts may become relevant issues.

Phase 5 – Final Presentation

Sharing results, experiences and learnings can best be facilitated by organizing a final (public) event. All projects realized during the internships are presented and ideally the contact person of the organization participates with a statement on the relevance of the project results. Additionally, a presentation may take place at the partner organization. Issuing a certificate rewards the students' engagement and may serve as documentation for their CV.

"Our organization benefits from the well-developed and professionally carried out project that was offered by the students." Partner, Social Association, Vechta, Germany

Benefits	*Success factors*	*Challenges*
• *New ideas, innovative approaches and solutions for organizations* • *Gaining professional insights into the business world* • *Tackling practical obstacles, taking responsibility for project realization* • *Concrete results, tangible output*	• *Selection of interesting and relevant organizations* • *Extensive briefing of students and partners* • *Openness and curiosity of students* • *Partners' commitment in allocating time and effort*	• *Finding creative and problem-solving tasks (not solely executive)* • *Matching students' profiles with partners' requirements* • *Time allocation of students* • *Offer payment or credit points (ECTS) rewarding the students' work*

Supporting material

Tools

• CASE Sustainability Performance Tool
• CASE Sustainability Competencies Tool

Templates

• Project Concept (doc)

- Confidential Disclosure Agreement (doc)
- Certificate

Pilot examples

- Profiling internship – Inclusion
- TryOut

Project examples

- Implemented project examples

2.2.5.2   Field trip complemented by case study

A field trip is a journey to a place away from usual environment which is attended by a group of students. The purpose of the field trip is to provide insights and direct experience with real-life initiatives and activities in thematic accordance with the visited place.

In this format, however, the field trip is complemented by a case study. It is not only a passive excursion to see interesting places, but a learning opportunity that requires prior theoretical inputs, active participation and interaction at the place itself, followed by reflection of the experience. The students thus get theoretical inputs, already with the knowledge that they will have to use later in practice. Then, they gain practical experience when applying the theory during the preparation, realization, and reflection of the particular case studies.

Phase 1 – Preparation

Theoretic knowledge referring to the context should be imparted in form of a pre-seminar or compact block courses. This may include obligatory readings and ideally reflections on the topics raised before the students get confronted with the real-life conditions. For the case studies, they form groups of 3-5 people and may choose from a pre-selection of enterprises that are part of the cooperation.

Phase 2 – Field trip activities

At the field trip location, students should first get local orientation and knowledge. The one or more representatives of the hosting organization present themselves and share their experiences.

Second, the student groups prepare and subsequently perform their field research. After preparing the own research questions, they design suitable methods to generate relevant data and conduct interviews and thematically focused field research. They learn how to establish contact, build rapport and interact in a culturally sensitive way.

Phase 3 – Presentation and report

At the end of the course, the results of the case studies are presented and summarized in a report. The representatives of the cooperating organizations – as partners of the students' research – should be invited to the final presentation. A possible outcome of the case study could be a set of recommendations for the organization.

"The preparation before the personal interaction with the enterprises is crucial for the students to be clear on what they want to learn." Teacher, Masaryk University, Brno, Czech Republic

| Benefits | Success factors | Challenges |

- *Strong inspirational effect on students*
- *Authenticity of the experience*
- *Enterprises turn into research partners*
- *Meeting students from different cultural backgrounds is enriching*
- *Reflection on own work and its meaning in a broader context*
- *Critical and innovative thinking is fostered*

- *Enthusiastic and well-prepared partners*
- *Allowing sufficient time for the collaboration and discussions with partners*
- *Thorough preparations for the field trip (e.g. readings, reflections and case study focus)*
- *Easy and flexible arrangements between partners and university*

- *Careful preparation of research design by students*
- *Being involved in the partners' activities in some way*
- *Respectful and long-standing relationship with the partners*
- *Good organizational and time planning*

Supporting material

Tools

- CASE Sustainability Performance Tool
- CASE Sustainability Competencies Tool

Pilot examples

- Studying Local Rural Systems
- Successful environmental projects

Project examples

- Implemented project examples

2.2.5.3   Excursion

An excursion is a trip by a group of people, in this case for educational purposes. As a teaching format, it provides alternative learning strategies for students, adding variety that is beneficial for both students and teachers.

Excursions to pioneers, enterprises, or start-ups in the field of sustainability-driven entrepreneurship, more specifically can help students understand the relevance of a sustainable economy and the need for alternative economic strategies. The format enables students to get to know different examples of sustainability-driven entrepreneurship in a concrete real-world setting. Students can discuss experiences with entrepreneurs as to the challenges and opportunities pioneers face in the emerging sustainable economy. Entrepreneurs can act as role models and activators who provide real-life feedback via their practical examples. Students get acquainted with sustainable entrepreneurs in different fields and learn from their approaches. Moreover, excursions to pioneers can give a practical introduction and illustration of inter- and transdisciplinary teaching and learning approaches. For optimal learning benefit, however, the outcomes of the excursion need to be integrated into the set teaching program.

Phase 1 – Planning

Depending on the purpose of the excursion, carefully chose the period of the year and duration for an optimal benefit from the activity. Consider seasonal or categorical time constraints at the partner's location. For diversity, visit various practical actors, for more profoundness, plan a longer stay at one destination (up to several days). Clarify the possibilities of mutual learning between the partner

organization and the students. Define the involved actors (e.g. employees), the form (e.g. discussion) and a respective time frame.

Foresee arrangements for transportation and, if necessary, for accommodation well in advance.

Phase 2 – Preparation

Contextual theoretic knowledge can be imparted in form of a pre-seminar or compact block courses. This may include readings and reflections on the topics raised before the students get confronted with the real-life conditions.

Phase 3 – Excursion activities

First, get to know the place e.g. through a tour and presentation by the local host. Sharing the concept, activities and experiences are valuable insights before starting a discussion or another form of exchange. Ideally, students receive the opportunity to engage by participating at workshops or activities. Thus, the students can give feedback and bring in different perspectives from outside the visited organization.

Phase 4 – Reflection

At the end or after the excursion, time for reflection should be granted. To intensify the experience, a written format can be chosen.

"It was really interesting and enriching to meet the farmers and listen to them talking about their experience in the authentic environment on the farm, where we could see how everything works." Master Student, Environmental Humanities, Masaryk University, Brno, Czech Republic

Benefits

- *Opportunity to share the partners' work with students*
- *Critical reflection on prior theoretical knowledge and assumptions*
- *Learning about different techniques, processes, conditions and consequences*
- *Personal and emotional engagement*

Success factors

- *Prior knowledge of and experience with the partner is a plus*
- *Open-mindedness of the partner and employees*
- *Arranging transportation far enough in advance*
- *Possibility of perception of impressions with all senses (visual, sensory, smell etc.)*

Challenges

- *Length of the excursion to be long enough for students*
- *Length of the excursion to remain manageable for the partner*
- *Scheduling the excursion at the most interesting period of the year (e.g. ecovillage in summer)*
- *Organizational efforts for longer excursions (over several days)*

Supporting material

Tools

- CASE Sustainability Performance Tool
- CASE Sustainability Competencies Tool

Pilot examples

- Sustainable Communities
- Management of Rural Space

Project examples

- Implemented project examples

2.2.6   In the classroom

When investigating possible cooperation options in the classroom the evaluation focused on courses that added a transdisciplinary perspective by inviting guest lecturers and speakers as external experts. The detailed description of the piloted regional good practices in this category can be found in section 3.3.3.

Though being the least complex form of implementing a cooperation, it still allows an important mutual exchange between students and practice partners. To make the encounter successful, an appropriate embedding into a course and careful preparation and reflection is essential.

2.2.6.1   Guest lecture

The invitation of experts or guest lecturers is a collaboration format that can facilitate transdisciplinary learning and is usually simple to implement. In the setting of sustainability-driven entrepreneurship, guests could be from sustainability-driven enterprises, start-ups, or incubators. Guest lecturers provide an important educational experience for students based on their real-world life experiences. Students get to see the insight and perspective of the guest lecturers' specific field. The format can enable students to interact with professionals in formal and informal settings. Through discussions, interpersonal competence and communicative skills are fostered. Guests' contributions can take the format of a single lecture, a lecture series (e.g. along a specific period like one month or one semester) or workshops (with different time length according to the specific needs. E.g. a whole-day workshop allows more time for interaction and practical exercises than a rather short workshop of 1-2 hours).

Another benefit is the link that students get to make between what they learn in their textbooks and the experiences shared by the guest speaker. Students thereby build important connections between what they have learned and the real world.

Phase 1 – Planning

Depending on the overall design of the course, the framework of integration including the selection criteria of guests is set. A choice of people based on personal contacts of the teacher works fast but can be limiting. A mix of proven and new lecturers is recommendable to bridge this gap.

Phase 2 – Preparation

Careful preparation of the setting is required to use the full potential of this format despite its relative simplicity. An extensive briefing of guest lecturers about the course setting and aims is key to clarify expectations and set a fruitful frame for the corporation. A more profound approach would let the guest lecturers participate already in the design process of the course. Students should be informed about the personal background of the guest in order to prepare adequately for the unit. Ideally, students prepare for the guest lecture by doing some selected readings.

Phase 3 – Guest lecture unit

To make optimal use of practitioners' knowledge and experience, guest lecturers can be asked to give feedback on student work during their visit. This should be communicated in advance and sufficient time must be reserved.

The exchange between the students and the external guests can be fostered through a dedicated space for a vital discussion. Relevant questions should be prepared by the students beforehand, especially when they are asked out of a critical point of view.

Phase 4 – Discussion & reflection

After the visit of the guest lecturer, time for reflection helps to link back to the academic perspective of the course topic.

"I learned that having doubts and uncertainties is part of the everyday working reality and that you can learn to deal with that." Student, Free University of Bozen-Bolzano, Italy

Benefits	*Success factors*	*Challenges*
• *Improve the ability to think critically* • *Students linking own ideas directly to the input of practice actors* • *Guest lecturers get in touch with young, motivated people* • *Personal contact with teachers appreciated by guests* • *Practical knowledge transfer to younger generation*	• *Minimized bureaucracy according to formats' low complexity* • *Interactive elements encouraging students to actively participate* • *Availability of guest lecturer(s) for feedback, questions and discussion* • *Flexibility of teacher concerning the needs of the guest(s)*	• *Avoiding overlap in the guests' contribution to a topic* • *Balanced division of time for input and discussion* • *The guest lecturers' availability for students before and/or after the course unit* • *Teacher should be prepared for intervening if necessary*

Supporting material

Tools

- CASE Sustainability Performance Tool

Pilot examples

- Ethical and local economy
- Sustainable Development in the Oldenburger Münsterland: solving problems with innovative projects
- Change-Management: Shaping a sustainable world by innovation, participation and leadership
- Teamwork

2.3   Sustainability Performance Tool

2.3.1   Background and objectives

The CASE Sustainability Performance Tool is a qualitative tool for recording and developing sustainability in companies and non-profit organizations. It provides a holistic overview of the interplay between business areas within organizations and reveals opportunities to systematically identify and further develop sustainability potentials and challenges. It builds on a comprehensive understanding of sustainability that considers ecological, social, and economic aspects in a balanced way.

The tool was primarily designed for teaching, but it can be used by enterprises and other organizations for self-assessment as well. It can be applied to every kind of organization: profit oriented enterprises, non-profit organizations, social businesses, associations, etc. For reasons of simplifying, all forms of organizations are summarized under the term "enterprise".

The main objective of the tool is to support collaborative learning within the frame of transdisciplinary projects between universities and business partners. It aims at interlinking academic and business realities and setting in action a process of mutual understanding of mind-sets, terms and working

routines. Accordingly, the tool and the analysis process create added value simultaneously for university teaching and entrepreneurial practice.

For teaching

- Students learn to understand enterprises as systemic networks of interlinked internal functions and departments. They get a feeling how enterprises are structured and how the different business areas should be accorded.
- Through a structured analysis, students get a wider perspective of sustainable entrepreneurial acting and learn to identify opportunities and challenges of sustainable development within enterprises.
- Students benefit from real world experiences, get to know good practice examples, and get impulses for their own sustainability-oriented business ideas.
- Teachers are supported in setting up a structured analyses process and in professionalizing collaboration between universities and external partners.
- Ideas and needs for further research questions and research projects are revealed.

For entrepreneurial practice

- Partners get feedback and an external view, particularly on their sustainability performance.
- Partners are motivated to reflect upon their organization and to re-think sustainability-driven entrepreneurial practices. They are motivated to figure out sustainability opportunities and challenges and to respond appropriately towards a more sustainable future.
- Through a structured analysis process, the tool supports the dialogue between universities and enterprises and gives ideas for further collaborative projects.
- Benchmarks for sustainability-oriented enterprises are created and provided.

2.3.2 Application

As mentioned in the introduction, the main objective of the Sustainability Performance Tool is to support teaching. As such it is crucial that the tool is integrated in a course or lecture. Under the guidance of teachers, students are enabled to combine microeconomic basic knowledge with aspects of sustainability sciences and to apply them in practice, either in case studies, or in the context of cooperation projects with enterprises or in their own business-plan. Possible contexts could be courses on business and management sciences, on entrepreneurship, on sustainable development or interdisciplinary modules for all scientific disciplines.

Moreover, the tool can also be applied in companies. It supports entrepreneurs and employees in reflecting on how sustainable aspects are organized and to develop them further. Possible contexts could be vocational trainings, seminars and advanced trainings or consulting projects.

2.3.3 Process of tool development

2.3.3.1 Integrating standardized sustainability reporting tools

Growing legislative pressure and increasing public concern about the global climate and the carrying capacity of the earth have led to increasing demands for organizations to act in sustainable ways (Freundlieb M, Teuteberg F; 2013). Consequently, the number of organizations that provide information on their sustainability practices has grown steadily (Kolk A; 2010). One way in which organizations communicate these practices to stakeholders is through sustainability reports, usually

published annually with financial reports, that report on the organization's economic, environmental, and social impacts caused by its everyday activities. (Global Reporting Initiative; 2015).

To support the reporting process various tools were developed, mainly using the guidelines of the Global Reporting Initiative. Most of them are designed for enterprises, focus on quantitative data, and require detailed, also quantitative insights in the organization.

For purposes of the project CASE it was necessary to develop an individual tool that meets the requirements of interdisciplinary and transdisciplinary university teaching and entrepreneurial practice at the same time. Therefore, some of the most appropriate and well-known tools were evaluated and key aspects were integrated into the Sustainability Performance Tool.

Global Reporting Initiative (GRI)

The GRI reporting, currently available as G4, is one of the most renowned tools for sustainability reporting. It aims at recording the impact of entrepreneurial activity on economic, environmental, and social sustainability. For this purpose, a comprehensive catalogue of 46 aspects is provided, with a focus on the social dimension and on globally relevant topics such as work security, human rights, or prevention of corruption. The G4 Reporting Principles and Standard Disclosure are supplemented by a comprehensive implementation manual, which contains references for the assessment of each single criterion and explanations for the necessary basic data (G4 Sustainability Reporting Guidelines, 2016).

As result of the evaluation of the original GRI Sustainability Reporting Guidelines, the contents were completely restructured. The new, revised standards, which will be available in 2018, build on three universal standards, relevant for all organizations, and a series of topic specific standards which cover environmental, social, and economic aspects (Global Reporting Standards, 2016).

Using GRI standards has the benefit to use global standards, what makes it easier for organizations to reveal their contribution to the UN Sustainability Development Goals or to the EU Directive for non-financial reporting. Furthermore, it enables a complete analysis of sustainability issues and increases transparency to all stakeholders. For university teaching, especially for interdisciplinary contexts, the instrument is only partly suitable, since it requires a lot of basic data and consequently also an extended business knowledge to handle these data.

Economy for the Common Good (ECG)

The Economy for the Common Good movement was set up in 2009 by Christian Felber and has the vision of a humane and sustainable economy, prioritizing no longer profit maximizing but increasing the common good (Felber, Ch., 2015). The core of the ECG assessment and reporting process is the Common Good Balance Sheet which defines and measures the contribution of an enterprise to the common good. It shows how an enterprise lives five basic values: human dignity, solidarity, ecological sustainability, social justice, and democracy/transparency – in relation to the most important stakeholders: suppliers, lenders, co-workers, customers, and the wider society. In this way 20 indicators emerge at the intersections of values and stakeholders to measure a company's contribution to the common good. With the help of a Common Good Report, these 20 indicators give detailed information about a company's performance and its contribution to the common good (Economy for the Common Good, 2015).

The strength of the ECG balance is the methodological approach that reveals both, the status quo, and the potential for future developments. The content focus is interesting as well because it combines micro- and macroeconomic perspectives and promotes the idea of transformation. As an entry tool for university teaching, however, it seems too complex and draws too little attention on business-related aspects.

Common Framework for Assessment and Management of Sustainable Innovation (CASI)

CASI is a European project, developed in the framework of the Science I Society Program of FP7. The project's main objective is to develop a methodological framework for assessing and managing sustainable innovation through wider public engagement in the Research, Technological Development and Innovation (RTDI) system by ensuring the commitment of a broad spectrum of societal stakeholders, including industry, research organizations, policy-makers, academia and science institutes, civil society organizations, media, and the general public. The core tool, CASI-F, promotes a structured process for tracking sustainable innovations and providing roadmaps for management (CASI, 2016).

The strength of the tool lies in its focus on innovation, which leads to an online pool of ideas for sustainable innovations. The methodological approach and graphical solution, as basis for a cross-sector benchmarking, is also promising. In university teaching, CASI is particularly interesting for the item innovation, but it cannot replace a comprehensive enterprise analysis.

2.3.3.2   Co-creating knowledge

The CASE Sustainability Performance Tool is well-embedded in the entire CASE project frame. That means, it considers conclusions and key statements of the Needs Analysis (WP 1) and integrates contents and methods outlined in WP 3 and WP 4 (Biberhofer and Bockwoldt et al., 2016). It is designed as a part of the Joint Master Program but might support single modules as well.

The development of the tool was structured as a collaborative process, integrating members of the CASE team, students, and teachers from the participating universities and external partners as well. It was developed in several learning steps, containing feedback loops and improvement opportunities Figure 2.6.
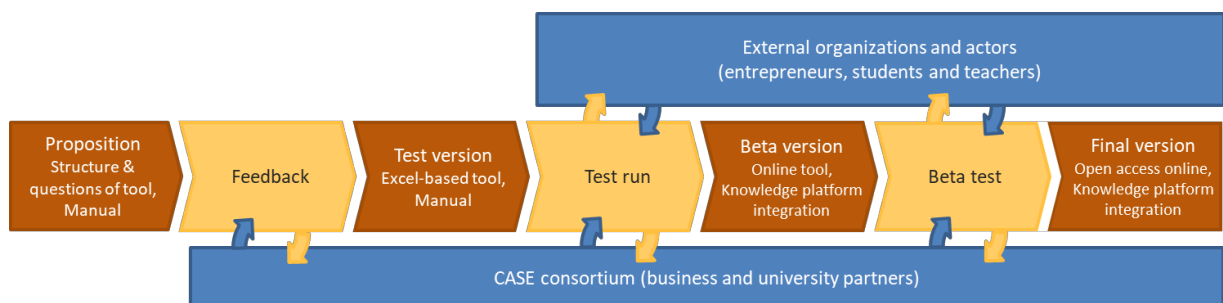
Figure 2.6: Development process of the Sustainability Performance Tool

(1) In a first step, an analysis matrix was developed, accompanied by a manual, guiding through the analysis process and the application of the tool.

(2) Members of the CASE team evaluated these core elements, considering understanding, logic of the structure, and usability in teaching.

(3) Building on this feedback a first pilot version was designed and

(4) tested by external partners of the five project regions. Ten representatives of enterprises were asked to verify the consistency of the tool, to ensure that it gives a comprehensive and realistic view of an enterprise. In parallel, the tool was tested by students and teachers in two different courses: bachelor students from "Environmental and Bio-resources Management" and students from Socio-Ecological Economics and Policy (SEEP). Students had the task to check, if they understand the purpose of the tool, the structure, terms, and concepts of sustainability-driven entrepreneurship.

(5) Grounded on these results, the first version of the online tool was developed. As an online tool requires additional adaptations in content and design, a further feedback loop was necessary.

(6) Again, the partners of the CASE team and external actors tested the beta version and gave valuable and helpful advice for further improvement.

(7) In a last step, the tool was adapted once again and is now available as open-access tool on the CASE Knowledge Platform.

Voices from entrepreneurs

"The tool gives a comprehensive overview of all business areas and reveals sustainability challenges very fast. It is easy to handle, and I am looking forward to testing the online version together with my team" (Enterprise Bolzano, 2016).

"It is clear, precise and worked out carefully, maybe too detailed for a quick overview." (Enterprise Zurich, 2017).

"The tool looks attractive to me." (Enterprise Vienna, 2017)

2.3.3.3   Using basic principles

The Sustainability Performance Tool follows principles which are fundamental for the understanding of sustainable economy and sustainability-oriented entrepreneurship.

- **Holistic view**: A concept of strong sustainability is put forward which is about the balance between the ecological, social, and economic dimension of sustainability. Accordingly, sustainability-oriented organizations should consider aspects of all dimensions in all working areas.
- **Systemic understanding of organizations**: Organizations, economic enterprises as well as NGOs, associations, and other non-profit organizations, are analyzed under a systemic focus. This means that the departments and working areas of an organization are not to be understood as separate units but as interconnected.
- **Transdisciplinary understanding**: The tool considers the fact that sustainable socioeconomic development can be achieved most effectively by deliberately designing the interfaces between business and science. Therefore, a continuous dialogue and reflection between enterprises, students, and teachers is crucial.
- **Interdisciplinary understanding**: The tool targets not only people with a business background but aims at providing access to sustainability-oriented entrepreneurship for students of different scientific disciplines.
- **Transformation orientation**: The tool aims not only at a status quo survey of the sustainability performance but also at working on suggestions for further development and transformation. Therefore, the reflection of the results in dialogue with the external partners plays a vital role.

2.3.4   Structure of the tool

The tool consists of three main parts which may be used optionally, according to the depth of analysis, Figure 2.7.
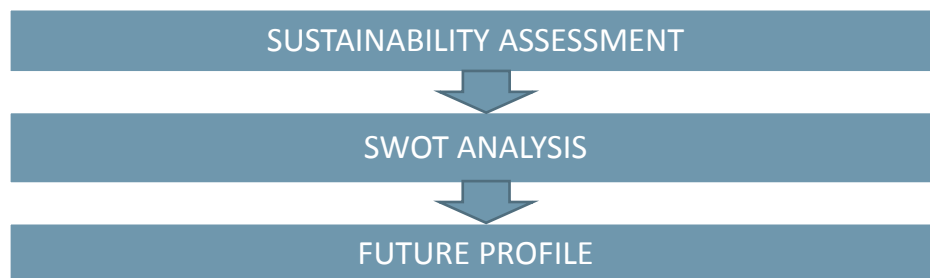
Figure 2.7: Main parts of the tool

2.3.5   Sustainability Assessment and Profile – assess performance and make it visible

The central aim of the assessment is to better understand interrelations within enterprises and to initiate the dialogue on sustainable alternatives, opportunities, and challenges. In the context of teaching, the assessment is not so much about an exact reproduction of the enterprise status quo but about developing students' competencies to understand performance more holistic and to ask relevant question during collaboration.

The structure of the assessment which is based on a valuation matrix, consists of the following elements:

CATEGORY: BUSINESS AREA							
	Assessment						Justification
	0	1	2	3	4	5	
Indicator 1							
Indicator 2							
Indicator 3							
Indicator 4							
Indicator 5							
Indicator 6							
Indicator 7							
Total of the category							

2.3.5.1   Categories – Business areas

The business areas serve as categories in the matrix. Each business area is evaluated in a separate matrix. The following business areas have been identified:

- Mission and Vision
- Products and Services
- Production and Supply
- Location and Logistics
- Stakeholder and Marketing
- Governance and Organization
- Employee Development
- Controlling and Reporting

For application, it is important that not all categories are relevant for all enterprises. The category "production and supply", for instance, is central for manufacturing companies but not relevant for service providers. The category "employee development" is not relevant for one-person enterprises.

2.3.5.2 Sustainability indicators and discussion questions

A set of indicators represents each business area. The indicators are formulated as statements and aim at giving a comprehensive picture of sustainability, covering all dimensions (e.g. Indicator 1.2: The company's mission takes equal account of environmental, social, and economic sustainability issues).

The discussion questions intend to broaden the understanding and give impulses for deeper reflection on certain aspects of the single indicators. They serve as guiding questions or examples, rather than being strict criteria which must be answered. Therefore, they might be used or not, reduced or extended in the concrete assessment process.

2.3.5.3 Assessment of indicators and qualitative justification

The first step aims at figuring out whether the individual indicator is relevant to the nature of the company's activity. For instance, for a one-person enterprise the indicator "participatory development of mission and vision" is not relevant. In this case, the indicator is not assigned a value in the assessment.

In a second step, the quantitative assessment is conducted by measuring the single indicator on a scale from 0 to 5. The scores correspond to defined sections on a percentage scale, from 0% to 100%, and can be interpreted as follows:

Score	Percentage-scale	Assessment	Interpretation
0	0 %	Does not apply	The criterion is not implemented.
1	1 % - 20 %	Rarely applies	First approaches of implementation.
2	21 % - 40 %	Partly applies	Some aspects are implemented, others not.
3	41 % - 60 %	Applies in many aspects	The criterion is partly implemented.
4	61 % - 80 %	Applies in most aspects	The criterion is mostly implemented.
5	81 % - 100 %	Applies completely	The criterion is completely implemented and can be taken as good practice.

Finally, for each indicator an additional field is available, where the assessment is justified verbally.

This step is important for evaluators to reflect their decisions and avoid superficiality. Furthermore, it is crucial for dialogue processes with cooperation partners to have grounded arguments, which may lead to fruitful further discussions about opportunities and challenges of sustainable development.

2.3.5.4 Sustainability Profile

The scores awarded per indicator are summed up in a total for each category. The assessment of each business area is visualized in a bar chart (Figure 2.8) that provides a quick overview of the sustainability performance.

Figure 2.8: Example of scores awarded per indicator

The visual representation of the sustainability profile of the whole enterprise is done in a radar chart, Figure 2.9. In blue, the performance of the analyzed enterprise is shown and may be compared to a benchmark or average (in orange).
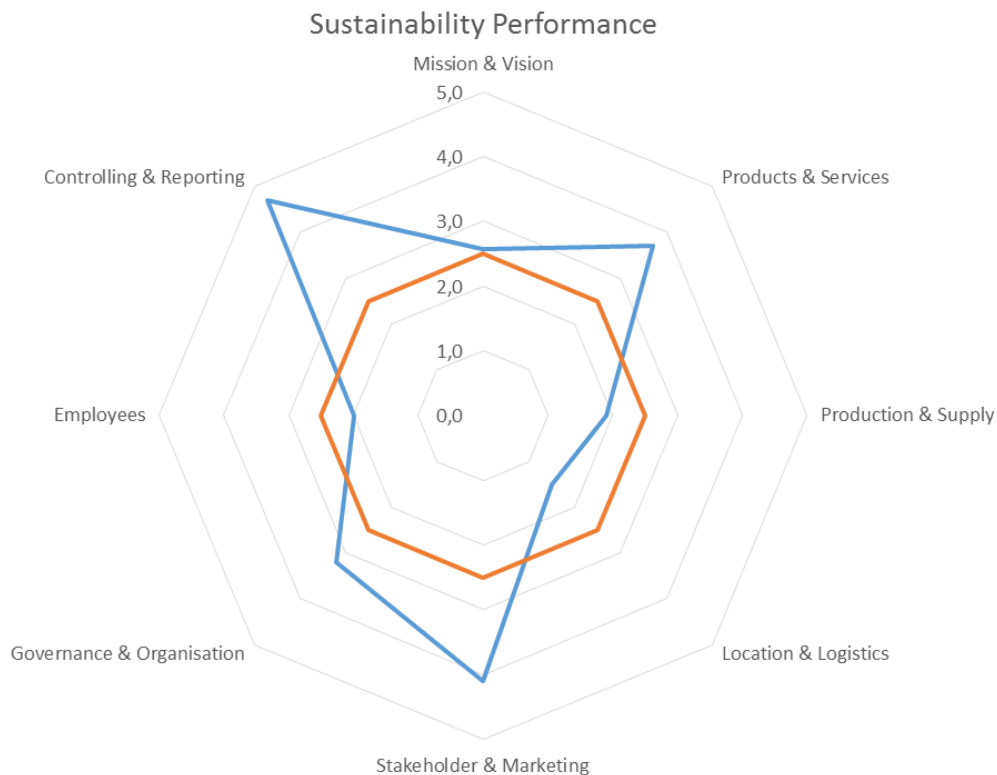
Figure 2.9: Sustainability performance visualization in a radar chart

2.3.6   Categories and indicators - Understand enterprises in a holistic way

Each organization, independent whether profit-oriented or not, must fulfill certain basic functions to meet its purpose and to be able to survive in the long term. In the CASE Sustainability Performance Tool, these basic functions are translated into eight categories, covering the different business areas or departments within an enterprise, Figure 2.10.

Certainly, there are many links and interdependencies between the single business areas, some overlap and flow one into the other. To encounter this complexity in an appropriate way, it is decisive to regard enterprises as systemic networks.

For purposes of simplicity in teaching, each business area or category is analyzed separately.

The order of the categories is optional, but it makes sense to start with "mission and vision" and to end with "controlling and reporting".
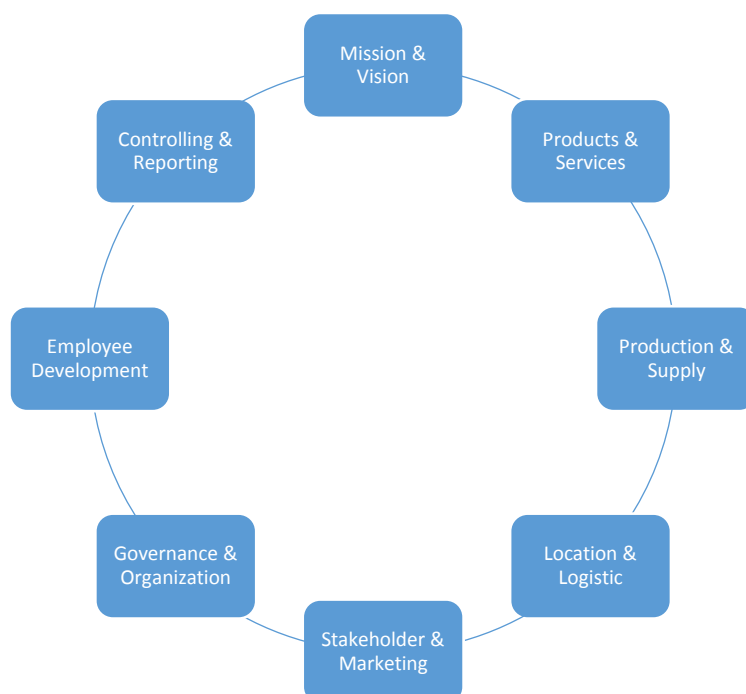
Figure 2.10: Categories in the Sustainability Performance Tool

Mission and Vision

The mission describes the basic orientation and purpose of the enterprise. What is the core task and what does the enterprise stand for in society? The vision describes the intended picture of the future. How should the enterprise's future but also the relevant environment (society, region, world) develop through the company's activities? The question how far aspects of sustainability are anchored at this superior and strategic level is relevant, as it is essential for the implementation in everyday routines.

Products and Services

This category is about the values, the enterprise creates. Are products and services in line with accepted sustainability standards? How far does the enterprise contribute to common welfare? Does the enterprise work in the "green economy" (e.g. production of renewable energies) or does it implement aspects of sustainability (e.g. production of chocolate, using organic, fair-trade raw materials)? A crucial issue is the enterprise's orientation towards innovation, as the ability to respond

to changing conditions and to develop and implement new opportunities, is central for long-term existence.

Production and Supply

This category is concerned with the production process and supply chain and therefore primarily relevant for producing companies and less for service providers. It is about giving an evaluation of the whole value chain, including the indirect effects and costs of production as well.

Location and Logistics

This category focuses on the environmental and social challenges and opportunities that arise through decisions about geographical site, design and construction of company buildings and the operation of the business. Sustainability-orientation aims at reducing the social and ecological footprint and has the potential to reduce long term costs and support the common welfare at the same time.

Stakeholder and Marketing

Under this item the concepts, communication and interaction processes aligned to the market are summarized. In contrast to the traditional understanding of marketing, sustainability orientation means to involve extended target groups as stakeholders (customers, suppliers, local authorities, interest groups, civil society) in distinct phases of creating products and services. Marketing is fundamentally re-thought, where customers are perceived as holistic beings with head, heart and soul. The "new" customer is well-informed, critical and orients his decisions on rational and emotional arguments and increasingly on the meaning of products and services.

Governance and Organization

This point describes the internal structure and processes which transfer the corporate objectives into operative action. The goal of a sustainability oriented enterprise is to develop into a learning, adaptive organization, being able to react to complex and rapidly changing requirements with fast, innovative solutions. This requires a changed understanding of leadership that does not follow the patterns of traditional autocratic top - down decisions, but integrates more participatory and flexible models that are summarized under the concept of corporate governance.

Employee Development

Employees and their active, self-conducted engagement are essential for the success of an enterprise. Under the premise of sustainability, employees are regarded not only as human resources but as people with values, attitudes and abilities that can continuously evolve. In this item, the aim is to assess how the personal development of each employee is fostered and which frame conditions apply.

Controlling and Reporting

This section describes how entrepreneurial activity can be made more effective by clear and transparent monitoring, success evaluation and reflection looping. Controlling therefore refers not only to classical financial controlling but to all business areas (e.g. marketing: how successful is marketing? Employee development: How are external learning contents integrated into daily practice?). Particularly interesting is the impact of the enterprise, e.g. the effects of the enterprise on the natural and social environment and how this is communicated to the outside world.

2.3.7   SWOT Analysis - Identify strengths and weaknesses

SWOT analyses provide a quick overview of the status quo but also the future potential of topics. Following the well-known four quadrant model, Figure 2.11, questions about the sustainable development of the analyzed enterprise are raised:

In what aspect does the enterprise already act sustainability-oriented? What are the strengths?

Where are perceived weaknesses and why these aspects are considered as weaknesses?

Which aspects are regarded as opportunities for a sustainable development of the enterprise? How can these opportunities be leveraged?

What are threats and risks for a sustainable development of the enterprise? How to cope with risks?

Figure 2.11: SWOT analysis matrix

The SWOT analysis can be used on different stages, depending on the purpose of the analysis, and comprehensively, for the entire enterprise or for individual business areas.

1. As a starting point, before or instead of the detailed assessment to get a general idea of the sustainability performance of the whole enterprise.

2. As a starting point to receive an overview of sustainability opportunities and challenges of individual business areas.

3. Subsequently to the detailed analysis to assess the potential for future fields of action, where the enterprise would like to be more engaged.

2.3.8   Future Profile - Planning Sustainable Development

Since many enterprises experience pressure to develop in a sustainable direction and need to constantly adapt, not only the status quo but also the desired future of sustainability performance is of interest. The future profile is not part of the tool, but it gives an outlook on planned goals, raising the question, which sustainability performance an enterprise wants to achieve in a medium or long-term time horizon (5-10 years).

Quantitative assessment

To ensure comparability with the status quo, the assessment follows the same logic as the status quo assessment, using the same categories and indicators. It is again carried out on a scale from 0 to 5, which corresponds to the desired realization targets in percentages.

Score	Percentage-scale	Assessment	Interpretation
0	0 %	Does not apply	The criterion is not relevant or not achievable for the enterprise.
1	1 % - 20 %	Rarely applies	First steps are planned but with a long-time horizon.
2	21 % - 40 %	Partly applies	The criterion is anchored in the strategy, but has not high priority.
3	41 % - 60 %	Applies in many aspects	The criterion is anchored in the strategy. Development targets are planned with a medium time horizon.
4	61 % - 80 %	Applies in most aspects	The criterion has a more than average priority and should be realized with a shorter time horizon.
5	81 % - 100 %	Applies completely	The full implementation of the criterion has top priority in the company plans. It will be well-equipped with time and money resources.

Qualitative justification of the objectives

The desired degree of attainment is underpinned by verbal justifications. For each criterion, the importance for the company's strategy, necessary measures and temporal horizon of implementation is assessed as well.

Future Profile

The results of the future assessment are summarized and visualized through bar charts for each business area. The summary of the desired set points for the entire enterprise is again visualized in a radar chart. From the comparison between actual values and target values, conclusions for the sustainability performance of individual business areas as well as for the entire enterprise can be derived.

2.3.9   Analysis process - Applying the Sustainability Performance Tool

Applying the Sustainability Performance Tool in the context of a cooperation project means to set up a defined process, where teachers, students and external partners collaborate in defined roles and tasks. The process consists of the following steps:

PREPARATION
INTRODUCTION
DATA COLLECTION
SUSTAINABILITY ASSESSMENT
SWOT ANALYSIS
FUTURE ASSESSEMENT
REPORT and PRESENTATION
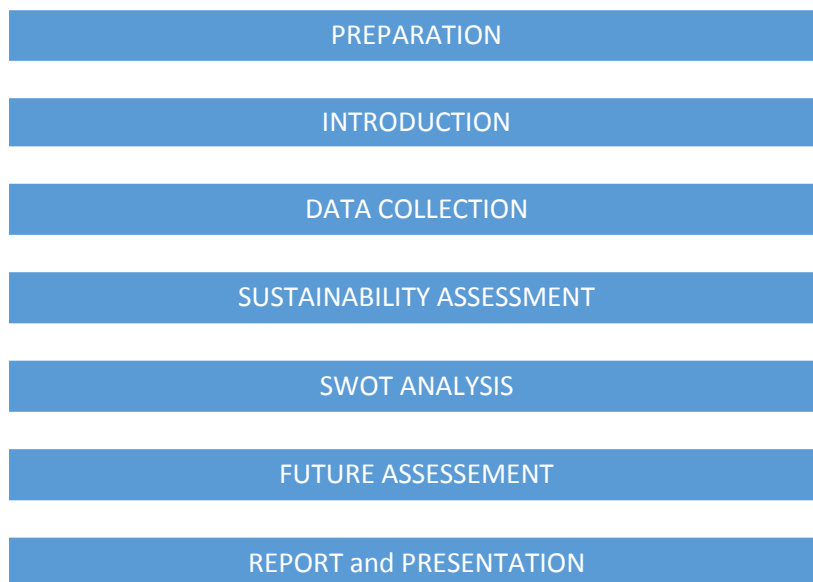
2.3.9.1   Preparation

As outlined in the chapter above, university-business cooperation projects need careful preparation, where needs and expectations of all involved stakeholders are considered. Applying the Sustainability Performance Tool in the context of a university course raises some additional questions which should be answered in advance.

About the course

What are the main objectives of the course? What is the purpose and function of the tool in the course?

Which additional benefit has the tool for the course?

In which format the tool is used, in a case study or in a real-world cooperation project? How is the cooperation project planned, just one external partner (e.g. with different departments) or several external partners?

Which time resources are planned for introduction and implementation of the tool?

About teachers

Who carries out the course? Which business or management skills does the teacher have? Does the teacher have knowledge in sustainability sciences, particularly sustainable entrepreneurship?

Which practical experience does the teacher have in carrying out cooperation projects? How is the access to the business world? Is the teacher already involved in business and multi stakeholder networks?

About students

Which backgrounds do the participating students have? Do they have basic knowledge in business and management or in sustainability sciences? Which practical experiences do students have in cooperation projects with external partners?

What are the expectations and motivations of students?

How are working groups organized (e.g. size, constellation)?

About business partners

What are the criteria for selecting the cooperation partners?

Is it the first cooperation project with the partner or does it build on an established partnership?

Who will be involved in the project? What is the role of the involved persons in the enterprise?

What is the motivation for participating in the project? Which expectations and needs does the partner have?

Plan enough time for the introduction of the tool, particularly if students have no business background. Each single indicator can give rise to questions about conventional business concepts and sustainable alternatives. Best case: plan one semester for the theoretical introduction and one semester for the practical project.

2.3.9.2   Introduction of the tool

As the testing phase revealed, a sound introduction of the Sustainability Performance Tool is a key success factor. It is crucial to enable students not only to manage it from a technical point of view but to dive deeper into the multi-facetted issues of sustainability-oriented entrepreneurship. Consequently, the introduction should cover the following contents:

Business and management knowledge

How is an enterprise organized? What are the key functions or business areas of enterprises and how are they linked? What are specific challenges of sustainable entrepreneurship?

Sustainability knowledge

What do the three dimensions of sustainability mean and how are they linked? Which approaches are behind terms like systemic, holistic, transdisciplinary, etc.?

Usage of the tool

How to use the online tool? How to collect data? How to set up a fruitful cooperation and constructive interview situations with external partners?

To get familiar with the tool it is recommended to test it in a case study first, before applying it in the context of a business partnership.

2.3.9.3   Data Collection

As a starting point, students collect relevant data and information about the cooperation partner. The structure of data collection follows the logic and headlines of the assessment tool (categories and indicators) and is carried out in a two-step process:

Desktop research

Students collect relevant information on the analyzed organization via websites, reports, advertising brochures and other channels. This should provide a rough overview of the status quo of the sustainability performance. The absence of essential information in external communication is also a statement and can already point out an important future field of action.

Field research

Information that cannot be gained from secondary sources should be collected directly through interviews or workshops with representatives of the enterprise. A careful preparation in advance, facilitated by teachers is essential. In addition to general principles of good cooperation, the following questions should be clarified:

- How is the interview carried out? By way of an on-site visit, a skype meeting or any other form?
- Who are the interview partners and which position do they have? (e.g. CEO, head of department, …)
- Who will be involved from the university side? The whole student group, just single representatives, also teachers?
- How much time is planned?
- What are the expectations of the partners?

Keep in mind that the requirement is not to ensure a complete data collection but to better understand how enterprises work. As such the effort for data collection should be limited, for students as well as for enterprises. Sometimes, data are not available, e.g. management ratios, others are too sensitive to circulate them externally.

2.3.9.4   Sustainability Assessment

The core element of the tool is the sustainability assessment, which provides an in-depth analysis of the sustainability performance for each business area or department. In accordance with the preferences of the external partners, the assessment can be conducted in diverse ways:

1. Grounded on a careful preparation the assessment is carried out in a participative workshop with students and representatives of the enterprise.

2. Students with support of teachers conduct the assessment based on the data collection. Afterwards, the results are discussed and verified with the business partners.

3. Business partners carry out a self-assessment and discuss the results with students and teachers afterwards.

Draw explicit attention on the qualitative interpretation and justification of the numeric values and make sure that they are well recorded because they sometimes reveal insights of perceived challenges and opportunities.

2.3.9.5   SWOT Analysis

The SWOT analysis aims at going deeper in certain aspects and at revealing future developments in terms of strengths, weaknesses, opportunities, and threats. As such it is recommendable to carry out the SWOT in a cooperative setting, e.g. a workshop, with clear defined tasks and roles.

- Students prepare the workshop, especially the guiding questions, and ensure that all results are recorded. During the analysis, they can either take the role of observers or, in advanced courses, as facilitators.
- Teachers are responsible for a fluent and smooth process, either in the role of facilitators or observers.
- Entrepreneurial partners are the key actors in a SWOT workshop. Therefore, it is crucial that those persons participate, who oversee future development of sustainability issues.

From the entrepreneurial partner, ideally representatives of management and of all departments or business areas are present.

2.3.9.6   Future profile

To deepen the results of the sustainability assessment, which focuses on the status quo and the sustainability performance already achieved by the enterprise, an extended version of the tool could provide an outlook on future plans and visions. The structure is based on the core matrix of the assessment, which allows a direct comparison between status quo and envisioned status. In general, this assessment will be carried out by representatives of the enterprise, as it requires deep insights in plans and decisions about future development of sustainability issues.

It depends on the intensity and quality of the cooperation before; which role students and teachers play in this process. Either they are involved directly or at least they should be informed about the plans of the enterprise.

2.3.9.7   Report and presentation

The final report summarizes the results of the assessment and the SWOT analysis. The students prepare the SWOT analysis, which should be approved by the teacher and discussed with the project partners. Depending on the requirements, the final report can also be presented directly towards the management and / or staff of the partner enterprise.

Final report and final presentation are not just impositions but can be the entry ticket for further cooperation projects. Therefore, plan enough time for preparing the report and the presentation and draw specific attention on design and graphic elaboration of the materials. It is the final impression partners keep from this university business cooperation.

2.4 Sustainability Competencies Tool

2.4.1 Background and objectives

The aim of the Sustainability Competencies Tool is to make the development of competencies for sustainable development visible and comprehensible. It focuses not so much on a quantitative assessment but more on qualitative reflection and dialogue processes, which are initiated by using the tool in various forms of self- and external evaluation.

Primarily, the tool is meant to be used by students in the context of sustainability-oriented courses at tertiary level. But it can be transferred to sustainability-oriented enterprises and non-profit organizations as well, used in a modified form to support processes of employee- and organization development.

The Sustainability Competencies Tool was developed in the frame of CASE project in a collaborative process, involving the project partners, students, and external partners. In the application, it was planned and named as "Coaching Tool". During the development process, it turned out that competencies for a sustainable socio-economic development should be put center-stage and be reflected in the name. Coaching is a method that may support the process of competence awareness. But the aim of the Sustainability Competencies Tool goes far beyond applying single methods, which is why it was necessary to re-define and to re-name it. Depending on the application, the tool has the following benefits:

For students

- Students learn what competencies for a sustainable development mean, what their specific characteristics in relation to other key competencies are and how they are interrelated.
- Students learn to understand competencies as a bundle of attitudes, values, skills and concrete experiences.
- Students are motivated to reflect upon their own competencies and to figure out capabilities and barriers to development.
- Applying the tool in university courses, it supports learning processes through interlinking contents of the course and development of own competencies.
- Applying the tool in peer settings, it promotes the ability to provide and receive qualified feedback and to reflect in dialogue processes.

For teachers and external coaches

- Through a structured process, the tool supports teachers and external coaches in coaching students.
- In the context of course evaluation, the tool supports the assessment of learning objectives and competence development.
- The tool can also be supportive for quality assurance in curriculum development processes.

2.4.2 Application

The usage of the tool is flexible and allows several forms of application. For each course, it should be decided how to use the tool, considering the objectives, time resources, participants' background and, if applicable, composition of groups.

Self- and external reflection

The key for individual learning processes is the ability to reflect upon your own competencies, capabilities, and boundaries of competence development. The tool supports the process of self-reflection but external evaluation as well, which is conducted by teachers, or in the case of cooperation projects by external partners. The comparison of self- and external perception and perceived differences can initiate fruitful further learning processes. It is crucial that comparisons are embedded in a comprehensive feedback and dialogue process.

Status- and development-oriented assessment

The tool can either be used only once in a course, e.g. at the final stage, or at the beginning and at the end of the course. When only used once at the end the tool can help to become aware of the connections between contents of the course and own competencies; when used twice, the focus can be put on the development and learning progress, strengthening continuous reflection and exchange about personal sustainability competencies.

Individual or group-oriented evaluation

In the first place, the tool is aimed to support the perception of individual competencies. However, the tool is also suitable for evaluation of group competencies in the context of courses focusing on group- and teamwork.

2.4.3   Process and methods of tool development

2.4.3.1   Theoretical and empirical background

The Sustainability Competencies Tool was developed as an integrated part of the project CASE and is therefore deeply grounded in the findings of the previous working packages. A comprehensive literature review on competencies for sustainable development and sustainability-driven entrepreneurship presents the theoretical basis for the tool. The framework for sustainability competencies, defined by Arnim Wiek (Wiek et al 2011 and 2014) coupled with Lans` (2014) insights serve as frame for the tool. The CASE Needs Analysis, which analyzes competencies for sustainability-driven entrepreneurship in the context of 73 interviews with sustainability-oriented enterprises and university partners (Bernhardt et al., 2015), provides the empirical basis. As such, the Competencies Tool underpins the transdisciplinary approach of the project, which has the aim to improve the dialogue between the academic and the business world and to better understand not only mutual needs, but boundaries as well.

2.4.3.2 Process of co-creating knowledge
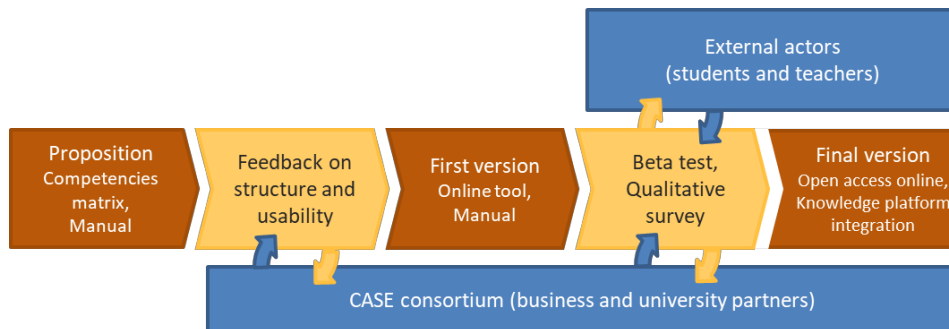
Figure 2.12: Development process of the Sustainability Competencies Tool

Co-creating knowledge efficiently needs a good structure. In CASE we adopted the following structure, Figure 2.12.

(1) In a first step, a competencies matrix was developed, accompanied by a manual, guiding through the assessment process and the application of the tool.

(2) Matrix and manual were evaluated by members of the CASE team, considering understanding, logic of the structure and usability in teaching.

(3) Building on this feedback, a core group of the CASE team deepened the research on sustainability competencies and worked out examples and connections to teaching. Grounded in this work, a first version of the online tool was developed.

(4) In a second feedback loop with the whole CASE team, about 15 members, all of them teachers, the beta version of the tool was tested and adapted accordingly. In parallel, the tool was tested by 11 students in a course focusing on "co-creation". The testing was structured as a quantitative survey with the opportunity for qualitative comments and a final dialogue about the tool.

(5) In a last step, the tool was adapted again and is now available as an open access tool on the CASE Knowledge Platform.

Findings of the testing

The reflection on competencies is a sensitive issue as it concerns disposition, capabilities and development of the own personality. As such, an extended testing was crucial for further improvement of the tool. The survey was divided into 10 main questions and 5 sub-questions, mainly focusing on the understanding of the five competencies fields and the referring sub-competencies. Two questions referred to the usability of the tool and the time-resources, only one to the aspect of reflection. The students had to assess the tool on a scale from 0 to 5. The value 0 means "not at all", 5 means "very strong".

The feedback out of the survey was positive overall but revealed fields of improvement as well.

- The introduction text is regarded as clear and good to understand with a value of 3.9.
- The description of the five competencies fields, as well as of the sub competencies, is assessed as more than average intelligible (from 3.8 to 4.3).
- The usage of the tool is also regarded as clear with an average value of 3.8. Also the time-effort is defined as suitable with a value of 3.8.
- Some comments revealed that not all terms were clear (e.g. multi stakeholder dialogue, dimensions of sustainability), which has to do with the focus of the course (not explicitly

focused on sustainability) and the setting of the test (not enough time for introduction). On the other hand, it made obvious that the tool should be well embedded in the context of a course and enough time resources should be provided for the introduction and defining terms.

- Regarding the question about how much using the tool stimulates further reflection, it obtained the weakest average value of 3.1 and no further comments. This weak result might be explained by the fact that the tool was tested in a specific testing session in a computer room via an individual questionnaire survey with a focus on the evaluation of the tool itself and no explicit relation to the teaching and learning process of the overall course on co-creation. Furthermore, the follow-up dialogue was too short due to time constraints that would have allowed discussing further the dimension of reflection.
- In some comments, the design of the tool was criticized, particularly the overload with text. It makes the assessment fuzzy and interrupts the flow of reflection. An important point that can easily be integrated into the online tool.
- Several participants highlighted positively the final graphic visualization of the competence diagram.

2.4.4 Theoretical context: Competencies for a sustainable socio-economic development

The tool is based on an understanding of competencies, which includes knowledge, skills and attitudes. Following Rieckmann (2012, p. 129) competencies can be characterized as individual dispositions of self-organization, which include cognitive, affective, willful, and motivational elements. Competencies are not determined a priori but have a process-oriented character. Accordingly, they are activated in the concrete situation of application. To what extent the level of existing and still developing competencies is perceived, is decisively related to the ability of reflection.

Wiek et al (2011) define competencies for sustainable development as essential for sustainability. Until now they have not been the focus of traditional education and therefore require special attention. Competencies for sustainable development are integrated into a context characterized by high complexity, insecurity, high speed of social change, individualization, diversity and uniformity. Therefore, it is crucial that sustainability competencies are considered as those competencies that enable people to successfully solve problems regarding real sustainability-problems, challenges and possibilities (Wiek et al., 2011). In section 1.3.1, the five types of competencies, usually associated to the group of sustainability competencies, are further specified: systemic, anticipatory, normative, strategic and interpersonal.

2.4.5 Structure of the tool and assessment process

The central aim of the tool is to initiate a reflection and dialogue process on sustainability competencies. The tool should help to sharpen one's own perception, to identify potentials, possibilities of development, as well as barriers. In the context of academic courses / teaching courses, the goal is therefore not an exact depiction of competencies but to foster sensitization and awareness of competencies.

The structure of the assessment consists of the following elements.

FIELD OF COMPETENCE												
	Importance				Knowledge				Application				Qualitative Interpretation
	0	1	2	3	0	1	2	3	0	1	2	3	
Sub competence 1													
Sub competence 2													
Sub competence 3													
Sub competence 4													
Sub competence 5													

Step 1: Fields of competencies and sub-competencies – Get familiar with the meaning of competencies for sustainable development

The five fields of sustainability competencies, described under section 2.4.4, serve as a guiding frame. Each competence-field is explained through five sub-competencies, revealing meanings of the competence but not being exclusive. Students should reflect upon each sub-competence and figure out, what it means for them and in the context of the course.

Online tool: For each sub-competence, discussion questions are available which help to reflect upon the own competence development.

Step 2: Components of competencies and evaluation – evaluate competencies on multi-levels

In accordance with the definition of competence mentioned in section 2.4.4, the tool proposes three components of competencies: importance, knowledge and application. Students should evaluate each component on a scale from 0-3, bearing in mind that the self-assessment reflects their individual perception. The assessment process can be guided through questions like:

- Importance: How important is the sub-competence from my perspective? Is it in line with my prioritized values?
- Knowledge: How do I assess my understanding and knowledge in the indicated field?
- Application: Do I apply the knowledge in practice? Which practical experiences have I gained?

The following table specifies, how the values from 0-3 should be interpreted.

Score	Importance	Knowledge	Application
0	The competence is not regarded as important.	Understanding and knowledge are completely lacking.	Experience in practical implementation is completely lacking.
1	The competence is regarded as moderately important.	Understanding and know-ledge are classified as weak.	Little experience in practical implementation.
2	The competence is regarded as important.	Understanding and know-ledge are classified as good.	Sufficient experience in practical implementation.
3	The competence is regarded as very important.	Understanding and know-ledge are classified as very good.	Considerable experience in practical implementation.

For each competence-field practical examples are available in the guide, providing experiences from courses that aim at fostering competencies for sustainable development.

Step 3: Qualitative analysis and interpretation - Interpret the numeric values and start a dialogue about competencies

As a result of step 2, a numeric value is shown for each sub-competence and for the competence field in total, allowing for several conclusions to be drawn. It is crucial that in step 3, students give a qualitative interpretation/justification of the results and deduce options for their own development path. The quantitative results can also be verified in dialogues with peers or teachers and thus deepen the reflection-process.

Deviations within the three components of competencies are of particular interest. For instance, if **importance** is high-rated, **knowledge** and **application** however low-rated, it could indicate a certain need, either for further personal development or for development of the curriculum.

Step 4: Comparison - Compare and reconcile self- and external perception

Depending on the course objectives and the relevance of reflection- and feedback processes, the results of the self-assessment can be compared with different values:

- Maximum: Every sub-competence has a maximum to reach, which means the advanced level.
- Results of previous assessments: the comparison with earlier assessments (for example, at the beginning of a course) gives an impact on reflection of competence development.
- Results of external evaluations: the comparison with the result of peer or teacher assessments supports the verification of the self-perception.

If comparative values are used, it is of importance to ensure that they are well embedded in a constructive dialogue and feedback setting.

Step 5: Competence profile – Making competencies visible

The values generated out of the assessment are graphically displayed in a bar chart, which provides a quick overview of strengths, weaknesses, and development potentials. If comparison values are used, they are displayed in a corresponding bar chart.

Online tool: The three components of competencies are indicated through three different colors, Figure 2.13.
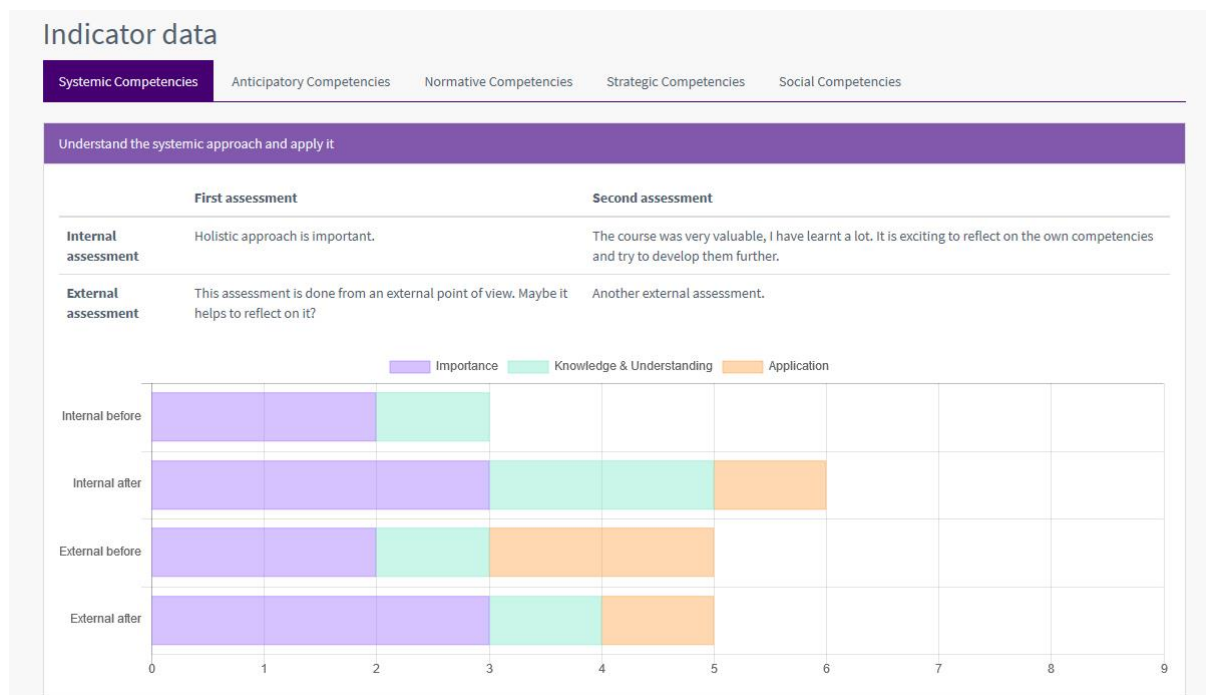
Figure 2.13: Visualization of the sub-competence in a bar chart

2.4.6 Reflection levels

Applying the Sustainability Competencies Tool in the context of a course means to embed it in the structure of the course. As indicated, the tool offers itself to be used in various settings and can thus be used to foster reflection at different levels. Below three levels are outlined and theoretically grounded.
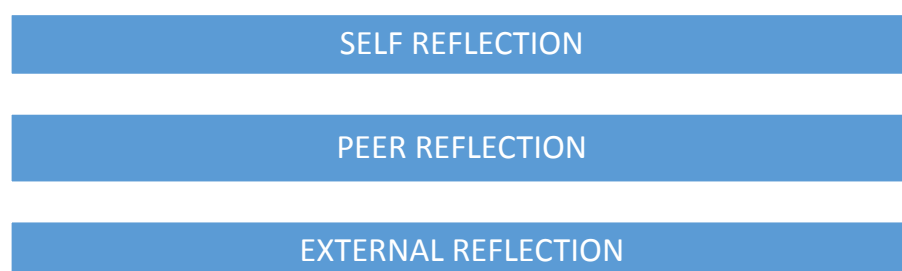
2.4.6.1 Self-reflection

Even if there are only few clearly defined concepts, reflection is regarded as a key for the development of competencies (Reinmann 2005, p. 7) and is the basis for self-determination in the learning process, as found in Klafki (1986) and Häcker (2006a). The learning cycle of David A. Kolb is certainly one of the most influential (but also controversial, cf. Greenaway 2008) teaching / learning models. Kolb assumes that learning is based on experience. "Learning is a continuous process grounded in experience" (Kolb 1984, p. 27). At the center of his explanations are four phases: Following a concrete experience (1), these experiences are described, communicated and reflected, before (2) the findings are abstracted

from them and are thus generalized in a phase of theory formation. The derivations from this (3) are tested in practical implementations, by transferring them again into concrete action and thus (4) into a phase of practical experience (Kolb, 1975).

Since self-reflection reveals only a part of one's own competence profile, the complementary perceptions of others are decisive. It can be conducted either as peer reflection amongst a group of students or as external reflection by teachers or cooperation partners.

2.4.6.2   Peer Reflection and Feedback

Coaching and mentoring play a central role in supporting learning processes and aim to initiate and accompany concrete action- and development opportunities grounded on the perceived competence profile. In this context coaching and mentoring are understood in a broader sense, going beyond the traditional understanding of a linear relationship between coach and client.

The two approaches "can be understood through the notion of becoming, through and in relation to others" (Rigg & O'Dwyer, 2012, p. 319). Coaching is based in the constructivist, systemic assumption that learners have to construct their knowledge in accordance with their existing frames of reference. Mentoring is based on social learning theory and serves two functions in the learning process: First, as role models mentors support the identity work of the learners developing an entrepreneurial identity and second, they are a source of social capital (Rigg & O'Dwyer, 2012). Whereas coaching has the idea, that the coached person is a competent individual who is in power of all resources needed to fulfill his/her tasks, the mentoring approach assumes that individuals learn best from other persons who are already one step further concerning their knowledge and development. Therefore, a coach has two functions. He should not only ask the "right" questions to help the coached person explore his/her resources, goals and motivations, but also structure his/her thinking process or activities. A mentor, on the other hand, can help with concrete advice, challenge assumptions or tell and show how he/she is solving similar problems.

2.4.6.3   External Reflection and Coaching

Coaching and mentoring play a central role in supporting learning processes and aim to initiate and accompany concrete action- and development opportunities grounded on the perceived competence profile. In this context coaching and mentoring are understood in a broader sense, going beyond the traditional understanding of a linear relationship between coach and client.

The two approaches "can be understood through the notion of becoming, through and in relation to others" (Rigg & O'Dwyer, 2012, p. 319). Coaching is based in the constructivist, systemic assumption that learners have to construct their knowledge in accordance with their existing frames of reference. Mentoring is based on social learning theory and serves two functions in the learning process: First, as role models mentors support the identity work of the learners developing an entrepreneurial identity and second, they are a source of social capital (Rigg & O'Dwyer, 2012). Whereas coaching has the idea, that the coached person is a competent individual who is in power of all resources needed to fulfill his/her tasks, the mentoring approach assumes that individuals learn best from other persons who are

already one step further concerning their knowledge and development[3]. Therefore, a coach has two functions. He should not only ask the "right" questions to help the coached person explore his/her resources, goals and motivations, but also structure his/her thinking process or activities. A mentor, on the other hand, can help with concrete advice, challenge assumptions or tell and show how he/she is solving similar problems.

2.5 Conclusions for WP 5

Cooperation for higher education is mainly coordinated by representatives of HEI, but the initiative to cooperate originates from students, practical partners as well as teachers. The participation of practical partners in the design process of the implementation guide underlined the importance of its attractiveness to external actors and students. When higher education institutions seek for cooperation, the online guide bridges this gap in communication. The collaborative development of the CASE tools revealed the need for such specific support to foster a sustainable development. The focus of the Sustainability Competencies Tool on essential capacities complementary to technical knowledge in one or more disciplines does not limit its application to higher education, but extends it to human resource development in general. The Sustainability Performance Tool was equally appreciated by business partners as existing solutions in sustainability reporting are too complex for providing a first holistic view on a company and to identify opportunities and threats when integrating sustainability.

The elements developed within WP 5 aim at lowering the barriers to cooperate, reducing the risk of failure and providing inspiration and support for all involved actors. They have the potential to enhance the mutual learning experiences between students, practical partners and teachers.

---

[3] This idea goes back to Vygotsky's concept of the "zone of proximal development" (see in Rigg & O'Dwyer, 2012, p. 324).

3 WP 6: Preparation and implementation of the transdisciplinary pilots: the regional sustainability challenges

In entrepreneurship education in general there is a need to better understand the question how to teach and/or learn entrepreneurial and enterprising behavior (Klapper & Farber, 2016). Especially in the case of sustainability-driven entrepreneurship education the development of competencies but also values needed for dealing with (un)sustainable development to support economic, social and ecological well-being, hence an entrepreneurial mindset, is crucial. This makes it vital to identify the most effective teaching strategies to design appropriate modules and curricula for the education of sustainability-driven entrepreneurs.

3.1 Objectives and research design of WP 6

University-business cooperation is an important science-society interface that can create an arena for transdisciplinary learning and facilitate the education of sustainability-driven entrepreneurs. The objective of WP 6 is to prepare, implement and evaluate regional pilot courses that contain new ways of teaching and learning for a sustainable socio-economic development by implementing different formats of cooperation between higher education institutions and enterprises. It is important to create knowledge about what the broader benefits of such teaching strategies are, not only for student learning, but also for teachers and the collaborating enterprises. Through the testing and evaluation of new cooperation formats, the pilot courses can provide important lessons for the planned future Joint Master Program on Sustainability-Driven Entrepreneurship. In addition, tools can be provided to support transdisciplinary teaching formats, and pedagogical experiences of university-business cooperation can be disseminated. Creating exchange about how to promote a transdisciplinary approach and what strategies for establishing and managing cooperation are successful can strengthen university-business cooperation more broadly.

Each CASE university has run several teaching modules that incorporate new ways of teaching and learning based on the cooperation between universities and business, testing suitable pedagogical approaches to tackle the recent challenges of a sustainable socio-economic development in the European Union (CASE, 2017). The teaching modules were frequently inter- or transdisciplinary, competence-oriented and followed a real-life approach fostering action competence.

The main research question addressed by WP 6 reads as follows: "What strategies are effective in cooperation between universities and cooperating partners in the field of sustainability-driven entrepreneurship?"

The following sub-questions were addressed:

- What are success factors of such cooperation strategies?
- What are the effects of the cooperation strategies on students, teachers, and cooperation partners?
- What are the challenges to be addressed?

The research followed a predominantly qualitative design. A qualitative research design is most appropriate to generate rich data capturing the experiences of participants in such cooperation (Saunders, Lewis & Thornhill, 2009; Bryman, 2012). To investigate the above questions, 21 courses from the five different regions represented in CASE, containing a collaboration between teachers, students, and partners, have been carefully selected and systematically evaluated.

The CASE members have agreed to investigate the effectiveness of the cooperation strategies from the perspective of all the parties involved in the collaboration, i.e. students, teachers, and cooperation partners. This can provide a comprehensive picture of experiences, benefits, and learning outcomes for each cooperation format. The decision to collect data from all parties involved is reflected in the research design, the procedures for data collection and analysis as well as in the presentation of the results in this report.

3.1.1 Research Plan (Task 6.1 Preparation Pilots)

The research design for the piloting was outlined in a research plan, containing all the relevant indicators, explanations, instructions, and procedures for conducting the study in alignment with the objectives and in a systematic way. The research plan was initially drafted by the partner from Masaryk University and subsequently refined by the leader for WP 6, University of Gothenburg. All partner universities provided their feed-back so to continuously improve the document that would serve as a guideline for data collection for all partners. The research plan ensured the comparability of the data as well as high quality and reliability by way of jointly developed data collection instruments.

3.1.1.1 Unit of analysis

Determining the unit of analysis of the research is crucial in any research endeavor. The research unit for this investigation consists of "all the courses offered by the CASE partners, or related universities, containing an element of cooperation between a university and a cooperating partner in the field of sustainability-driven entrepreneurship education". Moreover, the courses should be finished within the period April 2016 - June 2017.

Further, all CASE university partners were requested to purposefully select between four to six courses within their own or associated higher education institutions, containing a collaboration format as outlined above. The suggested pilot courses should be of strategic value for gaining knowledge as to what teaching strategies are effective to foster competencies for sustainability-driven entrepreneurship in particular, and contribute with new knowledge in relation to sustainability-driven entrepreneurship education in a broader sense. The courses should contain innovative teaching strategies that involve the partners in a purposeful way, offering a high potential to contribute to students' learning in terms of competencies for sustainability-driven entrepreneurship. Preferably the focus of the cooperation should be on learning about, discovering, experiencing, or even contributing to sustainability in a real-world context, based on a dialogue between students and practice partners. Moreover, courses that thoroughly integrated one or several elements of the pedagogical framework, figure X, were of particular interest.

3.1.1.2 Division into Big Foot and Small Foot Experience

Due to the variety of collaboration formats identified, it was decided to divide the courses to be piloted into "Big Foot experiences" and "Small Foot experiences", reflecting differences in duration, intensity, and complexity of the collaboration.

The category "**Big Foot experience**" contains courses that involve a long-term cooperation between students and cooperating partners with considerable intensity, e.g. practice, joint projects, and similar formats. In this type of courses, the students meet the cooperation partner repeatedly and actively cooperate with the company or organization. A Big Foot experience requires deep engagement by all

parties and has a high transformational potential as to student learning, fostering competencies for sustainability-driven entrepreneurship, and very likely a noticeable impact on the cooperation partner.

Courses containing a "**Small Foot experience**" comprise one or several separate short element(s) of cooperation with a single cooperating partner, or a set of these elements with different cooperating partners. Guest lectures, case studies, and excursions are examples of such formats. In this type of cooperation, students are mainly in the role of recipients of knowledge and experience transferred by a partner. There is only limited active cooperation between students and practice partners, although partners cooperate with a university as an institution.

All CASE university partners were requested to identify between four to six courses within their own or associated higher education institutions, containing a collaboration format as outlined above. The suggested pilot courses should be of strategic value for gaining knowledge as to what teaching strategies are effective to foster competencies for sustainability-driven entrepreneurship in particular, and contribute with new knowledge in relation to sustainability-driven entrepreneurship education in a broader sense. The courses should contain innovative teaching strategies that involve the partners in a purposeful way, offering a high potential to contribute to students' learning in terms of competencies for sustainability-driven entrepreneurship. Preferably the focus of the cooperation should be on learning about, discovering, experiencing, or even contributing to sustainability in a real-world context, based on a dialogue between students and practice partners. The CASE partners then recorded these regional pilots in a joint Google form, indicating general information as to for instance the level, credits, duration, and size of the course, as well as specific information outlining the cooperation format, teaching methods, learning goals and a motivation as to why the course was of particular interest for piloting. A link to the course homepage and syllabus was also provided, if available.

Each CASE university was responsible for preparing the evaluation of their suggested courses and collecting relevant data following the jointly agreed data collection procedure outlined below. After collecting and processing the data for a specific course (e.g. selection of relevant material and informative quotes, translation into English), the data was pre-coded by the regional partner and subsequently reported to the WP 6 leader with the help of a pre-formatted reporting form. The reporting form also contained basic information on the course, place and date of the evaluation, and the profile of the respondents. All data was collected anonymously. To protect the identity of the respondents, only nicknames were used. This procedure resulted in 21 course reports that were collected by the WP 6 leader over a period of 15 months, from July 2016 to September 2017.

3.1.2 Methods of data collection

3.1.2.1 Data collection instruments

Accurate and systematic data collection is critical to conducting scientific research. The division into Big Foot and Small Foot Experiences entails the adaptation of the data collection procedure to the characteristics of the cooperation format. For the Big Foot experience, a data collection instrument that allows for a deeper involvement with the respondents, such as interviews, is more appropriate, whereas for the Small Foot experience, the use of structured instruments, for instance surveys, seems more suitable. It is, however, crucial that data collection procedures are systematic and uniform across all courses within the same category.

The units of observation are all the parties involved in the cooperation between a university and a cooperating partner, contained in the courses defined above. In this investigation, students enrolled in

a course containing cooperation, teachers managing the respective course, and the partners collaborating with the university are the units of observation.

3.1.2.2   Data collection for the Big Foot Experiences

Due to the intensity and complexity of the collaborations formats evaluated in the category Big Foot Experience, focus group interviews with students and in-depth interviews with teachers were chosen as methods for data collection. Data for the cooperation partners was mainly collected by way of a qualitative survey. For partners who preferred an interview, this option was chosen.

Interviews are considered to be a highly efficient way to gather rich empirical material (Eisenhardt & Graebner, 2007) and can take different forms. Focus group interviews are an alternative to individual interviews, whereas several students from the course population are gathered for a planned discussion led by a moderator. The aim is to catch participants' different viewpoints and ideas on a number of predetermined topics. Data is thus gathered in the social context of the course participants (e.g. Wilkinson, 2004). To ensure that the focus group participants could speak freely, having a course teacher acting as a moderator was avoided. By providing some snacks and beverages and holding the interview in a familiar location, it was made sure that the participants felt at ease. Focus group interview lasted between 35 minutes and 2 hours (in average 1 hour and 15 minutes). Between two and eight students participated (average five students). The focus group interview questions are listed in Appendix A.

The teacher data was collected by conducting individual semi-structured interviews. Semi-structured interviews entail that questions are open, allowing the interviewer to follow up aspects of interest for the study, although these aspects were not initially considered when outlining the questionnaire (Stjernberg, 2006). Accordingly, open-ended questions were used, providing ample room to the interviewee to speak freely (see Appendix B for the questionnaire). Creating a favorable interview situation is also important for a good result. Consequently, interviews were held personally, predominantly on the premises of the university. When this was not possible, Internet-based communication (e.g. Skype) or telephone interviews were held instead. All interviews were recorded after obtaining consent by the respondents. Finally, for all interviews, including focus group interviews, either relevant parts or the entire interview were transcribed.

The data from cooperation partners was mainly collected through surveys. Also for this category of respondents, the survey questions were outlined in the research plan. The survey starts off with three of open questions, followed by eight Likert scale questions. Likert scale questions allow respondents to choose from a range of options in relation to a particular statement—in this case starting at "strongly disagree", scaling all the way up to "strongly agree". In addition, the respondents had the possibility to provide comments to each answer. The survey can be found in Appendix C. The survey was sent out with an accompanying letter that presented the project CASE and explained the purpose of the investigation. All surveys were administered electronically.

3.1.2.3   Data collection for the Small Foot Experiences

Given the shorter duration and lower intensity of the cooperation in the formats classified as Small Foot Experiences, surveys were considered to be the most appropriate data collection instrument. As already mentioned, the survey questions for each respondent category were outlined in the research plan. To collect as rich data as possible, the survey to students and teachers consisted of open questions only, allowing for ample space to express experiences, understandings, and provide

arguments (see Appendices D and E). This resulted in detailed reasoning and stories about the experiences made during the course. The survey to cooperation partners for Small Foot experiences was similar to the Big Foot survey (consisting of both open and Likert scale questions), but contained fewer questions (see Appendix F). Just as the survey for Big Foot experiences, the surveys were sent out electronically and together with an explanatory cover letter.

3.1.3   Sample overview

In total, 21 courses with innovative teaching and learning formats, containing a cooperation between students, university and partners were piloted. As mentioned in the methods section, this evaluation gathered data from students, teachers, and cooperation partners. This section provides an overview of the data collection instruments and the responses gathered, Table 3.1. Interview questions and surveys can be found in Appendix A-F.

Table 3.1: Overview of data collection instruments and responses

Focus group interviews	Semi-structured interviews	Student survey	Teacher survey	Partner survey
7	12	105	14	50

In total, 214 respondents participated in the evaluation of the 21 courses piloted. The number of respondents from each category, students, teachers, and cooperation partners, can be found in Table 3.2. A detailed list of all pilot courses with the corresponding number of respondents from each category can be found in Appendix G.

Table 3.2: Overview for each category of respondents (n=214)

Students	Teachers	Cooperation partners
139	23	52

After data collection and processing for each specific course piloted, the regional partners compiled the relevant data in a pre-formatted course report. The partners were also asked to select interesting and meaningful quotes that could be used to illustrate the findings. Subsequently, the partners conducted a preliminary analysis of their material, using pre-set codes (please refer to Appendix H). Partners were asked to summarize the most important take-aways for each category of respondents as to the effectiveness of the cooperation format. They also provided a piloting summary, drawing conclusions as to various aspects. Several arguments speak in favor of conducting as much of the analysis as possible at the regional level. The regional level is where the knowledge about the specificities of the course resides. In case of incomplete or contradictory information, the regional partner can more easily get back to the course responsible at his or a nearby university and ask for clarification. Established contacts can then be used more effectively. It is also easier to discuss questions in the mother tongue. The regional evaluator then plays an important role in translating and interpreting the collected material, functioning as a gate keeper. The course reports were forwarded to the WP 6 leader, University of Gothenburg (UGOT), for further processing and analysis. The evaluator at UGOT however also performed a quality control in the sense that she co-evaluated the material and discussed discrepancies regarding coding and interpretation with the regional evaluator.

In this way, a joint sense-making could take place, whereas the regional evaluator possesses more complete and detailed knowledge about the course and the central evaluator could tease out the meaning and make connections with previous material.

3.1.4 Data analysis

For the analysis of the piloting data in terms of success factors, learnings, and challenges, it was agreed that responses from students, teachers and practice partners should be analyzed jointly for each course. Hence, the findings from the different data collection instruments were compared within each course piloted. Triangulating the data from the different groups of respondents gave information on how the experiences and perspectives differed in-between the groups. The analysis of the empirical material from each course aimed at identifying key aspects for the successful implementation of the cooperation format as well as documenting the outcome from the cooperation from both a student and a partner perspective. The key aspects for the successful implementation are presented as "Success factors". Working intensely with the empirical data, further categories and sub-categories for analysis emerged naturally from the data. Preliminary categories were verified and discussed at joint meetings with several partners, either in person or via Skype, as well as through e-mail conversations. From these discussions, the framework evolved, and the categories presented below were seen to catch important perspectives of the effectiveness of teaching strategies and cooperation formats well. They also reflected what seemed relevant and interesting to present on the Knowledge Platform. The analysis of the pilot courses evaluated followed the data analysis categories outlined in Table 3.3, as applicable. The same framework was used in the subsequent analysis of each cooperation format.

As the type and amount of data collected differed between Big Foot courses and Small Foot courses, the analysis procedure differed as well. For the Big Foot courses, the data analysis tool MAXQDA was used to cope with the large amount of qualitative data, whereas Small Foot courses were analyzed manually. The MAXQDA tool enabled the systematic organization, structuring, and analysis of the data following the preliminary analysis by the regional evaluator. Open coding complemented the pre-set coding scheme.

Table 3.3: Data analysis categories

Overarching category	Sub-categories
Success factors	Success factors from a process perspective
	Success factors relating to the personal dimensions of teachers or cooperation partners
	Place dimension
Student experiences and benefits	Emotional effects on students
	Student learning, in particular regarding competencies for sustainability-driven entrepreneurship (as outlined in the below text and table)
	Student personal development
Teacher learning	none
Partner benefits and experiences	The process of collaborating
	Outcome
Challenges	Partner-related challenges
	Process-related challenges
	Context-related challenges

After analyzing each course separately, the findings were compared across courses using the same collaboration format. This process was also facilitated by the data analysis tool. Comparing the material for each format across courses can give important clues as to what contributed to the success of the format and what created challenges. Naturally, each region and university have different prerequisites for implementing courses containing university-business collaboration, such as resources, infrastructure, educational paradigm, etc. Hence, despite the similarity of strategies, methods and tools used in the pilot courses, their implementation may differ quite substantially in-between institutions, universities, and regions. Analyzing these differences may result in interesting findings as to the more tacit success factors. Comparison across courses should lead to a more nuanced understanding of a collaboration format, facilitating drawing informed conclusions as to what strategies, methods and tools applied are effective and why.

In addition to the analysis, experiences of the participants were summarized in descriptive texts. The purpose is to bring the courses and formats closer to the reader, using more of a story-telling approach. To this end, illustrative quotes are used, highlighting key aspects raised by each group, and providing innovative good practice examples. Moreover, an introductory text outlining the features for each course piloted was written based on the course report and information gathered from universities' webpages.

3.1.5   Experiences with and limitations of data collection

This section gives a short evaluation of the data collection procedure and addresses some difficulties and limitations. To start with, it is worth mentioning that overall, the data collection procedures worked well, and the regional partners experienced the process as mostly smooth. To share the research team's experiences with this kind of long-term and rather dispersed data collection procedures, which might be interesting for similar endeavors, the most important points are summarized in the following.

The data collection instrument proved to be suitable for the evaluation at hand. Only minor adjustments were made after the very first courses had been piloted. The instrument was general enough to allow for a broad variety of courses to be piloted and specific enough to evaluate the particular issues of interest. The fact that the research instrument was used in a consistent way across regions strengthens the reliability of the investigation.

The design of the data collection was also experienced as well-functioning, despite the broad variety of courses from different faculties and countries. Minor changes in the data collection procedures were however necessary due to changed circumstances and were handled by the regions in a pragmatic way. The intention was always to stay as close to the agreed procedures as possible and, if necessary, to choose an alternative data collection procedure that would generate as relevant and reliable data as possible. For instance, due to limitations concerning participation, one focus group interview was conducted as a qualitative interview with only two participants.

The course reports collected were of good quality and contained in most instances rich qualitative data. Even though many of the evaluations were originally made in the region's home language, there were no language issues when processing and analyzing the material.

The Big Foot experiences generated a large amount of data, which made the preliminary coding and interpretation of the data by the regional partners more difficult. Naturally, the Big Foot experiences resulted in richer data and descriptions than the Small Foot experiences, which made the identification of effective strategies and reflections on the topic easier.

Data collection with the help of focus group interviews sometimes created challenges. It was at times difficult to motivate students to participate in the evaluations. Due to last minute emergencies, some students cancelled their participation, leaving the evaluator with perhaps a minimum of two or three students instead of the planned five to eight. The German partner solved the problem of low participation by making the evaluation part of the course work, which gave good results.

The timing of the focus group interviews was a further issue. If conducted towards the end of the course, students were very busy with other tasks, whereas after the course, students had often left, and it was difficult to get hold of a focus group. In a few occasions, the time between the collaboration occasion and the focus group discussion was rather long, risking that memory is not as fresh, which can result in less vivid or less accurate descriptions of the experiences.

When it comes to the data collection with the help of surveys, low response rates were also a rather widespread problem, despite sending several reminders. With respect to student surveys, this might be due to too many evaluations being conducted already. Cooperation partners were frequently too busy to share their experiences or gave only brief answers. Overall, satisfactory answers from partners have been obtained.

A further obstacle were time constraints for evaluators and partners. The evaluation required many consecutive steps that had to be planned, and their execution was time consuming. In addition, this required much coordination with the teachers or course coordinators. In the event of new members

joining the team of a partner, these had to first familiarize themselves with the procedure, research instruments and coding, which required extra time. In some instances, the work of student assistants with transcriptions and other easy tasks had insufficient quality and had to be partly redone, also delaying the process.

A further challenge was that it has been difficult to engage teachers from other departments if no prior cooperation existed. Despite making sure well in advance that the Head of Department was informed and gave his or her consent to participating in the study, the commitment from the actual course responsible may still have been weak. Furthermore, also the teachers at times struggled with constant time constraints, delaying the process, and making the good timing of the evaluation challenging. A combination of constraints unfortunately led to that two of the pilot evaluations failed and had to be cancelled. Further information about these courses and an explanation of the adverse circumstances leading to cancellation is provided in Appendix J: Missing pilots.

3.2 Overview of pilot courses (Task 6.2 Implementation Pilots)

In Table 3.4 toTable 3.6 below, all courses evaluated by the five regional partners of CASE, containing a collaboration between students and practice partners, are listed and their main features are presented. To create a better overview, the courses for each category of formats are grouped in separate tables. For each category, the formats are arranged according to intensity and duration of the involvement between students and cooperation partners, starting with the most intense and long-term formats, gradually moving towards the less intense and shorter cooperation formats.

To start with, Table 3.4 below features the courses belonging to the Project-Based Formats, comprising the following types of collaborations: Service learning, Participatory research projects, Entrepreneurial projects, Sustainable Development Case study, and Sustainability Screening. In total, nine of the courses evaluated used a Project-Based Format. Five were held in the Vienna region, three in Sweden, and one in Germany. These courses facilitate transdisciplinary learning and several of the courses were organized jointly by several universities, meaning that also the teacher team was multi-disciplinary. A further characteristic of the courses is that also students from various disciplines participate and work together in teams. Although these courses are based on project-work, the formats differed quite substantially, as will be evident from the course descriptions presented in section 3.3.

Table 3.5 continues with the courses using a collaboration format taking place "in the field". The formats belonging to this category are: Internship, Field trip complemented by case study, Seminars and workshops, and Excursion. Seven of the courses evaluated make use of collaborations with practice partners at their locations. Three of the courses were held in the Czech Republic, two in Germany, and one each in South Tyrol and Vienna. The intensity of the cooperation between students and partners varies depending on the format. Internship is the most intense cooperation format, whereas the format excursion is at the other end of the scale.

Finally, Table 3.6 gives an overview on the courses taking advantage of collaborating with practice partners "in the classroom". In total five courses from four different regions using this format have been evaluated. Even though the courses use the same format, its implementation is specific for every course.

To further concretize the outcomes from the cooperation between students and practice partners, examples of 20-25 service learning and other innovative projects will be presented on the Knowledge Platform.

Table 3.4: Project-Based Formats with corresponding pilot Courses

Cooperation format	Pilot Course	Region	Type	Page no.
1. Service learning	A. Sustainability challenge I	Vienna	Big Foot	78
	B. Sustainability challenge II	Vienna	Big Foot	83
	C. SEEP (Service Learning I & II)	Vienna	Big Foot	87
2. Participatory Research Project	D. Outside the University Box - Participatory research with people of the region	Vechta	Big Foot	93
3. Entrepreneurial project	E. Sustainability Challenge – Start-up track	Vienna	Big Foot	99
	F. Methods for Practical Entrepreneurship	Gothenburg	Big Foot	103
	G. Garage	Vienna	Small Foot	109
4. Sustainable Development Case study	H. Case Study in Sustainable Development	Gothenburg	Big Foot	114
5. Sustainability Screening	I. Sustainable Management	Gothenburg	Small Foot	119

Table 3.5: Formats "In the field" with corresponding pilot courses

Cooperation format	Pilot Course	Region	Type	Page no.
6. Internship	J. Profiling internship - Inclusion	Vechta	Big foot	124
	K. ECN-TryOut	Vienna	Big foot	127
7. Field trip complemented by case study	L. Studying Local Rural Systems	Brno	Small Foot	131
	M. Successful Environmental Project	Brno	Small Foot	134
8. Excursion	N. Sustainable Communities	Vechta	Big Foot	138
	O. Management of Rural Space	Brno	Small Foot	140
	P. Analysis of cultural and communicative processes	Bozen	Small Foot	141

Table 3.6: Format "In the classroom" with corresponding Pilot courses

Cooperation format	Pilot Course	Region	Type	Page no.
9. Guest lecture	Q. Sustainable Development in the Oldenburger Münsterland (NEiOML), 1st edition	Vechta	Small Foot	144
	R. Sustainable Development in the Olden-burger Münsterland (NEiOML), 2nd edition (Winter semester 16/17)	Vechta	Small Foot	147
	S. Ethical and Local Economy	Brno	Small Foot	149
	T. Change Management	Vienna	Small Foot	152
	U. Teamwork	Bozen	Small Foot	155

3.3   Results – Regional pilots: Collaboration formats in practice

The different collaboration formats have been introduced in section 0. In the following, highlights from the collaboration formats will be presented. The most important conclusions as to the effectiveness of each format for educating sustainability-driven entrepreneur are summarized first, followed by a discussion of the potential of the format to foster the development of sustainability competencies with students. Subsequently, each course piloted for the respective format is introduced, providing basic information on the set-up and implementation. Thereafter, accounts of the experiences that each category of course participants, i.e. students, teachers, and collaboration partners, made in connection with the collaboration, are provided. Testimonials from the participants aim at providing a lively picture of the experiences and good practice examples are highlighted in separate boxes.

An analysis of key success factors, outcomes and learnings that could be gained from the courses piloted in accordance with the structure presented in section 3.1.4 can be requested from the authors.

3.3.1   Project-based formats

The category of project-based formats comprises the following types of collaborations: Service learning, Participatory research projects, Entrepreneurial projects, Sustainable Development Case study, Sustainability Screening, Figure 3.1. Please refer to section 2.1 for a description of the different formats.
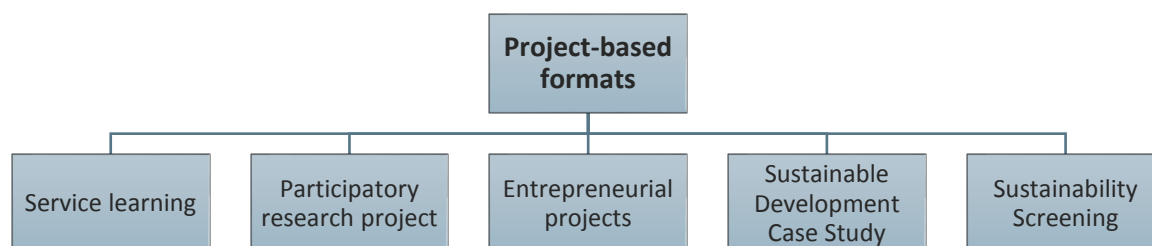
Figure 3.1: Project-based formats

3.3.1.1 Format 1: Service learning

The service learning format enables learning through civil society engagement by collectively tackling practical challenges.

Effectiveness of the format Service Learning for sustainability-driven entrepreneurship education

The service learning format is a very effective approach for sustainability-driven entrepreneurship education as it has the **capacity to foster competencies for sustainability-driven entrepreneurship** in all five spheres of relevance (normative, strategic, interpersonal, strategic and systemic competencies). In addition to developing competencies, the format fosters **emotional engagement** and supports the **personal development** of students. These capacities are supported by several fruitful approaches to teaching and learning combined with service learning. The following provides a brief summary of the key features and approaches applied.

To create a beneficial learning environment in the context of service learning, careful planning and **clear structures** are required. A **well-designed course setting** (input sessions, events, tools etc.) with clear demands and frameworks for group tasks is needed. Providing guidelines and a time frame is key for the orientation of practice partners and students.

Ideally and to be able to contribute with solutions tackling complex sustainability challenges, the format follows a transdisciplinary approach. By providing a **learning space for transdisciplinary settings**, the format fosters joint problem-solving between students, partners and teachers. **Face-to-face meetings** with partners and students on site provide such a learning space. **Expectation management** and transparent communication in-between students, teachers and partners in an early phase of the project are crucial. There should be **transparency** as to what is realistic in terms of framing the project tasks, possible output, and potential learning outcomes for students. **Shared goals** in-between teachers and partners as to the approach and objectives from the beginning on are important. Furthermore, a well-assessed opportunity space with the partner is required. It is important to pick meaningful spaces which provide freedom to students to decide on the problem to be addressed, enabling them to develop a feeling of ownership. Hence, there should be a good balance between student autonomy and partner needs. Another factor to be closely observed is that the project should be framed for implementation.

The communication between the practice partner and students is a learning process in itself and may require support from the teacher. **Coaching sessions offered by the teacher have** a key function all along the service learning experience. In the early phase, coaching is key for idea generation and project development. In the implementation phase, **regular coaching meetings** provide a trustful learning space, tackle motivation and foster critical reflection and dialogue. Also, competencies orientation and learning from mistakes are enabled.

Both in the interaction with the partner and the teacher, **dialogue at eye level** is an important means of teaching and learning. Students need constructive feedback from partners and teachers. The demands on the teachers' abilities to coach are high in the context of a feedback-intense format such as service learning as they can determine the impact of the project substantially.

Another central feature is that the format follows a **practice-oriented approach**, combining formal and informal learning experiences. The approach creates linkages between theory and practice, allowing for theoretical knowledge from input session to be tested in the Service Learning projects.

Furthermore, **solution-oriented thinking** and **action competence** of students are fostered. Tools for project management and the handling of practical knowledge are crucial. Also, the implementation of interactive and creative elements is key for students' personal take-away. Moreover, the actual impact of the Service Learning Project on the project partner matters, especially for student motivation. The accumulation of action competences in a transdisciplinary setting motivates and empowers students to contribute to a transformative society at a local level. Hence, the format improves the students' abilities to act as change-makers, which can be seen as a prerequisite for sustainability-driven entrepreneurship.

The format fosters different ways of thinking with students (network thinking, out of the box thinking, innovative and creative thinking) and enables **deep learning processes**. The reflection process of students is at the core of the format's pedagogy, which is ideally fostered with the help of various tools (e.g. personal diary, reflection papers and feedback sessions). However, the reflection tasks should not be burdensome; experience-based learning tasks must have priority.

Moreover, the setting activates the **emotional aspects of learning**. Joy via learning is key. As a result, positive feedback and appreciation are needed. Service Learning projects motivate and enhance deep engagement of student teams. Students highly appreciate doing something useful and feel passionate about people, which is connected to building emotional competencies

Other important aspect for student learning is the **work in interdisciplinary teams**, bringing in different kinds of disciplinary perspectives and expertise. Managing group processes is a negotiation and learning process and requires specific methods and tools oriented towards this aspect. Group dynamics can have positive or negative effects and are important for personal development.

Cooperation partners appreciate the open and flexible approach of service learning. They also highly value the well-prepared and well-structured setting combined with constantly **high administrative quality**. Communication efforts are especially important for partners to understand what students need to do and what teachers expect. This helps framing own expectations and gaining clarity how to benefit from the cooperation. Service Learning projects are joint and simultaneous development processes for students AND partners, and not least, personal development processes.

In sum, the strategies applied are highly effective to positively affect students' competencies in sustainability-driven entrepreneurship. The Service Learning format caters for learning based on personal real-life experience, whereas students provide solutions to real sustainability challenges in partner organizations.

Potential of the format Service Learning to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High

As mentioned above, the format has a high capacity to foster competencies for sustainability-driven entrepreneurship. The findings support that all five competencies were developed to different degrees. As a result of the format's focus on process-orientated learning, the most pronounced

areas of competence development were strategic and interpersonal competencies. Beyond developing competencies for sustainability-driven entrepreneurship, the format created emotional engagement and supported the personal development of the students.

The fostering of **strategic competencies** was evidenced by students learning how to set up a project when not everything is ready made. They have to manage the balance between freedom and the preset frame, develop something on their own and take responsibility for it.

Students were experiencing all steps from idea generation, development until harvesting the specific results. They were required to structure the entire process (protocols, to do lists, task distribution, next steps, meetings etc.) and applied solution-oriented thinking, for instance, making sense of ambiguous demands and condensing ideas into a core topic that the group could work with. They learned how to plan and work productively and independently. Students also learned to be assertive towards the partner in order to be able to focus on a concrete project and its implementation, which expresses the manifestation of action competence. A further obstacle to overcome was to create a project without (large) funding.

Furthermore, students realized that the end result can differ significantly from the initial expectations, due to experiences made along the way. Making mistakes is sometimes unavoidable and can reveal a special learning experience.

Interpersonal competencies developed both from the interaction in interdisciplinary teams and from the transdisciplinary setting, collaborating with a partner. Working with the project, group processes have to be managed, which is a negotiation and learning process in itself. When developing group projects, students gained knowledge about, and own experience of, supportive team structures. In their work, the groups both learned to handle struggles concerning group dynamics (e.g. superior roles of group members), and enjoyed the support from positive group dynamics. Further, interdisciplinary and intercultural learning was promoted. Students learned to accept different opinions and ideas, coordinate different intentions, and apply a respectful and appreciative approach in mixed teams. As to intercultural learning, students worked in culturally blended teams, i.e. a mix of native and non-native students. Students also learned and developed ideas further from the discussions with other groups from the class.

From discussions with the partner, students got to understand the frame of the cooperation and set the right focus. They learned to compromise with the partner, e.g. find a project task that fitted both the partner's and students' interests and competencies. Also, they gained an understanding of the partner's background, interests, needs, and planning strategies. More broadly, the Service Learning experience enabled students to learn about different roles in organizations and the dynamics within companies. Interpersonal competencies were also developed when students got in contact with various stakeholders at site and beyond, who broadened their minds. These personal meetings gave them an understanding of people's backgrounds and why the act in a certain way.

The promotion of **systemic competencies** became apparent in students' improved ability to cope with complexity. They were able to navigate in sometimes complicated and confusing settings and also developed the ability to deal with information deficits.

Acknowledging that frictions are useful for learning, **normative competencies** were noticeably fostered, given that students developed the courage and ability to ask critical questions. Also, they developed a sense of responsibility and were honest with the partner about the lack of resources, time restrictions etc. they experienced. In a broader sense, students learned a lot about future work life and the importance of a good work-life balance. Furthermore, they developed an understanding of what is meaningful for themselves and for society.

The promotion of **anticipatory competencies** is sometimes hard to detect. In this setting, it became however apparent in the students' ability to learn how to plan for mitigating the future impact of the company. They generally experienced an improved ability to assess possible changes and their impact.

In addition to fostering competencies, the format promoted **emotional engagement,** a **feeling of mastery**, and **motivation beyond the project**. Students developed a feeling of ownership and identified with the course and the partners. Students were emotionally fulfilled thanks to the combination of personal interactions, a meaningful project task, and carrying the responsibility for the entire project. Students were proud of their own determination when working with difficult parts of the Service Learning project.

Students' **personal development** was fostered given that they learned to deal with unexpected situations, disappointments, failures or negative results and reflected on them (dealing with fear and failure). They were further very motivated and eager to learn more, e.g. do research on their own about a topic. Hence, individual learning was encouraged. In addition, students developed a sense of responsibility.

To conclude, the results support that competencies for sustainability-driven entrepreneurship could be fostered broadly via service learning. Furthermore, the format was beneficial for student motivation and stimulated personal development.

Pilot courses A, Sustainability Challenge (1, first semester) and B, Sustainability Challenge (2, second semester), relate to Module 1.3 of the CASE master program: Interactions in multi-scales (see Biberhofer & Bockwoldt, 2016, p. 73).

The courses should give specific insights into the following themes of the pedagogical framework

- *Learning to learn: Strong focus on self-directed, reflective learning in groups and with the coach*
- *Real-world orientation: Inter- and transdisciplinary project work. Long-term cooperation with a practice partner based on dialogue and co-creation of knowledge*
- *Coaching: Key role of coaching for creating a trustful learning space*

A. Vienna Pilot Highlights: Sustainability Challenge "Service Learning Track" (1, first semester)

The Sustainability Challenge "Service Learning Track" is an inter- and transdisciplinary course on sustainable development in cooperation with four Viennese universities. The initiative educates the leaders of tomorrow through Service Learning projects, encouraging students to develop their own business solution together with cooperation partners. The course creates an interface between education, research policy, and practice and fosters the cooperation between various sectors as well as an interlinked understanding of social, ecological, and economic sustainable development. With a focus on solution concepts for urban sustainability challenges, students, university partners, and practitioners jointly aim at creating sustainable benefits for people, the environment and the economy

in the Vienna region. The course concept is designed to provide space for all partners involved and focuses on creating new services for urban sustainability challenges faced by local stakeholders.

The "Service Learning Track" is designed as a project course on sustainable development. The annual topic in 2016 "Smart City – city of the future?" concentrated on solution concepts for urban sustainability challenges coupled to the thematic issues climate change, governance and ecological economics, social-ecological politics, and sustainable building and energy. Service Learning partners comprise numerous companies e.g. Verbund, AGR, Spar, but also NGOs or public authorities, e.g. city departments responsible for energy/city development & planning, or environmental protection, representing key players in the Vienna smart city stakeholder process. Core design features are interdisciplinary group assignments and the Service Learning methodology. In short, the Sustainability Challenge links the paradigm of sustainable development to current urban sustainability challenges in Vienna, structuring the course in a five-step process of 1) planning and preparation; 2) inter- and transdisciplinary input sessions, 3) action - project work, 4) presentation and reflection, and 5) final evaluation phase (see Knowledge Platform link for further details on the process: https://www.case-ka.eu/knowledge-platform/cooperation-formats/service-learning/).

Experiences from the participants during the first semester - students

Interdisciplinary work in teams was a central success factor for the Service Learning projects. The different backgrounds and perspectives of the students from various disciplines were experienced as highly interesting and enriching. Teambuilding exercises were essential and helpful for the starting phase. Students strongly recommend that meeting the team and teambuilding should occur prior to contacts with the partner.

"I learned a lot from different disciplines. Cooperation was good and worked well." Student, Sustainability Challenge Vienna

Student experiences with their partners were mixed. Several essential prerequisites for a successful cooperation can be identified. Firstly, it is important to start getting to know the people and not necessarily the topics or project contents. Secondly, meeting the partner and learning from them at their site is encouraged. Thirdly, sometimes mediation from the teacher is needed to get to know and understand process and experiential knowledge of the partner. At the same time, it is essential that the partner sees the students as his counterpart and not the teacher, otherwise student learning is compromised.

"In this triangle cooperation partners, professors, and us the team, we are the most important interface in between all." Student, Sustainability Challenge Vienna

A **good communication** with the partner and **regular meetings** are also important. The cooperation works well if the **partner listens to students and their ideas**, tries to understand them and answers their question. The teams also highly valued well-prepared partners who spent the time needed with them. Consistency and continuity were also success factors. Partners giving fast responses to students' questions are much appreciated, even though they realized this is not always possible.

"Direct and open communication is important especially concerning expectations and where to go and if there is space and freedom for other ideas or not." Student, Sustainability Challenge Vienna

Those groups that reported difficulties with the cooperation frequently mentioned a **lack of information and communication or differing expectations** as reasons. Some groups felt that they were **not met at eye level by the partner**. Some partners had high expectations, lacking understanding, tolerance, and patience towards students. It was sometimes difficult to handle the partner's expectations remaining at the same time open and visionary. Transparency and clear communication about the expectations from partners, teachers and especially students concerning the project idea is therefore crucial. Feedback from partners was generally an important motivation factor.

Some teams felt that the partner cooperated for marketing purposes rather than for the output that students produced. Despite negative voices, it should be remembered that even **disappointments are helpful for the learning process**.

"At the beginning, I thought we are going to change the whole place (company) and we are going to make it all different and then it will work. Then it was a bit disappointing that this is actually not possible, and you hear that you have to do that in a different way and we are going to do that like this. But this was a good learning process. I am very satisfied with the output for me personally and until now with the whole course concerning the learning process." Student, Sustainability Challenge Vienna

Coaching played a central role for the Service Learning process. Meeting with the coach was helpful for idea generation and expectation management, especially if the partner did not communicate concrete objectives. The personal contact with the coach made students build trust which is needed to feel comfortable in a project and have a safe space, enabling creativity to flow. The coach could make students feel understood and motivate them for better performance.

Some suggestions for improvements raised by students were that there was a mismatch between lecture topics and project topics. Another improvement would be to provide an innovative internal platform to encourage synergies in-between different project groups. Meetings such as stop over event could be used even more actively to give feedback to students.

Teacher experiences first semester:

In the **course preparations** for the service learning format a mix of partners from established networks and new ones was preferable. Established partnerships provide a safe space, while new partners are necessary to keep the concept alive and bring in new innovations. Usually, a pragmatic approach was used, focusing on exciting topics, network building, and good people. Once the partners were selected, communication structures had to be developed, and the projects needed to be defined to create clear tasks for the students. To achieve the aim of creating impact with the solutions developed by students, the project frame must be clear, strict, and well-designed. Moreover, the benefits of the project and its potential need to be clear to the partner.

The learning space and possibilities to create an impact differ between small partner companies and large ones. Large companies have more established structures and can benefit from an **intrapreneurial approach** to harness the innovative potential of the students. In small companies, the opportunities to change the organizational culture and influence the innovative potential may be bigger and students

may be met more frequently at eye level. Small companies can benefit from community building and a stronger network.

When it comes to **methods and tools,** frontal knowledge transfer is still key, although the teacher would like to change that. He sees, however, difficulties with implementing other concepts, especially for block sessions with all student groups. To compensate, he tries to create a relaxed atmosphere with easy going communication and a critical approach. The teacher also must pay attention to **group dynamics**. Sometimes methods must be adapted to fit with the context and people's needs. Hence, the group dynamics must be reflected in the teaching approach and methods used.

Coaching plays a key role for the learning and development process. There are two main issues for the role of the coach: providing a safe learning space, motivation, and facilitating critical dialogue at eye level. The research diary is a good starting point for coaching, allowing to address interesting issues raised. Failures and mistakes are a learning opportunity rather than a setback. Coaching also fosters self-reflection regarding the learning process and is a good forum to foster competencies orientation. Besides, the teacher points out that coaches must be aware of needed limits for the learning space. Too much freedom may be difficult to handle for students.

In addition to coaching, the teacher also plays a role in meetings with the cooperation partners, especially new ones. To the partners, his presence signals the importance of the project. However, the role of the teacher at the meetings should be clearly defined.

The question whether the cooperation with partners and the implementation of the Service Learning projects was satisfactory was answered affirmatively by the teacher. He was very satisfied with the established partnerships, working with people he already knew. There was a good atmosphere at the same time as awareness and a critical perspective on important topics could be created. The outcome seemed to depend very much on the people and their role in the companies. The position of the contact person is thus a critical factor for the ability to create positive changes.

Bringing together students and partners created exchange and mutual benefits. It was pleasant to see the **joy of partners and students learning together**. Joy really is an important quality criterion for the cooperation. The teacher finds it rewarding when partners recognize students' work, its innovativeness, and the impact of their output. The teacher was also proud of the fact that new innovative teaching and learning formats could be implemented. The stop over event was great, good feedback was received and there were no dropouts during the entire one-year period.

Rounding up the discussions, the teacher highlights a couple of key points. Firstly, he emphasizes the importance of applying a so-called **"dirty" approach to Education for Sustainable Development (ESD)** as opposed to a clean approach which refers to formal education. "Dirty" ESD is much harder to implement, requiring practice-based learning, but is more effective for two reasons: It can create ownership and it is solution-oriented, aiming for impact. He believes that the service learning format could become even more solution-oriented, aiming for a stronger impact.

This said, the teacher reasons that you must **strike a balance between the output of the service learning project and the actual learning process** of the students. Both have high priority, but none should dominate the collaboration. Consequently, the learning process and the impact must be harmonized!

Experiences from partners during the first semester

Nine partners participated in the service learning scheme of the "Sustainability Challenge" in 2016. The collective of cooperation partners is very varied: large companies with over 100 employees, small companies, the City Administration, Non-Profit Organizations (NPO) and NGOs. All cooperation partners were satisfied with the cooperation. They particularly appreciated the **very professional**

organization provided by the RCE Vienna team. The course structure and processes were clear and well-organized. The cooperation was simple and efficient, requiring relatively little administrative effort from the partner. Partners see **appreciative communication at eye level** as very important for a successful cooperation.

"Exciting format, which always had the interests and needs of all stakeholders in mind." Partner, Sustainability Challenge Vienna

Partners further appreciated the amount of effort put into selecting students and formatting teams. The good selection and composition of **student profiles** in groups is highly valued by partners. Also, the importance of multidisciplinary, integrative teamwork was conveyed in an excellent way.

All partners agreed that the thematic focus of the cooperation was well chosen. A point that still needs improving is to develop a **communication structure** from the very beginning and to have a better exchange between partner organizations and teachers about common goals. Shared goals between teachers and partners could certainly improve the cooperation and students' learning experience.

Most partners were able to dedicate sufficient time and human resources to the cooperation. **Personal meetings at the company** were preferable, sometimes with larger stakeholder groups or combined with on-site visits. The meetings served to agree upon for instance project sequence, concretizations of the content and objectives of the service-learning project, division of roles and tasks and timetables.

"The course is very important! The students take this with a lot of sense of responsibility and with high motivation." Partner, Sustainability Challenge Vienna

Student characteristics and attitude are further important aspect. Partners are very satisfied with the fact that students are highly motivated, innovative, and worked independently. For partners, the cooperation was exciting, and the creative atmosphere outside the day-to-day business was very enjoyable. Many partners felt that they had personally learned something from the experience.

"There is a very clear process and a very appealing way of transferring knowledge. A playful, free handling of the global task. Independent thinking is thereby very much encouraged. Very open, inspiring framework with a lot of communication possibilities, which was used with incredibly much joy." Partner, Sustainability Challenge Vienna

Several **positive effects** were reported by partners. The discussions with students and teachers fostered a higher awareness of important topics and a critical perspective towards own practices. Students with their innovative potential and visionary thinking brought a fresh breeze to the partners, providing new impulses. Innovative issues could be addressed outside the daily business and it enabled a joint learning process between students and partners. Exchange with science and the transfer of university knowledge to practitioners was useful and exciting. The **creativity potentials of young people** could be harnessed. In addition, the organizations benefited from **being part of a network of partners** and learning from a community of practice.

Some points that need improvement relate to the lack of knowledge of the partner as to what teachers teach and how the knowledge can be used optimally in the actual project implementation. Communication should be improved in this respect. Another **suggestion for improvement** is to put more focus on project management and its structure. For instance, the division of responsibilities between the partner and the student team is not very clear, raising the question who should be responsible for project management coordination.

Good practice example

By involving the student team in a concrete project with a **high strategic importance** for sustainable urban development in Vienna (climate adaptation and promotion of biodiversity and quality of life through building greening), the students were able to **get to know the complex framework conditions** in the preparation and mediation of the project goal directly in **meetings with relevant stakeholders.**

Deputy Division Manager, City Administration

B. Vienna Pilot Highlights: Sustainability Challenge (2, second semester)

Experiences from the participants during the second semester – students

As highlighted in the experiences from the first semester, **teamwork played a vital role** for the success of the Service Learning projects. Handling group processes and creating supportive team structures that would ensure joint and successful performance, was a learning process in itself. Clear communication and work division were also important. Learning for students required quite some interpersonal competencies. Gaining an understanding of the project frame and setting the right focus was a challenge.

"It was important that we understood what they could expect from us, (…) to set the right foci. They were planning a new campaign and first we had difficulties to figure out in which areas they wanted us to work. Finally, we picked five areas and were confident that they liked the ideas." Student, Sustainability Challenge Vienna

---

Learning about organizational structures and processes was another piece of the puzzle that students needed to succeed. This knowledge could best be acquired by being introduced to people relevant for the project at the partner site in the very beginning.

"The partner introduced different sections from the company and subsidiary company to us, so we knew the whole team from the beginning." Student, Sustainability Challenge Vienna

---

According to students, working together effectively with the partner required clear communication strategies and expectation management between students and partners. Some student teams realized that the cooperation was a challenge also for the partner. Thus, letting the partner be active in the team facilitated a joint learning process. Students further realized that their ideas were valuable and highly appreciated by the partner. Nevertheless, creative thinking and designing processes was very difficult for the students.

"Developing something new was always a challenge in terms of being creative and think of something better than the people who had worked with this for two decades." Student, Sustainability Challenge Vienna

---

Students were always looking forward to visiting the partner on site and getting personal feedback. **Personal meetings with the partner had a strong motivational aspect**. It was not unusual that students strongly identified with the company. The teacher in his role as a coach played a crucial role for the service learning experience. For instance, to bridge their initial lack of processual knowledge, **the teacher told students about difficult situations and how to deal with failures**. In general, having an open and honest approach facilitated handling the challenges. The teacher could give the students a sense of security and in meetings with the partner he had a mediating role, was open-minded and provided alternative proposals in case of different opinions.

Regarding the service learning project as such, students wanted to do something visible, creative, and interactive. They wanted to **get a practical experience** instead of only working with theoretical projects. The cooperation also made students learn about work-life reality. They got to know the rather strict structural setting and numerous rules and procedures that they needed to adhere to. Something that was important for the students was that their project created interest with the partner and had a real impact.

Students very much appreciated the company presentations on sustainability and believe that **partners should be given more space at events** to talk about their take on sustainability issues, preferably early in the course. Further **possible improvements of the course** relate for instance to the summer break that students felt was not beneficial for their work. Another point raised was that students would like to get to know other project groups and their work to be able to exchange experiences. Last but not least, some students lamented the abrupt ending of the course at the final event and would have liked to have a more personal closing, reflecting that a milestone in their personal development process is coming to an end.

Teacher experiences second semester:

The teacher appreciated the exchange with students from different universities and the **good joint dialogues**. However, different ontologies and epistemologies represented a challenge. To create favorable condition for a dialogue, some "**translational work**" by the teacher was required, which was best achieved via examples and pictures. The interdisciplinary setting led to interesting and sometimes challenging discussions with students, for instance on the value of a social science perspective and of problematizing the role of technology in the urban space. The teacher learned not only to deal with challenging situations, but also how to contribute and provide support in her area of expertise.

"The experience with group work was great, I had two amazing groups!" Teacher, Sustainability Challenge Vienna

---

Regarding **methods and tools**, the teacher believes that an increased use of project management tools would be favorable to support group work. In addition, basic method skills should be fostered, such as document analysis, drafting questionnaires or online surveys, and data processing. The cooperation between students and partners worked well when **mutual expectations were clarified early on**. Transparency as to what can be achieved in a project is key to avoid frustrations. An important

question is what students can learn from a suggested project. **Achieving a balance between service and learning must be a central ambition**. Another key point is to design projects for implementation as the aim should be to stimulate actual changes. The teacher gained a better understanding of what is required to foster a successful project stimulating change. Communication in all aspects is key and therefore a **continuous exchange with partners** must take place. This is however a challenge for the teacher in terms of time resources available.

"Communication is key in order to understand as a teacher what we are able to do and how we can support realistically." Teacher, Sustainability Challenge Vienna

Another reflection is that the Service Learning format develops and matures over time and depends on the people involved. As to the course events, **open formats with a structured approach** seem to work well. The teacher enjoyed the open format of the touch down event and the creative presentations of the student groups. Students used more innovative formats such as theater this year and the teacher was proud of the students' communicative abilities. It was also great to see that students invested a lot of passion and got engaged beyond the project, developing a feeling of ownership, and identifying with the course and their partner. This seemed more likely to happen when students were able to relate to the mission and vision of the partner towards sustainability. A further achievement was that students were **keen to address the actual implementation of their project output**.

"Students got in touch with specific creative presentation formats such as theater work and were more open towards such formats than in previous years." Teacher, Sustainability Challenge Vienna

The support of **RCE as a science-society interface and bridging actor** in the cooperation is very valuable. It can facilitate the cooperation by enabling a better dialogue and communication process in-between teachers, students, and partners. Ideally, the content of the teaching should also be discussed and coordinated in-between the different universities and involved teachers. Team teaching needs time and resources which are often in shortage.

Experiences from partners during the second semester

Like the first semester, the partners highly appreciated the **good planning and coordination** of the course, the well-organized joint meetings, as well as timeliness in general. Likewise, partners were satisfied with the coaching of the groups by the teachers, and the cooperation in general was considered to be great. Teachers were seen as reliable, supportive and competent, helping the partner to guide students appropriately. The information transfer from teachers to partners is very important and valuable. When crises arise, teachers are required to address the problems as early as possible. Teachers also played an important role to guide partners as to feedback strategies – how to provide constructive feedback that has a positive impact on student motivation.

The **heterogeneous group composition** among students was enriching, but could also represent a challenge for the partner in the development of common goals and group formation around a joint project. Additional efforts were required to harmonize the groups and teacher support may be needed in the future. Other fears of the partners were that the cooperation might fail because of

different languages of the involved parties, which could cause difficulties at an interpersonal level. The partners fear that the end results might be negative.

Partners met their student group frequently for **exchange of information and status reports**, mostly on-site. Further exchange took place via telephone and e-mail with partners giving feedback to the students' written inputs. Some partners intensely involved students in their work processes, representing a dynamic iterative process close to practice in direct contact with the most relevant actors. Other partners provided additional support to their group with the organization of the final event.

"Students practically had a working place in MA22 and successfully implemented a strategically important project (feasibility study façade greening) where we as service learning partner only had to provide a coordinative role." Partner, Sustainability Challenge Vienna

The different events provided an exciting way to exchange for instance interim results (via movies, presentations, and posters) and a good opportunity for partners to strengthen broader awareness of particular problems and potentials. The **high visibility** of the projects was a plus, providing a great marketing opportunity. Partners could also learn from students how to skillfully sell in their projects. Some student projects even attracted media attention locally.

Generally, **the cooperation with students allows for new perspectives and is very enriching**. For instance, students were able to help with planning and feasibility studies and implemented concrete projects.

"With the help of the project, the topic "Green Infrastructure" has been implemented in a Smart City Demo project. This is likely to be a milestone as Smart City projects have been very technological." Partner, Sustainability Challenge Vienna

Partners are keen to get a good product or result in their projects. A **good prior assessment of tasks** that are well suited for students in a Service Learning context is an important prerequisite for successful projects. Partners need concrete examples of successful Service Learning projects and tasks to get a clear picture of what works well in practice.

Pilot course C, Service Learning I + II (SEEP), relates to Module 1.3 of the CASE master program: Interactions in multi-scales (see Biberhofer & Bockwoldt, 2016, p. 73).

The course should give specific insights into the following themes of the pedagogical framework

- *Learning to learn: Several interesting tools and events for critical reflection (personal project diary, world café, marketplace session)*
- *Real-world orientation: Inter- and transdisciplinary project work. Long-term cooperation with a practice partner based on dialogue and co-creation of knowledge*
- *Coaching: Coaching creates an important learning space*

C.   Vienna Pilot Highlights: Service Learning I + II (SEEP)

This is a one year-long course forming part of the Socio-Ecological Economics and Policy (SEEP) Master Program coordinated by the Institute for Ecological Economics at Vienna University of Economics and Business. A core element of the course is that students are encouraged to bring their own service learning project to life in the Austrian context. The Service Learning projects are conducted with either an established partner organization or company, a start-up company or an association located in Vienna or greater Austria. For the period investigated, nine Service Learning projects were conducted, three with start-up cooperation partners and six with companies and other associations. Partners were active in diverse fields, dealing for instance with Climate protection and justice, environmental protection, food, online platforms, mechatronic and urban development, amongst others.

In total 45 students were taking the course, divided into three sub-courses to allow for each lecturer to coach 3-4 groups for the duration of their specific Service Learning project. The teacher stayed in touch with his partners for the whole course period of one year (Service Learning I+II), usually about twice a month, depending on the project phase.

The course started with an introductory session about Transformative Education and Service Learning. Subsequently, the working context and service learning partners were introduced in class, followed by a visit to the partners with the respective student group. Students were then in charge of defining their specific Service Learning project together with the partner. For the remaining period, students worked with the implementation of their project idea, frequently being granted a large degree of freedom by their partner. Regular coaching meetings took place in different constellations, creating space for reflection. Students were also encouraged to write their personal project diary.

At the end of the course, the student groups pitched their Service Learning project in class. This was followed by a 'World Café' where essential questions about the process were discussed, creating reflections, and sharing experiences. Moreover, there was a Marketplace Session, where students and partners could display a poster featuring the Service Learning results of the joint project.

Experiences from the participants - students

Students were mostly enthusiastic about their experiences with the Service Learning partners. They enjoyed doing something social, getting in contact with partners and other stakeholders and working in an organization provided many learning opportunities.

Identifying a suitable project task was a challenge for some student groups as they were not really used to define problems and let their creativity flow. Also, a balance had to be found between finding a project that fits with the students' interests and competencies and meeting the partner's needs. Sometimes, students needed sense-making skills to understand what the partner would like them to contribute with. Hence **dealing with ambiguity and complexity** was a common challenge.

"I think it was important that we came up with an idea that we wanted to do or something that we had in mind, tell it to Peter (name changed) and see if he wants to change something. Basically, we had to make a plan out of the ideas he brought up." Student, Service Learning I + II (SEEP) Vienna

Being able to work with a project that is meaningful for students personally is very valuable. This was facilitated by offering a variety of Service Learning projects with different opportunity spaces. Some groups interviewed producers and consumers, designed workshops, arranged a booth at a public market or organized a panel discussion. Others produced PR material such as flyers and posters, or produced a video.

Several student groups were given free hands to develop their ideas after the initial framing of an idea with the partner, which gave them **space for experimentation**. The cooperation was particularly rewarding for students if the partner had a positive approach towards the cooperation in general and showed appreciation for the students' work in particular.

Having freedom to develop something on their own and being responsible for the whole process **strengthened students' self-confidence** and gave them valuable working-life experience. Many groups felt that their partner fully trusted them. The feedback from the partner and teacher was important to help students to further develop their project. The teacher's structured approach to develop a timeline and set milestones together with the groups helped them to focus on the implementation phase. Groups had sometimes high expectations as to what they can achieve, but eventually realized that the actual results would turn out more modest. The process was dynamic, and expectations could change.

"My expectations were a little high, how much would be accomplished in this year, and how much we could help. And after talking about it for the first few meetings, I realized we wouldn't be able to have such a significant impact on this, I think, but that's ok." Student, Service Learning I + II (SEEP) Vienna

Those working with start-ups, could directly **experience how ideas can develop into specific results** and be a part of the entire development process. At the same time, they learned that it is important to **have a good work-life balance** to not get burned out. Group dynamics were highly important for the process and functioned as a support system. Also, discussions with other groups helped students to process their own project experiences and develop ideas for further working tasks.

"If you start from almost scratch, and then you see how ideas develop, and how experience accumulates. You see how different motivated people change and develop during the process, and use specific roles. Almost everything linked to the group process makes it really interesting, because we met each week and we could follow the process." Student, Service Learning I + II (SEEP) Vienna

Students not only learned from the direct project experience, but also from the interaction with an enterprise. It became obvious that partners also were struggling with getting organized and streamlining processes. Interestingly, this authentic atmosphere made the process very creative and mutually rewarding. Students experienced **emotional fulfilment** working with the project task and **contributing to something meaningful**. It was highly satisfactory to work together with the partner on outputs and deal with real-life situations.

On the negative side, some students reported that partners were not positive and receptive about their ideas, so they had to revise and develop them further. Therefore, learning to deal with negative experiences and failures was also required.

Teacher experiences

The **teacher** shared that Service Learning requires a different approach to teaching as it deals with the real world, not only theory. You must be ready for new things all along as cooperation partners change over time and every cooperation is different, has its own specifics. Sometimes things went the wrong way, but this is also an opportunity to learn. Being calm and pragmatic was a good approach as well as staying enthusiastic and burning for the idea.

Regarding the selection of cooperation partners, the teacher shared that they are both old acquaintances and accidental contacts. What was important is that the partners have a good communication capacity, are benevolent and work constructively. Doing a **thorough assessment of the opportunity space** for the collaboration was necessary. A tension was detected between pre-defining problems (by partner or teacher and partner jointly), creating limitations for the students, and leaving too much freedom to students to navigate the opportunity space and identify a problem by themselves. Most students, the teacher assumed, need guidance and support.

The administrative work connected to the Service Learning, e.g. communicating, coordinating, and organizing, was rather large, especially at the beginning of the course. A clear structure was required, especially if one is responsible for many groups. Hence, group formation, partner allocation and the progress report were important elements that require a **clear time corset**.

The coaching of the student groups was more creative and hence meaningful for the teacher than the administrative work. Good communication was essential for students to succeed with their projects. The teacher aimed at **creating a trustful space** of communication and continuous discourse with students to share experiences and emotions. To keep the overview and be able to intervene, if necessary, the coach should not change, not even for long-term projects.

"I choose a very open approach in coaching meetings. Talking and discourse is the ideal space for sharing personal experiences, critical reflection, because it does not leave the space. (…) A discussion stays inside a room, it is closed. This provides security and trust, which is central." Teacher, Service Learning I + II (SEEP) Vienna

It is also joyful to be with the students at the partners' site and meet the people. For the teacher, these are the moments that count because they help to **maintain the connection**. Being creative in the field makes the format meaningful for the teacher.

You have to take this time to meet the cooperation partner, these are the moments that count! They make you realize why you are doing this (…)" Teacher, Service Learning I + II (SEEP) Vienna

Special didactical methods (e.g. world café) can be implemented at plenary meetings, where all groups meet, e.g. to discuss contents or present progress reports. Individual project diaries are also a good tool to make students **critically reflect** on the process and come to new conclusions. However, the teacher made mixed experiences with using diaries. Therefore, it can be assumed that it is best to have a flexible approach to diaries and not force students to keep them. Generally, it was important to only use methods that do not disturb the actual working process and implementation of the project.

"People who are more introverted do not like to share a diary, it is uncomfortable for them. It is about security; they do not want their emotions to be hurt or trust broken. For if they submit personal piece online as a task, it gets disposed. It leaves the controllable. You cannot force people to submit a diary. If someone does not want to share, then this is okay. You have to adapt and tell them to submit a very rational report without emotions, that's it." Teacher, Service Learning I + II (SEEP) Vienna

The teacher should always be prepared for uncertainty. Therefore, both **planning for the unexpected** and creativity were required from the teacher. It was very important for students to have a reliable contact person and good communication with the partner. The information flow must be transparent and accurate. Coordination problems impact and make the creative work of the students suffer, leading to an unsatisfying process.

Another reflection of the teacher was that the university administration poorly understands the Service Learning format. Additional communication efforts may be needed to explain the value of a special course setting compared to more conventional teaching settings.

Experiences from partners

All **partners** were very positive about the cooperation and its results. For instance, integrating students' knowledge from prior studies into the project was beneficial for partners. They also enjoyed working with very **motivated and engaged students**, who worked largely independently.

There was a strong agreement that the thematic content of cooperation was well chosen. The partners also enjoyed the **unbureaucratic setting** and the fact that there was ample space for partners' ideas, wishes and needs. Information was clearly communicated, and the teacher was very anxious to support the collaboration in all matters.

Partners stated that they were able to allocate sufficient time to the project. They interacted with the students quite intensely, either by e-mail or discussing the progress and next steps at meetings. It was appreciated by partners that the teacher could be present at important meetings and lend his support. This showed the partners that the project is indeed important. Teachers taking part in coaching meetings was also deemed necessary since expectations might change over the project's life-time, which has to be communicated transparently.

The partners were able to **gain valuable experiences** from the new setting and cooperation in a university context. They got insights into university proceedings, approaches, and opportunities. As to the outcome of the Service Learning projects, **tangible results and project outputs** were reported, such as for instance a toolkit, comprehensive documentation, a method to deepen a survey, survey results, and organizational help with a symposium.

The motivation of the students was **inspiring and fruitful** for the cooperation and also had a positive effect on the cooperation partners' attitude and motivation. The only negative experience that was reported was that one student group could not conduct their project as planned due to the lack of data that should have been provided by the firm. Therefore, the project turned out less successful. The partner concludes with hindsight that one should not approach projects that cannot fully be captured. Clarifying the partner's opportunity space and communicating transparently with all parties involved from the beginning was again highlighted as crucial to avoid surprises in later stages of projects.

Supporting material

- Syllabus of the course
- Agenda for single session focusing on project pitching or World Café
- Guidelines /description of diaries

3.3.1.2   Format 2: Participatory research projects

Participatory research projects allow students to explore community-based research through a participatory project.

Effectiveness of the format Participatory research projects for sustainability-driven entrepreneurship education
The format allows students to practice **joint problem-solving** related to sustainability **in a real-life, community-based context**. Sustainability issues and the concept of participation are thereby experienced in practice.
Students get acquainted with the **complexities of sustainability** and develop the capacity to find solutions how to address these in a participatory process. During this process, students learn to **deal with difficulties** (due to conflicting goals, partner attitudes, time constraints) and develop strategies how to overcome them. These capacities are also essential for successful sustainability-driven entrepreneurship.
The format offers diverse learning opportunities for students. They gain in-depth knowledge about a new sector or topic and its sustainability challenges and **gain experience with collaboration** and communication. The independent work in teams helps students to **build up self-esteem and self-efficacy** outside university. These experiences create good conditions for an entrepreneurial mindset.
For the format to work optimally, teachers must make sure that the prerequisites for participative procedures are given. **Clear communication of needs and expectations** is essential. Mutual trust between students and partner is the ideal state. Praise, frequent feedback, and a collaborative attitude by the partner increases student motivation.
In contrast, authoritative decisions by a partner may influence the process negatively. Consequently, it is vital that **teachers** are **responsive to students' needs along the way, assist with problem-solving** and **provide motivation and support**. Attention should be paid to students' need to manage the balance between satisfying the partners needs while satisfying their own learning needs.

Potential of the format Participatory research projects to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High

Based on the piloted experiences, the format mainly fostered students' strategic and interpersonal competencies, but the cooperation also activated systemic and normative competencies. Overall, the format developed students' capacity to work effectively and independently.

By working in groups and together with a partner, students' **interpersonal competencies** were fostered. Students were able to practice and improve their communication and collaboration skills.

Inter- and transdisciplinary thinking and acting was required to co-create knowledge between students from different disciplines and practice partners, which trained students' **systemic competencies**.

Students developed **strategic competencies**, given that they planned and conducted a participatory research project related to a real sustainability challenge of the partner in a new environment (development of **research question, research design,** collecting and analyzing **data**). Strategic competencies were further strengthened by applying the theoretical knowledge acquired in both a scientific and a practical context within their project. The tasks involved with the project honed students' methodological skills, for instance drafting and managing a questionnaire.

Working with a concrete sustainability-related project in a real-life context required students to reflect upon, analyze and solve emerging problems, enabling them to train **problem-solving competencies**. Applying participatory methods for knowledge creation can be a challenge. If tensions or dilemmas arose between students and partners, the students also developed **normative competencies**, for instance by distancing themselves from the marketing focus of partners and learning to act in accordance with their own values.

The format also triggered quite some emotional effects with students, for instance, they were proud of being able to provide solutions to the problems of the partner. Their ability to offer concrete results despite difficult circumstances and time constraints resulted in a **feeling of satisfaction and mastery**.

However, a lack of responsiveness of the partner can also result in negative feelings, particularly frustration. For instance, when students felt that they were not taken seriously and that their opinion was ignored. This can however also be considered as an opportunity to learn to **handle frustration** and **overcome setbacks**. Emotional resilience is a characteristic that may be useful in an entrepreneurship context as well.

Pilot course D, Outside the University Box - Participatory research with people of the region, relates to Module 1.3 of the CASE master program: Interactions in multi-scales (see Biberhofer & Bockwoldt, 2016, p. 73).

The course should give specific insights into the following themes of the pedagogical framework:

- *Competence orientation: Competencies for sustainability-driven entrepreneurship are set as learning goals.*
- *Learning to learn: Pedagogy is based on participatory methods*
- *Real-world orientation: Inter- and transdisciplinary project work.*

D.   German Pilot Highlights: Outside the University Box – Participatory research with people of the region

The course represents good practice for the co-creation of knowledge between science and society. It addresses essential approaches and concepts of transdisciplinarity, Responsible Research and

Innovation as well as participatory research and action fields (e.g. science shops, community-based research). The teaching is based on participatory methods, such as group work and discussions as well as project work in cooperation with local project partners. An interesting feature of the course is also that competencies for sustainability-driven entrepreneurship are set as learning goals, aiming at building capacity with students to address sustainability challenges and opportunities.

Students first get a series of theoretical inputs to sustainable development, transdisciplinarity, and the topic of responsible, participative research and innovation. Subsequently, local project partners present their current sustainability-related challenges that students will be working on in teams together with the local project partner. The cooperation piloted involved three partners: the city administration, a local food entrepreneur (a start-up company) and a municipal institution for elderly people and intense nursing. After choosing which challenge to work on, students apply the theoretical knowledge gained concerning research processes in these practice-oriented projects with the broader aim to contribute to sustainable regional development. During the research phase, students regularly communicate and collaborate with their project partners. Through the project work, topics such as participation and sustainability are experienced in practice. At the end of the semester, the student teams present their project results for the partners at a joint seminar.

Good practice example

One of the student groups worked on a project provided by a local food entrepreneur, addressing the question: "What do people in rural and urban areas think about new food products?" With the help of a survey, data was collected about vegetarian and vegan lifestyles and about the willingness of people to buy sustainable food.

Experiences from the participants – Students

Students were satisfied with the collaboration and emphasized that **regular personal contact with the partner** outside of the course structure was very important for a successful collaboration. **Mutual trust between practice partners and students** was a positive characteristic of most collaborations. Praise, frequent interaction with and positive feedback from the collaboration partner created strong motivation with the students. Communication worked in most cases well and was easy and swift. However, at times students asked for faster response time as well as greater flexibility and accessibility than partners were able to provide. Students also noted that partners' expectations sometimes differed from what they perceived to be their task according to the course aims. Also, students experienced that there was too little time for the actual research process. They would therefore want to start earlier with the cooperation and transdisciplinary research in order to make more time available for the process.

Students experience the interaction with teachers as positive as they were supportive and motivating. Plenty of material (concerning research methods, participative and responsible research, science shops, etc.) was available for downloading, which students found very useful.

What also contributed to a positive student experience was the fact that concrete results were achieved. Students were particularly proud of being able to **provide a solution to the problem of their partner** despite difficult circumstances and the limited time available. This gave students a **feeling of satisfaction and mastery**.

Some challenges addressed by students were that they had to learn to distance themselves from the marketing focus of the partner. It was sometimes difficult to remain neutral. Also, different expectations and needs threatened to hamper the collaboration. Further obstacles observed were

that students are unexperienced at interacting with the public for research issues and had little authority towards employees, but had to rely on managers to speed up data collection.

The most important effects of the practice-oriented projects on the competence and experience of the students was that they learnt how to plan and conduct a participatory research project in a new environment. The project work improved their **communication and collaboration competencies** (by working in group and with a partner), their methodological skills (for instance by drafting and managing a questionnaire) as well as their presentation skills. Students learnt to work effectively and independently.

"The most important is to have a personal contact with the partner, meeting them outside the course structure" Student, Outside the University Box, Vechta

Teacher experiences

The teacher works also in the Science Shop Vechta / Cloppenburg and is therefore frequently asked by her contacts whether research cooperation on specific issues would be possible. As a result, the teacher could choose partners with appropriate questions both from her earlier relations and from new contacts that got in touch with her.

According to the teacher, the introductory session when partners presented themselves and outlined their questions, turned out well. Research questions were elaborated, negotiated, and agreed upon jointly by partners and students.

From the teacher's perspective, the **layout of the cooperation worked well** and was appreciated by participants. Although the overall cooperation strategy functioned satisfactorily, some planning could be done differently. For instance, communication with the partners as to what can be accomplished in the cooperation could be improved, perhaps with a contract. Another issue requiring further attention is to **make sure that the prerequisites for participative procedures are given**, as authoritative decisions by a partner may influence the process negatively.

Overall, in the teacher's view the goals of the collaboration were achieved, and partners were satisfied despite time constraints and some minor disharmonies along the way. The teacher also noticed that **partners differed in the amount of praise given to the students**, which is a pity in her view, as this can negatively affect student motivation. Hence there is a need for teachers to **be responsive to students' needs along the way**, assist with problem-solving and provide motivation and support. Particularly important is the communication with students experiencing difficulties. The teacher also sees a need for herself to support the collaboration more strongly by encouraging students to stay in contact with their partner via emails or short visits.

The teacher was in several aspects positively surprised by students' work. The **students learned to give good presentations**, which the teacher feels very proud of. In future courses, the teacher would like to start the project phase earlier in the semester to give more time to the students, and invite the partners from the beginning on.

"I feel proud of the good presentations given by my students." Teacher, Outside the University Box, Vechta

Partner experiences

The cooperation partners were positive towards how the teachers managed the cooperation. They appreciated that it was **organized in an efficient and pragmatic way**. From the partner perspective, the

focus of the cooperation was well chosen and the methods and tools (e.g. participatory method, group work, project work) applied worked fine.

Partners **appreciated the launch event** as well as the fact that students cooperated with teachers during the process, for instance to discuss their questionnaires. During the project phase, arrangements and contacts were made per telephone or email. However, students often expected quick responses from companies, which is usually not possible without prior consultation. Also, sometimes student teams were somewhat hesitant to take contact via e-mail.

Given the good results, partners were **positive to the collaboration**. They valued the cooperative attitude of the students and the fact that they worked effectively and independently. The students' work showed solutions to partners' problems, hence **facilitating problem-solving**. The collaboration yielded concrete results on which further planning could be built. In some cases, cooperation resulted in **new concrete ideas for the business**. Some partners wanted the results to be more widely spread in the organization or used them on their webpage.

What could be improved is time planning and scheduling; partners would appreciate being provided with a schedule over the project work for their student group from the start. Also, the structure of the final seminar could be improved to avoid idle time for the partner.

Furthermore, partners are keen to **meet their project group early** to get to know each other and discuss the content of the collaboration. The time available to implement the project was quite short. One partner would even be willing to devote more time to the cooperation to increase the quality of the project outcome. Perhaps then, the collaboration should be longer to yield better results for the partners.

Overall, partners enjoy cooperating with students and universities, partly for curiosity and for getting new insights, partly for the experience to support student learning. They are willing and prepared to put time and effort into the collaboration, but expect students and the university to do the same. In the long term, further support to students from the partners is likely. As students are growing more aware of the company, new relationships such as internships and theses writing could be interesting options.

"Awareness of the company among students is growing, potentially making new relationships possible, for example, internships, bachelor and master theses." Partner, Outside the University Box, Vechta

Supporting material

- Syllabus
- Readings provided to students

3.3.1.3   Format 3: Entrepreneurial projects

The format allows students to gain first experiences as entrepreneurs, developing an idea into a business model to address real-life sustainability challenges.

Effectiveness of the format Entrepreneurial projects for sustainability-driven entrepreneurship education

The format enables students to get a **genuine insight into the start-up world** and **gain first-hand experience** as to what it is like to be an entrepreneur. Through the involvement of practice partners, many of them with an own start-up history, **the entrepreneurial spirit** is spread and an **atmosphere of exchange and mutual learning** at eye-level is created. **External workshops** with start-up experts and cooperation partners, covering various topics in the area of entrepreneurship, provide useful inputs. To deepen the learning process, individual as well as team reflection tasks can be assigned.

The integration of **external coaches** as well as jury members seems to be a very effective strategy in order to **combine theoretical knowledge with practical input**. Coaches with real world experience as entrepreneurs can give authentic feedback on the students' business ideas and possibilities for implementation. They bring in a lot of practical know-how for students who are aiming to get their own start-up going. The coaches' **broad expertise** in terms of business model, target groups, communication strategies and technical implementation encourages students to really work on the actual implementation of their ideas. The effects range from **eye-opening findings** to the **possibility of receiving answers** to upcoming questions during the development process of their business model. Students can develop an **entrepreneurial mindset** by being socialized into the entrepreneurial approach (learning what matters, insider tips, etc.). A further benefit is that students get connected to the start-up scene, which enables networking and further cooperation with partners. Overall, the link to practice partners from the regional start-up scene can be seen as a success factor.

Interdisciplinary student teams can foster creativity and are thus a further key success factor. Cooperation between different universities guarantees interdisciplinarity which often supports interesting and suitable constellations of start-up teams. The format also empowers students to **develop their personality**. Students can find out about their strengths and weaknesses, clarify their possible roles and reflect on what **being an entrepreneur or intrapreneur** implies.

For certain, it can be concluded that the **Sustainable Business Model Canvas** is a highly suitable tool for students to develop their start-up business model. But also, a variety of other tools or methods can come to use within the frame of the format, for instance pitching tools (e.g. the Value Creation Forum) or reflective and dialogue-oriented methods, such as coaching or dyads. Regular pitching training taught students to present complex issues in a short time. It is further warmly recommended to combine the format with a **camp outside of university,** allowing for students, partners and teachers to tackle challenges and exchange experiences in a focused way.

For a well-functioning format, the teacher plays a crucial role for providing a **well-organized**

structure and coordinating all interaction activities. The teacher should select coaches based on their know-how, trying to mix different expertise. Furthermore, the teacher needs to effectively communicate with the coaches prior to the course and set up time slots for their inputs, pitching events etc. The teacher's organizational talent and efforts are thus a further success factor. It can also be concluded that the teacher's strategy will be more successful if he or she has a good insight in the regional start-up scene, which facilitates the selection of suitable partners.

Based on the experiences gathered, entrepreneurial projects are suggested as **highly suitable and effective for educating sustainability-driven entrepreneurs.** The setting and especially the support from the coaches, triggers students' motivation and invokes courage, commitment and self-discipline. The open space granted within a clear framework provides a creativity-promoting setting that is highly beneficial for enabling students to pursue sustainability-driven start-up opportunities.

Potential of the format Entrepreneurial projects to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High

Over the course of the piloted entrepreneurial projects students' development of competencies for sustainability-driven entrepreneurship were fostered in all five dimensions, but most prominently, strategic and interpersonal competencies were activated.

With regard to **strategic competencies**, the format enabled students to practically apply what they had learned earlier in their education, using a broad knowledge base and skills. Working practically out in the field made everything become much more real. It was characteristic that many of the student groups had the common goal to make a positive societal impact with their venture, which shows that **normative competencies** underlie their entrepreneurial intentions.

Students broadly acquired **entrepreneurial competencies**, such as discovering, **evaluating and realizing innovative business ideas** (with the help of the Business Model Canvas and other methods and tools). They learned to use appropriate methods and tools to develop their business idea and to evaluate and analyze the environment around the idea. Furthermore, students developed a sustainable business model for their idea and learned to identify the critical factors for evaluating entrepreneurial projects. Other crucial learnings were how to protect their idea, how to assess market size, and what kind of team is needed to realize the idea. **Anticipatory competencies** could be promoted given that students learned to work with and understand risks on a deeper level. Students see the possibilities (although still aware of the risks) and learnt to think new and differently.

Systemic competencies were fostered by testing assumptions about the Business Model (e.g. product or service, potential customers and their needs). Using this tool, students learned to see the whole and realized that all the parts are needed for successful entrepreneurship. In this process, creativity and resourcefulness were required.

The format also fostered students' **action competencies.** They developed the willingness to initiate change and were goal and success oriented. The students further reasoned that even small steps forward are part of a journey towards a goal, indicating perseverance.

Along the process of testing and elaborating their business model, students were able to hone their **project management competencies**. They developed skills related to the entrepreneurial process and

learned to work effectively in teams, which refers to the dimension of **interpersonal competencies.** Teamwork skills were developed due to interdisciplinary cooperation and the student/ teacher/coach relation. Students within the teams supported each other and learned to take important joint decisions. Students developed not only as a member of their start-up team, but also with regard to their own personality.

In addition to learning from their own project, students learned from other teams' work and journey thanks to regular seminars. Providing input and a third-party perspective to the projects and process of other teams developed students' analytical skills. Another interesting development was that students were **seeking cooperation instead of competition** (cooperative thinking), for instance when their idea was based on the principle of a circular economy.

From the frequent interaction with their external coach, students were learning about networks and developed **abilities to navigate in networks**, which is part of developing interpersonal competencies.

Overall, students reportedly acquired competencies searched for by large companies (e.g. handling difficult situations, resourcefulness, etc.), which is seen to **improve their employability**.

Besides broadly fostering competencies, **entrepreneurial projects invoked emotional responses** with students. These were uniformly positive. Meaningfulness, fun and engagement were frequent mentions. The project was exciting, and student felt commitment and pleasure in the process. Working with the 'real world' made learning greater fun and students felt stronger engagement for their studies. They also felt that they were doing something important and meaningful. Their project mattered not only to themselves, but also to external, competent people, i.e. their coach. Often, students experienced 'contagious enthusiasm' between themselves and their coach. This spreading of the entrepreneurial spirit lead to a qualitative change in the way of working and learning.

As touched upon earlier, the format is well-suited to develop an **entrepreneurial mindset** with students. Their start-up spirit awakened when getting an insight into the reality of start-up life. This created motivation to get started with their own activity. Students quickly gained awareness of their potential – that it is possible to develop something great out of a small idea. Empowerment was another effect of the format - students realized that they had freedom and knowledge to create something new and some developed fast readiness for the realization of their ideas.

Students however also **experienced the downside of entrepreneurship**. For instance, they realized that sustainability-driven entrepreneurship requires a lot of time and effort. They experienced the ambiguity of the entrepreneurial process and learned to handle obstacles, e.g. by finding another solution and continue working.

E. Vienna Pilot Highlights: Sustainability Challenge "Start-up track"

There is considerable concern that universities teach in an overly academic way, conveying theoretical knowledge only. As a counterbalance, students should be given the opportunity to also acquire practical knowledge during their studies. However, authentic practical knowledge can only be transferred by practitioners, not university teachers with a purely scientific background. The course Sustainability Challenge "Start-up track" has a twin strategy to tackle this challenge: Firstly, the course is designed to integrate practical cooperation partners from the very beginning. Secondly, teachers come from different universities and have diverse backgrounds. They also have practical business experience, some of them combining their work at university with running a start-up themselves.

The Sustainability Challenge "Start-up track" was held for the first time in 2016. It is a collaboration between four universities, University of Natural Resources and Life Sciences, Vienna University of Economics and Business, University of Vienna, and Technical University of Vienna, and an addition to the Sustainability Challenge "Service Learning track". In the "Start-up track", students are supported by teachers and practitioners in realizing their own entrepreneurial idea for a future-oriented city. Students apply for the course with their own idea for a sustainable start-up, either as an individual or a team. In this first edition of the course, 16 students participated. In the first semester, focus lies on sharpening the students' start-up ideas. After a kick-off event, several interdisciplinary blocks were scheduled at the different universities, dealing with topics related to Smart Cities, such as sustainable building and spatial planning, climate change, ecological economics and social-ecological policies. Workshops with start-up experts and external cooperation partners provided further useful inputs. Individual as well as team reflection tasks were given to deepen the learning process. The Sustainable Business Model Canvas is the core tool used to test and elaborate different elements of a business model, examining its overall fitness in an ecological, social, and societal dimension. Along the way, the student teams were supported by start-up experts in further developing their business ideas. The first semester ended with a joint Stop-Over Event, where each team presented their business concept.

The second semester was dedicated to further elaborating the business ideas with the help of the input received, aiming at creating a solid and tangible business plan. Especially, the three days Start-up Camp offered intense personal support for tackling challenges and taking the next steps in the development process. During the semester, individual coaching session with the teachers provided further support to the teams on their journey. At the end of the second semester, all teams presented their final results for a broad audience of practitioners, academics, and students at the Sustainability Challenge Touch-down Event.

http://www.rce-vienna.at/sustainabilitychallenge/home/lehrveranstaltung/

Experiences from the participants - students

The students have a double role in the course as they simultaneously act as course participants and as future entrepreneurs. Student voices regarding the course were predominantly positive: The course provided them with a **unique setting to get a taste of the start-up world** and gaining insight into practice. Students had the chance to **try out being an entrepreneur without taking any risks**. Thereby, they could create their own working environment, establishing ways of communicating and managing their work-life balance. The course provided them with the opportunity to test useful entrepreneurial tasks, for instance writing a proposal for support or funding. Also, the coaching sessions were perceived as helpful and meaningful.

Students highlight that the initial phase of developing ideas together to find a common topic is a crucial stage. It is suggested that this initial idea development should take place over a longer period and be more profoundly integrated.

Regarding teambuilding, students appreciated that the process was flexible. Working in **interdisciplinary teams with students from different universities was a key for success**. The team is perceived as extremely important as it takes all the big decisions. Therefore, it is emphasized that special attention should be paid to the process of teambuilding.

*"There are ups and downs, but if you have a good idea and the right team, it is possible to succeed."
Student, Sustainability Challenge "Start-up track" Vienna*

The variety of external partners that gave input to the process was seen to have great potential, providing different impulses for the projects. For instance, the excursion to a funding institution was very interesting. Inviting practitioners gave a good insight into their motivation and where they can get energy from, especially in difficult phases. Being able to ask questions to the practitioners without any access barriers was exciting. The interaction with a practice partner had also a direct impact on the entrepreneurial projects. For instance, it made one of the teams realize that their idea was too big. They learned that they should focus on one aspect instead, making the project smaller, yet more realistic. Given the importance of the input from external partners, both as an inspiration and as a reality check, students would prefer having more of it already in the first semester.

Overall, the setting was quite challenging, although the cooperative aspects of it were rewarding. The teams realized that their **common goal is to create a positive societal impact**. Students want to initiate change and realize that this can be achieved by **cooperation rather than competition**. They started to work together, merging with potential competitors.

Besides, students quite enjoyed the media interest and coverage in the context of the course. They also found it valuable and useful to get acquainted with the regional network of sustainability-driven actors and becoming a part of it. This is a **potential anchor point for their later career**.

A suggestion for improvement made by the students was to invite start-ups from previous courses to share experiences from realizing their ideas. Students would also appreciate to be attributed individual coaches already at the beginning of the course and meeting them regularly thereafter. In addition, it could be beneficial to also have a camp at the beginning of the course. This could facilitate getting to know each other and allow focused work to develop ideas on a common topic of choice.

Teacher experiences

As mentioned earlier, university teachers with merely a scientific background are not suitable to transfer practical knowledge. Therefore, the teachers on this course have different backgrounds, bringing in practical experience as well. Some of them work partially in a start-up and at university, which increases authenticity and intensity of the experience for the participants. Teachers thus have a double function. On the one hand, they are supervisors and coaches; on the other hand, they act themselves as practical partners. The **combination of "practicing teachers" and cooperation partners** from sustainability-oriented companies provides a **unique mix of knowledge and experiences** that enrich the course setting. Both teachers and cooperation partners have multiple functions; they inspire and motivate, provide insights, and share their experiences. They allow students to **acquire authentic practical knowledge** in areas such as writing a business plan or doing financial calculations. The cooperation partners are motivated to support the students because of their own start-up history. The teacher mentions that sometimes, they even recruit interns or employees out of a course.

The course setting aims to create an **atmosphere of exchange and mutual learning at eye level**. Regarding methods and tools, the teacher highlights that it is essential to have the right combination. The reflective and **dialogue-oriented methods**, such as dyads and coaching, reached especially the "fast" and forward students. Despite being an unusual method, very few students had difficulties with the dyad. Presentation and communication skills were fostered through methods such as **pitching and improvisational theatre** (on the topic of fundraising, practicing how investors and business angels could be gained). When applying the methods, a good balance between working in the teams in small, often mixed groups (e.g. case clinic) and formats enabling exchange in the plenary was aimed at. The **Sustainable Business Model Canvas** was used as a core tool. It is based on the popular Business Model Canvas by Alexander Osterwalder and was further developed by the course teachers.

The teacher, commenting on the structure of the course, further pointed out that the first and the second semester differed in important ways, conveying different kinds of experiences to the students. The first semester was very academic with blocks of three hours on a single topic, which was not ideal. Frontal lectures with long discussions, especially on more general issues did not work very well. The teacher felt that it was difficult to reach out to the students. A conclusion drawn is that input session should not be longer than 30 minutes, if no interactive elements are built in. A lesson learnt is that one should leave the seminar rooms already in the beginning, for instance to a camp outside university. This would facilitate for students to find a common basis, concentrate on their start-up, and build a team spirit.

In contrast, the second semester was seen to have worked out very well. The **three-day camp at a rural site** with little or no distraction provided a breakthrough in the development process, which was also acknowledged in students' feedback. Then the goals of **awakening the start-up spirit** and giving an understanding of the reality of start-up life were well achieved. Students were motivated to start their own activity.

"The setting, especially the three-day camp, works very well and is appreciated by all participants. The only disadvantage is the longer journey to the location for cooperation partners, if they take part for a short time. This can be solved either by prolonging their stay or having their visit at the university or at their company." Teacher, Sustainability Challenge "Start-up track" Vienna

Another achievement pointed out by the teacher was that the teams got very far with their ideas, which may be a result of the diversity of participants from different universities, studying various subjects (e.g. economics, technical studies, natural sciences, etc.). The **interdisciplinary teams could bring in many aspects and different foci**. It could also be observed that students developed both as a team and as individual personalities. On the personal level, they found out about their strengths and weaknesses, were empowered and had the opportunity to reflect on being either an entrepreneur, an intrapreneur or neither nor.

The teacher observed several positive learning aspects. For instance, some students developed a **fast readiness for the realization of their ideas**. He could also notice that students learned something essential for their life, e.g. how to make something great out of a small idea. He is particularly proud of the fact that the course could give participants an **awareness of their potential in the world** - a realization that they have the freedom and knowledge to create something new.

The teacher also shared how the course came about. The main concept existed as single university offer at the University of Natural Resources and Life Sciences, Vienna. The proven concept was integrated into the likewise proven concept of the "Sustainability Challenge", which created some challenges difficult to fully address at the first attempt. As the course was given for the first time, the

teacher sees good possibilities for improvement. Some changes suggested were to better link the theoretical blocks on the overall topic of Smart Cities to the start-up track. Also, the cooperation among the teachers should be improved. **Co-teaching poses a challenge** due to the restrictions in the availability and participation of some teachers. An intense feedback process and the evaluation as a pilot for CASE helped to identify the problems and to develop solutions. A further developed edition starts in the winter semester 2017.

http://www.rce-vienna.at/sustainabilitychallenge/start-up/

F. Swedish Pilot Highlights: Methods of Practical Entrepreneurship

This course is part of the master program on Knowledge-based entrepreneurship. The objective of this course is to run an incubation process for the development of a new business. Incubation involves a meticulous process of identifying, evaluating, and negotiating promising venture ideas. These venture projects are supported from idea to start-up company and beyond.

The course builds on the collaboration with GU Ventures, a Gothenburg based holding company owned by the Swedish Government, providing support during the whole process. GU Ventures participation in turn is financed by Region Västra Götaland (see box: partner profiles). Students work in entrepreneurial interdisciplinary teams in close contact with GU Ventures, either with developing their own project idea or pre-selected venture idea in collaboration with an early start-up partner. GU Ventures not only provides coaching; the partner is also involved in the sourcing of ideas. Early start-ups from university are thereby provided with support and competence to develop a new or existing entrepreneurial project.

Early in the course, there are some presentations about the methodology, and students are prepared for the open-endedness of the course. During the six months the course runs, students develop entrepreneurial ideas into projects and work towards creating a scalable business idea. If promising, they develop their projects into companies. Students work with updating the business model, gene-rating and testing new ideas about products and services, collecting and analyzing data about stakeholders, such as customers, in an iterative process, and presenting the business model and ways forward. This process is accompanied by business coaches from the university and GU Ventures. Every other week there is scheduled supervision. The groups present for each other where they stand, what they were doing the last two weeks as well as their plans as to how to take the project forward.

In addition to the coaching, specific methods, tools, techniques, and assessment systems are provided to support practical entrepreneurship at the student level. Examples of methods and tools used are the Business Model Canvas, Value Creation Forum, video reflections, storytelling and log book. At the

end of the course, students hold a presentation about their Business Model and a plan how to go forward.

The partner is very involved in the course, not only assessing the ideas but also in terms of supervision and access to resources. For instance, students can apply for money with the partner for market analysis or events. In a later phase, there is a possibility for students to continue developing their projects in GU Ventures' ordinary incubator. GU Ventures could also invest in promising projects and companies.

Good practice example: Video reflections and storytelling

Video-reflections are used as a tool to reflect on the theoretical parts of the course. These reflections are then combined with storytelling. Students practice storytelling, which is an important communication tool to visualize the future and mobilize people. To make it work you must be convincing with what you are trying to achieve and really explain how the customer's situation will become better.

Students were mostly positive to these tools, given that in the future, they may have to sell in their idea with potential investors. They need to be able to communicate their projects clearly. Testing and practicing communication using the storytelling structure seemed a good way of presenting the projects.

Experiences from the participants - students

Generally, students considered that the course provided **vital experiences for entrepreneurship**. Students appreciated to get the possibility to work very practically and try things out that they have learned earlier on in their education, both at a bachelor level and during the master program.

"This is a good course that unites all the earlier courses, you need everything from marketing to sales, to finance, all the courses that you have been studying earlier. It has been a good way of putting together - where you see the whole and that all the parts are needed to be successful." Student, Methods of Practical Entrepreneurship, Gothenburg

---

In the course students could make own decisions and work much more **practice-oriented**. Even though the process still was supported by theoretical material, **everything got much more real** to them. This made learning great fun and many students felt a stronger engagement for the school. Some students clearly stated their group's intention to start their own enterprise and that this was the trigger for them to try to learn as much as possible and develop their business idea as far as they could.

"I believe that many, including me, have gained large experience relating to going from the idea stage to really know the last step, from there you could go these different paths, which has been an incredible journey." Student, Methods of Practical Entrepreneurship, Gothenburg

---

Another strength of the course was that the students' backgrounds were very mixed (engineers, HR, business students etc.), which came to good use. This made the projects more open and the different backgrounds made the collaboration great fun. The opportunity to get **real-world feedback** on their work was particularly meaningful. The Business Model Canvas was the main tool which students revisited all the time. It was basically part of every presentation. At the progress presentations, each group received separate feed-back from a teacher and a representative from GU Venture, as well as from the other groups. It was also valuable to see how other project groups developed and try to help

them with constructive comments. This made students learn from the work of all groups, not only their own.

The coaching sessions with the teacher and GU Ventures were very helpful to improve and further develop the project idea. If necessary, extra supervision and support was granted to sort out group dynamic problems.

"It was clear that the partner (GU Ventures) was experienced in meeting people like us who are really in an early phase and could support us. Open up possibilities, this would not have been possible with only the university perspective and teachers. I believe it is good that also the 'other side' is part of this, those who have the experience and a network and know how things work." Student, Methods of Practical Entrepreneurship, Gothenburg

The **coach from GU Ventures** was very committed and provided broad and ample support having a different perspective compared to the teacher. The partner is very knowledgeable on the market and has an amazing network of contacts, to which he tried to connect the students to enable them to keep working with their ideas. Coaching went beyond the theoretical parts that the school normally contributes with. The collaboration with GU Ventures provided **insightful advice and continuous support** to the student groups throughout the whole process.

Students experienced a **different kind of commitment and pleasure in learning**. Even aspects that they earlier found boring, such as statistics and financial aspects, became interesting. Students worked with risks in a completely different way, gaining a deeper understanding. Students also developed their mindset in other aspects. Although being aware of the risks, they still see the possibilities and have learnt to think new and differently. They have **adopted an entrepreneurial mindset**.

"We learnt from the start that we were going to meet obstacles on our way, but then you simply go either to the left or to the right and based on these circumstances continue working. For this is what it is like in the entrepreneurial world, sometimes you get stuck and then you have to take it from there." Student, Methods of Practical Entrepreneurship, Gothenburg

The type of project ideas that students work with, either own ideas or pre-selected projects sourced by GU Ventures, had a strong effect on their perception of the whole course. Students groups who were assigned a pre-selected project idea did not have the same pleasurable experience with their project work as student groups working with own ideas. It is important to make sure that the ideas are suitable to work with and fit the course. Students suggested to organize idea events where you brainstorm ideas to share. Further suggestions for improvements were that the embedding of sustainability could have been better. For the students, sustainability is the future. This became obvious when looking at the customer perspective, but also demands from society, regulators etc. The sharing economy is a concept that could have received more attention.

"When I am out there looking for a job now, I notice that this is what makes me differ from others, that I have a totally different overview compared to someone who has only been studying marketing or calculated financial issues. With this entrepreneurial way, you get an overview on all aspects, a little of everything. I am very happy with my education and in particular this very course!" Student, Methods of Practical Entrepreneurship, Gothenburg

Experiences from the teacher

According to the teacher, students really appreciated that they are **working with real projects**, especially those students who are working with their own projects. This was exciting for them, but they also **realized that it takes a lot of time and effort**, and that there is a lot of ambiguity. The teacher believed that this really improved their understanding of what is going on, both on the positive and negative side of it. It was a totally new experience for them.

"They (students) realize that entrepreneurship is very emotional. It's an important thing, it is not just calculating a number or see if it is profitable." Teacher, Methods of Practical Entrepreneurship, Gothenburg

A trend seen during recent years is that students increasingly propose own ideas instead of selecting ideas from the university. The teacher observed that **using own ideas resulted in that students are more motivated**, and it is a better learning experience for them. However, it was always the teachers who assigned the groups and allocated ideas to groups.

Given GU Ventures involvement in coaching, he became a very important resource for students, helping them hone their ideas to make them more viable. The teacher was very proud of the collaboration with the partner as they were open with the students and helped them in a kind and supportive way. The partner managed to show an interest in the students, really **pushing them to develop their ideas**, helping them along the way and giving them access to their contacts, etc. In addition, the partner helped with a lot of practicalities, e.g. if students decide to start a company. Then the partner was an external resource, helping for instance with contractual issues.

The teacher **wanted students to learn fast**. They should be active in **"pivoting" the idea**, figuring out what assumptions do not hold and what changes are needed. This is an **iterative learning method**, called the Customer Development Process. The main point is that the students quickly **create a hypothesis or assumptions about the business**, thereby creating a business model from day one. The subsequent work is about verifying or falsifying these assumptions or hypotheses. This required students to go out of the classroom and **test these hypotheses**, selecting those that are most important or easiest to test. Students went out and talked to potential customers, trying to find a customer segment they wanted to focus on when developing the Business Modell and their product or service. This strategy made students grow increasingly more confident during the course that their Business Model works. The teacher tried to evaluate the process, but also that students have some evidence for their opinion about their Business Model. The teacher was very open when it came to tools, but no particular coaching process or ideology was implemented. In common was however that coaching was based on the Business Model Canvas, which was used as a communication tool. Coaching was also about asking students how they are going to test different things, how they are going to get the information needed and what type of conclusions can be draw.

Some issues that should get stronger attention in the future are related to the type and focus of their projects. The teachers noticed that students engage more with their own ideas than with external ideas. He would like to increase students' interest for working with external ideas and make them believe in that these can be a great learning experience as well. Highly motivated and more interested students select their own ideas, whereas students that are assigned external ideas may not be as motivated.

The biggest challenge however was to push students, so they **focus on what matters**, e.g. the financial aspects. Therefore, teachers push the monetary aspects a little extra if students do not pick this up on their own. Students are more focused on potential customers and what can be offered to them rather than if this makes sense financially.

Successful cases can be of two types. One is when there is a very motivated student group that has been learning very fast and has continued after the course, starting their own business. But successful cases are also those in which the group has learnt a lot and understood the process, but have concluded that this is not an opportunity that they would like to pursue.

One challenge with this type of collaboration is to determine where the course ends and where the extracurricular activities start. Teachers made clear what is part of the course, what is evaluated and what is expected, but then they encouraged students and point out to them that there are a lot of resources around, assistance, money, which they are free to use, apart from the coaching.

Experiences from the partner

The cooperation partner, GU Ventures, is the coordinator of the initial contacts between external idea providers and students. During the course, GU Ventures runs a **six-month pre-incubation process** together with the Business School. They have a "deal flow", as it is called, new projects come in and often these projects do not have an entrepreneur connected to it. After the six months, the projects may be transferred into the ordinary incubator business and it is then possible to invest in the companies. The idea is that **students can follow along and work in these companies**. It was however decided to **work with service-oriented ideas** with the Business School since students are good at identifying and developing business. The cooperation partner appreciates that students taking the course are focused on entrepreneurship and very committed to that. The students are generalists, i.e. business developers and economists. As a result, the partner can experiment with different industries.

An extra benefit for GU Ventures is that the collaboration enables them to handle ideas that are not connected to the University. The partner can **work with diverse promising external projects** that through this course are linked to University.

A further advantage pointed out by the partner is that there are not too many tools, the **focus lies on the Business Model Canvas**, successively **digging deeper in all its different parts**. Critical factors to evaluate a case are identified. Following the partner, the Business Model Canvas has turned into a trend in the incubator world and everyone knows the concept, which is an advantage.

> *Good practice example: Business Model Canvas*
>
> "During the course, we use the Business Model Canvas as a way to visualize the business, and we go through all its parts during the semester. When we coach we sit down together with the students and take a look – how did they work when looking at the cost structure, what will it cost, make a budget, all of this, whereas next time we may be looking at value creation, what value proposition do we have, who are the customers and who are partners in this. So, we go through all the boxes of the canvas systematically." *GU Ventures, Partner*

As to the learning process, the partner believes that students learn many things they may not even be aware of, especially relating to the organization of promoting a start-up, the way students divide the work in-between themselves, how they see to that the group makes progress every week and considering these small steps forward as being part of a journey towards a goal.

"I feel that students learn a lot from working operationally and hands-on, especially around how to organize the building of a start-up. Also, the regularity of the coaching and the fact that we stick to one model, the Business Model Canvas, I believe they learn a lot from that." Partner, Methods of Practical Entrepreneurship, Gothenburg

GU Ventures does not have a primary focus on sustainability, but the **contribution to sustainable development is taken into consideration** in the selection and assessment of the projects. The partner has worked with the United Nation's **17 global sustainable development goals (SDG)** to determine which of the companies in their portfolio are addressing which of the goals. When new companies are taken up, they are analyzed in terms of the SDGs that they address (e.g. improving education, better health etc.). The **partner can have an impact on companies to work with these goals**. Also in the coaching with students, this is taken up. But the project should be sustainable both from a macro and micro perspective, i.e. the business should also be sustainable from an economic perspective.

Challenges with the course design are that six months is a short time, although there are some good examples of companies that made it to GU Ventures' portfolio, enabling the partner to continue promoting the start-up. Extending the period to work with the projects would be desirable. It must be kept in mind that **these projects should turn into growth companies**. This is a requirement from the Region Västra Götaland; the companies should create new jobs in a short-term perspective.

Another challenge is when the project is discontinued after the course. Although it certainly still is a good project for the university - students have learnt a lot - it is less advantageous for the partner. The whole idea is that students should get involved and in some way, continue working with the project to safeguard their competencies.

Some **external idea providers** of the pre-selected ventures also shared their experiences. They were generally positive to the collaboration and were in close contact with their group throughout the entire course. The collaboration was smooth, and the students were ambitious, meticulous, and enthusiastic. The idea providers were mostly satisfied with the cooperation. The thematic focus was well chosen, and the idea providers personally learned something from the collaboration, for instance the questions addressed by the students stimulated reflection. A particularly useful outcome of the cooperation in a longer perspective was all the material collected and the documentation developed by the students. This provided **plenty of new knowledge and insights**. What could be improved from the perspective of the idea provider was to get more information on the design and content of the course from the start.

Good practice example: Value Creation Forum

During the course, the workshop format "Value Creation Forum" is used recurrently. Its purpose is to give effective feedback in the incubation process of a start-up company. A panel of invited guests listens to a pitch of an innovative idea. Each guest has a role to play, which is made clear with the help of hats and glasses. A green cap sees possibilities, a white one represents the investors' perspective and a red one is problem-oriented. Guest wearing glasses represent the customer perspective. Each participant gives feedback from the perspective of the role he is assigned. The company has then the chance to change its pitch based on the feedback received and the process is repeated, possibly with different roles. The roles can also be adapted to the kind of pitch that is held. This method has its roots in the NABC tool developed by SRI International in Silicon Valley (formerly Stanford Research Institute). In this specific course, the students step into the different roles and thereby are able to practice peer coaching.

Supporting material

- Business Model Canvas
- Value Creation Forum

G. Vienna Pilot Highlights: Garage: Build your own Start-up

In this course, students learn to implement instruments and methods that help to discover, evaluate and realize technology-oriented, explorative business ideas. Students have the possibility to bring in their own business ideas and develop them further in interdisciplinary teams of 4-5 students within a structured process. The basic principles of idea generation, searching for business possibilities and the methods to be employed during the semester are presented and discussed at the kick-off session. During the process, the teams are supported by the teachers and by external mentors in both online and offline coaching sessions, with the goal of transforming an initially rough idea into a convincing business concept. The results of the start-up planning process are summarized in a business proposal. The course is built around several interactive workshops, combining various teaching methods to impart multiple topics and skills. Among these are open discussions, coaching sessions, expert talks and regular presentations of results. At the end of the term the student start-up-teams present their business ideas in front of potential investors and other experts (external jury members). The interdisciplinary teams from three different Austrian universities and diverse fields allow – like real start-up situations – various perspectives, skills and competencies to shape the business idea and its implementation. Likewise, the external coaches have different backgrounds and are from a variety of institutions, each providing his/her expertise to the course (e.g. Management consultants, lawyers, representatives from Venture Companies, the Economic Chamber of Austria, the Austrian Research Promotion Agency etc.). The Garage received the "Award for Excellent Teaching 2011" at WU Vienna and stands out due to its highly interdisciplinary setting.

Experiences from the participants - students

Students not only come from **widely different academic backgrounds**, e.g. business informatics, industrial engineering, marketing management, economic law and finance, spatial and regional planning, environmental and bio resource management, but also bring substantial **professional experience** into their teams. Overall, the students were very satisfied with the cooperation with the teachers and external coaches. The open space for development created, granting freedom within the basic framework of the course, was promoting students' creativity, and found exciting. Students

experienced a very good cooperation with all actors. They received highly informative input, which gave direction to the teaching process and the start-up project. Generally, the organization of the course was very personal and uncomplicated. Teachers always had an open ear and gave support with advice and action. Students also appreciated the **creative atmosphere when working in interdisciplinary teams** and the fact that they could decide whether and how intensely they wanted to cooperate with their coach.

"The different backgrounds (students and teachers from different universities, coaches from across sectors/supporting infrastructure) have definitely contributed to creativity in the team." Student, Garage: Build your own Start-up, Vienna

The **personality, professionalism and expertise of the coaches and practice partners** contributed much to the positive experience of the student groups. They were described as exceptionally competent, friendly, motivating, helpful and very dedicated. Students perceived that their coaches granted them all the space they needed, while allocating plenty of time for meeting them at the university or over Skype. It was particularly appreciated that the coaches were uncomplicated and gave good, practice-oriented input. This included **valuable know-how about the industry, markets, and competitors**, but also what is important to investors. From the students' perspective, **learning what is relevant in practice** is key and cannot be replaced by theories and conceptual design.

The external coaches, bringing in experience from for instance consultancy, seed funding and corporate development, played an important role in many aspects. Their help in the process was invaluable also regarding **acting as strong motivators and promotors**. Students learned from the personal experience of the coaches what an entrepreneurial approach means in reality. Thanks to their **contagious enthusiasm**, coaches acted as catalyzers, **spreading the entrepreneurial spirit**. This contributed to a change in personal attitude; students learned for instance that they needed to be much more open and proactive when it comes to creating a support network for start-ups/business ideas. The variety of actors involved in the course and the personal network of the coaches created a good foundation for a more proactive approach.

"I really appreciated the personal exchange of information and the degree of enthusiasm that one exerts on one another." Student, Garage: Build your own Start-up, Vienna

The coaches also gave the teams confidence that their ideas and projects mattered. For instance, one team was boosted by their coach who was personally interested in their idea, seeing synergies with his own work. Declaring his interest to work with the project even after the course, the coach showed that the project was relevant beyond the context of the course. Further benefits were that the external coaches could **provide students with a broad network**, advice on legal aspects and prototype testing, amongst others.

On a practical level, **communicating a complex idea in understandable and purposeful way** was one of the challenges to be mastered. Through **pitch training**, students learned how to improve their personal rhetoric, presentation techniques as well as how to hold a proper pitch.

Some student teams got in contact with a business themselves to check whether their concept was of interest, getting to know minimum requirements and attitudes, which provided a good basis for decision-making. Also, possible future cooperation was discussed. Another team established their own start-up during the course, thereby being "their own practice partner".

In sum, students were granted **support from multiple actors**, whereas the external coaches got across the key messages from their field. An additional positive circumstance is the supportive environment for start-ups in Austria (for instance Vienna Business Agency, Incubator Hubs, Accelerator Programs, Angel and Venture Capital Investors, regular events or competitions).

We were given free hand, which is very motivating and allowed to break out of very regimented everyday life at the Uni. The whole format is very much based on self-discipline and probably just because of this creativity-promoting and exciting." Student, Garage: Build your own Start-up, Vienna

Some suggestions for improvements for future courses related to the communication of dates and the timely provision of the course requirements. A few students did not know from the start what had to be performed and submitted.

Moreover, due to specialization, some student projects would have required additional expert knowledge, which could not be provided. Matching projects with relevant companies or coaches from the same industry remains a challenge. Further workshop options, for instance deepening legal aspects or clarifying the internal organization of start-ups, would also have been appreciated by some students.

Experiences from teachers

The **teachers** were satisfied with how the course and the collaboration with the external actors worked. The collaboration was efficient and effective, and everything turned out well, also since the course had been running already for several years. According to the teachers, the success of the cooperation depends on the organizational talent of the course instructor as it is not always easy to coordinate students and practice partners. The role of the teachers can best be described as a **facilitator with significant organizational talent**. In addition, the variety of formats of this university course is clearly a strength.

The course enables students to further develop their ideas and projects. From the teacher's perception, the support from the external coaches, people well-known in the Austrian start-up scene, strongly affected students' learning processes. Some teams **radically changed their initial business model,** and many wanted to establish a start-up for real after getting help from the coaches. Coaches provided valuable input as to the business model, market analysis, and the founding of a firm, amongst other aspects. In addition, **external workshops were organized within different areas of entrepreneurship**, e.g. online marketing, legal aspects, pitching, crowdfunding, etc. These were always well-attended and provided supportive learning environments for students.

The **work in interdisciplinary teams on a concrete project**, the iterative process and practice, as well as the close cooperation with the external coach, generating continuous feedback, were success factors of the course. Also, in the teacher's view, the variety of people and their diverse knowledge, ranging from established entrepreneurs to external jury members and funding agencies, helped student teams to take advantage of different ways of feedback and review options.

Experiences from partners

The **cooperating partners** had various functions, acting as external coaches or jury members. Their broad expertise in terms of business model, target groups, communication strategies and technical implementation as well as their entrepreneurial spirit **encouraged students to really work on the actual implementation of their ideas**.

From an organizational point of view, partners appreciated the professional course structure, thorough preparations, and smooth cooperation, especially with regard to communication issues. The experience exchange with the university and students was useful and effective. Relationships could be established for the future. The interaction with the students brought fresh creativity and interesting ideas also for the coaches. Finally, they also benefitted from the coaching experience as it is good practice for them.

3.3.1.4   Format 4: Case Study in Sustainable Development

<div style="background:orange;">

Transdisciplinary project work for sustainable development in a local context

</div>

Effectiveness of the format Case study in Sustainable Development for sustainability-driven entrepreneurship education

The format has the ambition to enable students **to create knowledge about relevant and complex societal problems**. While combining knowledge from science, industry, politicians, and citizens the format presupposes transdisciplinary knowledge. Students gain critical awareness of the sustainability understanding and engagement of the cooperation partners. The format is well suited to give students a profound understanding of **sustainability issues in a local context**, and how they are shaped by the interests of different actors.

Before students decide on a project, it is necessary to enable them to gain in-depth knowledge about local sustainability challenges. Thus, an excursion, introducing students to the area under study is a vital ingredient of the format. Prior theoretical input is also recommendable.

A further feature that makes the format effective is the **large degree of freedom** granted to the students in designing and investigating their project, which gives them experience in running a project from start to end. Nevertheless, coaching plays a vital role and teachers should see themselves as coaches instead of experts. The coaching can **provide space for reflection** and help students to handle problems and stress.

To sum up, three benefits speak in favor of the format: 1) It enables students to gain valuable experience in **interacting with actors and stakeholders in society**; 2) Students acquire an advanced and critical understanding of the notion of sustainable development as a complex phenomenon and strategic tool; and 3) Students acquire project management skills that create action competence to address sustainability challenges. These three benefits are a vital prerequisite for sustainability-driven entrepreneurship.

Potential of the format Case study in Sustainable Development to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High

Working with a **complex sustainability-oriented task** in interdisciplinary student teams, the format allows for students to train various competencies for sustainability-driven entrepreneurship, most prominently strategic and interpersonal competencies, but also systemic competencies.

Belonging to the skill set of strategic competencies, students' **project management skills** are

fostered. Students are granted large freedom in designing their project, which involves defining a problem and focus area, but also determining the limitations of the project, and subsequently planning and running the project in an independent and self-directed matter.

As the experiences and the understanding of practitioners and locals are the focal point of the investigation, students train their **interpersonal competencies** by identifying relevant stakeholders, e.g. citizens, politicians, business representatives, and gathering data with the method that seems most adequate for the study purpose. Thereby students gain experience with **interacting with a wide range of societal actors** and stakeholders, and get insights into their work. Moreover, the different types of knowledge and information gathered need to be assessed in terms of relevance and accuracy.

Working hands-on with a complex sustainability-oriented task also fosters students' **systemic competencies**. For instance, students must handle different viewpoints, conflicts, time pressure, and despite these difficulties, work in a pragmatic and result-oriented way. They gather experience in leading and working in interdisciplinary teams as well as organizing and holding meetings with different stakeholders.

In this **transdisciplinary setting**, students gain awareness of and learn from the sustainability engagement and knowledge of cooperation partners. They also learn to handle contacts and communicate with industry and diverse stakeholders, which, in the longer run, may lead to career opportunities.

An important take-away for students is also the understanding that the **case study is important beyond the course context** and own learning experience, for instance for the development of the municipality under investigation.

H. Swedish Pilot Highlights: Sustainable Development – A case study approach

The case study course within sustainable development is a transdisciplinary course at master level given jointly by the Department of Economy and Society and the Faculty of Science. It was held for the first time in 2002 when Prof. Roland Scholz, who developed the format, was a guest professor at the University. In this course, students can work intensely with the concept of sustainable development, dealing with opportunities and challenges of the phenomenon in both theory and practice. Each year, the course investigates a unique case study area in Western Sweden. In the current period, the course focused on the Northern Archipelago of Gothenburg, more specifically the municipality of Öckerö. The course consists of literature studies and a number of initial lectures, followed by a one-day excursion to the area under study. Students, working in interdisciplinary groups of 3-4 people, identify and frame a specific problem in the focal area which they subsequently map and analyze with appropriate research methods. For ten weeks, they plan, carry out and evaluate a project based on the problem identified in close collaboration with authorities and other relevant stakeholders, such as companies, NGOs, and citizens. Students also receive supervision by the teachers. In addition, each student writes a personal 'project diary' throughout the process, aiming to keep track of his own work process and the work within the groups.

Students are granted a large degree of freedom in designing their project. They get valuable experience in interacting with actors and stakeholders in society. The work results in a written report, which is presented orally and discussed in class at the end of the course. In spring 2017, there was also the opportunity to present the work as a poster at the International Congress on Coastal and Marine Tourism held in Gothenburg.

Experiences from the participants - students

The topics that students chose to work with all related to locally debated issues. One of the groups investigated opinions towards a proposed bridge from the mainland to Björkö, conducting interviews with representatives from the municipality, local organizations, and citizens. The group was very satisfied with their choice of project and the collaboration within their group. Another group, studying a planned solid waste plant on Björkö, interviewed suppliers of equipment and machines for waste management, representatives from the municipality and local citizen to investigate their opinions on waste handling on the island. The two remaining projects dealt with marine spatial planning and its impacts on local communities as well as nature's role in social integration.

Most students appreciated that they were **granted a lot of freedom** and therefore were partly able to "create the course on their own". At the same time, quite naturally, this was also perceived as challenging by some. Maybe the biggest challenge, as mentioned by the students, was not to make the project too big.

Students were generally very satisfied with their achievements during the course. This related to both group work, their personal performance in the field and regarding the written report. Group work made the course more enjoyable thanks to a good division of work and good collaboration, helping each other out when needed. Furthermore, students could improve their abilities to discuss and argue complex issues in English. Students also raised that the diversity of academic skills and personal opinions required the development of additional interpersonal skills and techniques. Students had to handle the fact that there was a lack of formal hierarchy in combination with the absence of any direct accountability. Working in group thus **fostered complex personal skills** that went beyond dealing with the actual task at hand.

Although most students were satisfied with the group work, some would have wanted a better group mix, i.e. a larger variety of backgrounds. To the contrary, for one group, the diversity of the group resulted in little collaborative work, except for writing up the report at the end. This was lamented by some group members who would have liked to better take advantage of each other's knowledge. A conclusion from this experience is that if diversity is too high, collaboration risks diminishing, if teachers do not actively facilitate it. Moreover, some experienced students (with geography studies) complained about the lack of insight and understanding of fellow students on how to conduct a case study in a group. This points at the need to deal with this kind of issues systematically, be it in a preventive way or reactively at supervisory meetings.

Working in the field was a highly valued experience. There was broad agreement among students that their project greatly benefitted from the field work done. Most students also believe that improving their skills to conduct field work is beneficial to their future career. They not only got a considerable number of **new personal contacts**, but also improved their ability to **identify and approach different relevant actors**.

Interviews were the most common form of data collection, whereas some groups also used social media for communicating with local individuals. Students experienced personal interviews as a very pleasant form of interaction. People were nice and helpful, openly sharing their thoughts despite the fact that sensitive questions were addressed. Given the considerable number of interviews conducted, **students' interviewing skills developed** over time.

Experiences from interacting through social media were more mixed as opinions were expressed rather strongly and the students' involvement in the debate was not always welcomed. Interacting with municipalities was appreciated by some groups, while others struggled with slow replies and a

shortage of relevant information. It was also difficult for students to know in advance which stakeholders would be relevant. Hence not all material collected was very useful.

Nevertheless, students organized their work well and were able to **collect their material in an effective way**. Beyond data collection, students learned to use new ways of sorting and analyzing data. They generally learnt more about what it takes to work more independently and to plan, perform and write up the project work.

Students were very satisfied with their work and trust that their cooperation partners feel the same. For instance, they could point out a new opportunity to a cooperation partner. Regarding the time aspect, some students felt that the duration of the field work was too short, but that they nevertheless were able to produce good results given the resources and timeframe.

"We provided information to one of the cooperation partners that they had an opportunity that they were not aware of. If that will work out, that would make me very happy." Student, Case Study in Sustainable Development, Gothenburg

When it comes to suggestions for improvements, students felt that the cooperation partners would need to get better information about the students' skills and earlier information about their project ideas. Generally, the main stakeholders and cooperation partners could be better prepared and integrated into the course. Students would also have wanted to get more distinct information on how to work in this type of project. Nevertheless, many students were positively surprised how fruitful the chosen methods were to achieve the course objectives.

Teacher experiences

The teacher was satisfied with the outcomes of the course. He was both surprised and impressed by the quality of the students' reports, which he considered to be mature and self-critical.

The cooperation with the partners was based on previous personal contacts, whom he asked if they wanted to cooperate with the students. The teacher mobilized people he knew had useful contacts and were involved in the issues studied. Furthermore, the teacher used different Facebook groups and contacted nature guides on the Island of Björkö. At the outset, the course leader introduced the methods and tools, e.g. how to conduct interviews and surveys, to the participants. During the process, **regular supervisory meetings** were held. Each group had their own **supervisor with experience in the field of study**. Students were also required to write a **personal 'project diary'** to record their experiences.

The teacher was proud of how the students handled upcoming problems. He thought that they were very talented and showed mature behavior. Generally, the cooperation strategy applied by the course leader worked well, but the teachers seemed to have overestimated (some of) the students' communication skills. The students have a 'sender perspective' and need to better understand the situation for the receiver, the cooperation partner. Hence, **students might need advice on how to communicate their project clearly** to the partners and how to move the project forward despite slow responses and time restrictions of cooperation partners.

Furthermore, the capacity to handle stressful situations differed between students. One of the students left the course in advance, most likely because she felt too much stress having to present their work orally. Thus, students should be better prepared for the oral presentation and taught how to handle stressful situations.

From the students' criticism, it becomes obvious that it is challenging for teachers to accommodate the different backgrounds and levels of knowledge of the course participants in the introductory part of the course. For instance, the lectures introducing the concept of sustainable development were too basic for some students and at an appropriate level for others. Some students would have preferred an introduction into more long-term, systemic sustainability challenges, while others would have preferred to spend more time in the field instead. Given the diversity of students but also the changing prerequisites brought about by **choosing a new location for study each year**, it seems challenging for the teacher to adequately prepare the students for the field work and provide relevant lectures. This should be kept in mind when introducing the course format for future students in order to manage their expectations.

The course leader and the teacher call for better financial resources to give more time for tutorials and preparation (something that has been provided from different source over time, but remains insecure). This could compensate for the extra work required to accommodate the specific course format and allow for the reports to be printed out and provided to the cooperation partners in an attractive format.

Experiences from partners

The cooperating partners' answers are from private actors and officials interviewed for the project investigating the possible construction of a solid waste plant on the Island of Björkö. The respondents were generally satisfied with the cooperation with students. They found the thematic focus of the investigation suitable for them and were happy with the research methods applied. Data collection occurred mainly by way of interviews, but respondents were also in mail contact with the students and hinted at colleagues who have the knowledge require to advance students' projects. A problem raised by the cooperation partners is that they get many requests for interviews. Therefore, it is very important that the course leader early on provides relevant information about the course and its objectives, i.e. before students get in touch and ask for an interview. Similarly, it is important that students highlight that they work in a transdisciplinary project at university. Otherwise, their request could disappear in the mail flow, leading to delays in their process. **Communication issues are very important for the partner** and they think that students could be clearer on that point.

In sum, the cooperation partners show different appreciation of the students´ abilities and it is obvious that the **benefits for the cooperation partners are low**. Assumingly, one of the reasons is that they did not have time to read the full reports before giving feed-back. The benefits for the partners could be enhanced if the (four) project reports were made more coherent and provided in a printed version. This could **promote a more long-lasting discussion between the cooperation partners and the citizens**.

3.3.1.5 Format 5: Sustainability Screening

Students evaluate the sustainability practices and performance of a company and provide suggestions for improvements

Effectiveness of the format Sustainability Screening for sustainability-driven entrepreneurship education

The format is well suited to introduce students from different disciplines with little prior knowledge on sustainable business to the complex realities of managing corporate sustainability issues. It is a good way to connect theory with practice and to create awareness of the practical difficulties and limitations for corporations wanting to develop their sustainability performance.

The fact that students get to **interview a corporate representative** (CEO, Sustainability/Environmental Manager) of their case company and pose questions about the firm's sustainability efforts **creates significant engagement and motivation** with the students. Working with a real case and potentially making an impact on the company's sustainability practices was the most appreciated learning experience. It was also valued that the companies were pre-selected and meetings pre-arranged.

Before the visit to the company it is important to **thoroughly prepare students**, providing them with suitable tools for analysis, and making sure they understand the greater sustainability challenges that their case company and the sector it operates in faces. The format has the capacity to **spark interest in sustainability issues with business students** and sensitize them for the grand challenges that the business sector faces. Sustainability Screening may also be a first step to **prepare the ground for a more far-reaching engagement** with a company, for instance for collaborating within the framework of a Service Learning project.

Potential of the format Sustainability Screening to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High

In terms of competencies for sustainability-driven entrepreneurship, the format's strength lies in developing **strategic competencies**. Students were able to tie the theory from the course to a real case company, which deepened their understanding of how sustainability issues play out in practice. Furthermore, they gained **skills how to source relevant information** (annual reports, homepage, interview) and **how to thoroughly examine a company** (business plan, operational levels etc.). In parallel, students acquired skills, **how corporate sustainability performance can be evaluated**, which simultaneously gives them the analytical toolbox necessary to come up with relevant suggestions for improvements and make a real impact. They also learned that satisficing may be necessary in the absence of perfect information.

Students further gained **systematic competencies** in the form of improved understanding how companies work with different sustainability dimensions. **Interpersonal competencies** were fostered through group work, learning to collaborate, and realizing that this can be challenging. Interviewing a corporate representative made students gain confidence in interacting with professionals, especially given the positive experiences made. **Normative competencies** were fostered through students **learning how to deal with different dilemmas in the sustainability area from a broad perspective**. Students also realized that **there often is a gap between academic knowledge and reality**. It can further be concluded that the learning situation fostered personal engagement and problem-solving skills. Beyond the competencies, students **gained inspiration from companies that act as role models**.

I.   Swedish Pilot Highlights: Sustainable Management

Sustainable Management is an elective course at the Master's Programs, enabling students to sharpen their analysis skills in sustainable business. An important part of the course is the Sustainability Screening Case, giving students the opportunity to perform an in-depth study of the sustainability practices and performance of a medium to large-sized local company by analyzing important attributes of existing and plausible sustainable strategies. The analysis is conducted in groups of five students, based on desktop studies and at least one interview with the CEO or CSO of the company. The aim is to foster a holistic understanding in the field of sustainable business and improve students' analytical skills by connecting theoretical knowledge with corporate sustainability practices.

Each year companies from different sectors participate, enabling students to maximize their aggregated learning experience. In 2016, companies within the area of energy, transportation, housing, manufacturing, and consulting participated. Prior to the interview, student groups create an analytical framework in class with the help of a series of workshops and lectures. After interviewing the company, student groups prepare a written report which is presented in class. The companies receive feed-back through a presentation from the group and/or by getting access to the written report.

Experiences from the participants - students

Students thoroughly enjoyed the cooperation with the company and considered it to be the best part of the course. Conducting an interview at the company was highly appreciated and most students consider **working with a real case company** to be **a unique and exciting experience**. The sustainability screening was a good way to **connect theory with practice** and raise awareness of the practical difficulties and limitations for corporations wanting to develop their sustainability performance.

Nice company, open for change, co-operative - if they have the right attitude, it is a win-win situation for both the company and the student." Student

Students appreciated that the companies were pre-selected and meetings pre-arranged, saving time and effort for students and increasing the willingness of companies to collaborate. Although the preparatory workshops were appreciated, students still see room for improvement there. Furthermore, the learning situation for non-Swedish speakers needs to be improved as in some cases information was only available in Swedish. Other students commented on the differing prerequisites as every group had a different company to work with.

"A general lesson seems to be that sustainability work is mostly something that is done on paper and not in reality." Student

Some deeper insights were gained, e.g. that a broad perspective of sustainability is necessary to implement it in a reasonable manner, that companies' willingness to become environmentally-friendly often depends on the importance their stakeholders put on the issue and that sustainability work mostly is done on paper and less in reality. Moreover, students observed that there is a **gap between academic knowledge and reality**.

The learning setting fostered personal engagement and problem-solving skills. Students felt that they improved their competence regarding knowledge about the field (industry), **learned how companies work with different sustainability dimensions** and handle various dilemmas in this area, as well as gained skills how corporate sustainability performance can be evaluated. Listening to the presentation of other groups further broadened their knowledge.

"I learned that the world is not perfect, and we may not find all the information we need, but we have to work with that." Student

Good practice example: teacher preparations

It is extremely important to inform the corporate representatives about the purpose of the exercise and what the expectations are! In practice, this often means to restrict the general presentation of the organization to a minimum so the students get enough time to ask questions. It is also important to contact the companies well in advance, preferably three to four months in advance. The time for the interviews must be booked before the course starts. If the companies are outside of town there need to be some travel arrangements made, e.g. suitable time tables and purchase of tickets etc.

Experiences from the teacher

In the teacher's view, meeting professionals and discussing their challenges to develop corporate sustainability, is by far the most **meaningful experience for students**. The teacher was satisfied with the set-up, although the time **constraints of the interviewees** may be a difficulty. An experience made by the teacher is that it is vital to **thoroughly prepare the students** before they meet the professionals. Contacting the companies and booking interviews well in advance (preferably 3-4 months) is necessary. This is needed to enable students to **get an understanding of both business-related and sustainability-related issues that go beyond basic knowledge**.

"It's important to prepare the students well beforehand, so they use the time to get beyond basics." Teacher

Companies are selected either through personal contacts or through an intermediary, Miljöbron, a university-sponsored organization that connects companies and students to work on sustainability-related projects. It is crucial to inform cooperation partners about the purpose of the exercise and expectations. In addition, students may need **help with travel arrangements** if the company is located outside of town (tickets provided by the course).

Regarding the case analysis, students choose a suitable framework by themselves, but are familiarized with several frameworks from general business management (Business model canvas, accounting and reporting systems, sustainable strategies, etc.). The groups present their frameworks and interview

guides in class before the interview, so they can still adjust before visiting their company. A challenge of the set-up is that teachers need to be experienced to **give a broad and critical perspective on the students' preparations**. If this is the case, the set-up works well.

One drawback worth mentioning is the teachers' **limited control over the cooperation partners' performance**, which may influence students' learning experience. It is recommendable that groups be composed of both Swedish and foreign students to overcome potential language barriers.

"Generally, the set up works well, even though it is hard to get enough time with the company representatives." Teacher

Partner experiences

The cooperation partners were satisfied with the choice of thematic focus and also appreciated that **only little preparations were required**. They were cautiously positive about the benefits for the company. To get leverage from the students' work, students would however need to put more time into the project. In some cases, partners would also like to see more of the results of the group work.

One of the partners considered the value of the cooperation to lie in that students arrived at the **same results as their internal investigations** did. Furthermore, **being interviewed created reflections** about the company's sustainability efforts, made the staff think and was a revelation.

"Getting interviewed created reflection about the company's sustainability efforts." Partner

The partners appreciated the coordination of the contact via an intermediary, which worked smoothly. Thanks to the intermediary, no direct contact between teachers and cooperation partners was necessary. It was pointed out by students that cooperating partners got involved in the project work to differing extents. Some only gave an interview, whereas others supported the student group during the whole process (by mail and phone). Students may perceive such differences in treatment as unfair.

Despite minor difficulties, both teachers and partners find the collaboration to work smoothly and time-efficiently.

"I appreciated that only little preparations were required." Partner

Supporting material
- The generic Business Model Canvas

The following courses relate to Module 1.3 of the CASE master program: Interactions in multi-scales (see Figure 1.1, page 9. From Biberhofer & Bockwoldt, 2016, p. 73)

- Sustainability Challenge (conceptualization phase)/Region Vienna Summer Semester 2016/Winter Semester 2016/17
- Service Learning Course, Seep Master Program/Region Vienna
- Participatory research with people of the region/Region Vechta/Summer Semester 2016

3.3.2 In the field

Four different cooperation formats are based on experiences gained in the field: Internship, Field trip complemented by case study as well as Excursion, Figure 3.2. The formats are described in more detail in section 2.2.5.

```
                    ┌──────────────────┐
                    │   In the field   │
                    └──────────────────┘
          ┌────────────────┬────────────────┐
  ┌──────────────┐ ┌──────────────┐ ┌──────────────┐
  │              │ │  Field trip  │ │              │
  │  Internship  │ │ complemented │ │  Excursion   │
  │              │ │ by case study│ │              │
  └──────────────┘ └──────────────┘ └──────────────┘
```
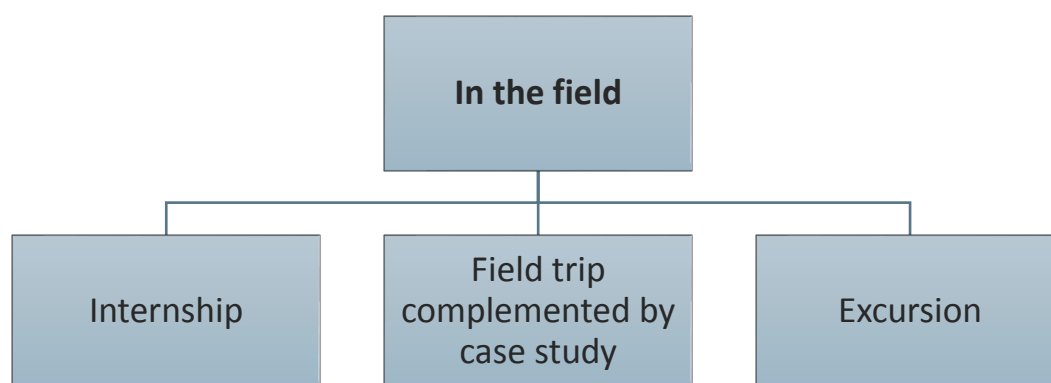
Figure 3.2: Cooperation formats in the field

3.3.2.1 Format 6: Internship

Students gain real-life experience within an organisation – from start-ups to established companies

---

Effectiveness of the format Internship for sustainability-driven entrepreneurship education

The format builds on inter- and transdisciplinary exchange, providing an **authentic experience of the world of practice**. Students gain professional insights into a new sector or area depending on the activities of the partner and can apply theoretical knowledge within their organization. In addition, students gain a **contextual understanding of sustainability** issues related to the partner's activities. Furthermore, students learn to tackle practical obstacles and improve their action-competence more broadly, which are important characteristics for sustainability-driven entrepreneurship.

Overall, the format builds on **high independence and self-responsibility** of the students. Developing these traits is also well in line with what it takes to become an entrepreneur.

It is also crucial that students experience a feeling of **autonomy and mastery** during the internship. This allows students to be creative and to develop self-confidence, which likewise represent important assets of entrepreneurs.

It is concluded that the format is appropriate for gaining experience in the field of entrepreneurship in general and sustainability-driven entrepreneurship in particular, if students are able do their internship at a start-up company with a sustainability-driven business model. In this case, the format is regarded as **highly effective for sustainability-driven entrepreneurship education**.

Some learnings as to this type of cooperation drawn from the investigation are that the internship should be longer than three months to give good results. Furthermore, a **kick-off event** is a favorable setting for cooperation partners and students to get to know each other. **Careful matching of students and partners** is also necessary (student disciplinary specialization and interest should fit partner needs, particularly in a sustainable entrepreneurship context). Furthermore, **extensive briefing** of students and partners is key to clarify expectations and set a fruitful frame for the cooperation.

For the start-ups, working with young, creative people is beneficial and may contribute to the progress of the company. Students bring in new ideas, concepts, and alternative approaches, especially through working in interdisciplinary teams.

Partner characteristics such as **openness, flexibility and spontaneity** are beneficial. Partners who generously dedicate time and efforts to the cooperation and who support the students in a competent manner without limiting them are particularly valuable.

Potential of the format Internship to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High

Internships allow students to get insight into the structure and functioning of companies while building context-specific knowledge and competencies. The format has a good potential to foster diverse competencies for sustainability-driven entrepreneurship, particularly strategic, interpersonal, and normative competencies, but also systemic competencies.

As to **systemic competencies**, internships train students' capacity to analyze **complex real-world** issues, evaluate difficult situations, and deal with contradictions and uncertainty.

Students further develop their **strategic competencies**, generally improving their action-competence and solution-oriented thinking. These competencies are fostered for instance when applying the gained theoretical knowledge in a practical context in connection with a project. Students **plan and realize their project in collaboration with a practice partner** while carrying the **responsibility for the whole life-cycle of** the project from idea to realization. In this process, they deal with complex information in a real learning situation, which allows them to train their **problem-solving competence** (e.g. ability to reflect, analyze and solve possible emerging problems). In the same vein, the project work also develops students' **time- and project management skills**.

An internship obviously also requires strong **abilities to cooperate and collaborate**, fostering the **interpersonal competencies** of the students. Students learned to **work together with peers from different** subjects, **which required relating different disciplinary perspectives to each other**. This improved their competencies in teamwork. The regular interaction with the partner also fostered

students' communication and presentation techniques, and students were able to train handling stressful situations.

Normative competencies were developed given that students applied critical thinking and **learned to question complex concepts**.

Pilot course J, Profiling Internship - Inclusion, relates to Module 6.1 of the CASE master program: Elective courses (see Biberhofer & Bockwoldt, 2016, p. 87).

The course should give specific insights into the following themes of the pedagogical framework:

- *Competence orientation: Active, student-centered and experiential learning. Inclusive pedagogy as the theoretical basis*
- *Learning to learn: high independence and self-responsibility*
- *Real-world orientation: Inter- and transdisciplinary project work*

J.   German Pilot – Highlights: Profiling internship – Inclusion (Internship to realize theory-practice transfer of Inclusive pedagogy)

This course aims at helping students understand the principles of the Convention on the Rights of Persons with Disabilities, appreciate disabled people's concerns, and understand the mechanisms and frameworks needed to translate the Convention into practice. In a preliminary block, students learn the basics of inclusive pedagogy. Subsequently, the whole student group makes excursions to all partners to get to know their work. This provides students with ideas for developing an own project. Then they write a theoretical concept for a project work with a partner, outlining its form and content. Students then get feedback on the project idea from the partner. The partner usually also provides a contact person with time and financial resources to support the student projects. During the practical period of the internship, students work in a project-oriented way and, while implementing their project, deal with relevant aspects of inclusive pedagogy within their partner institution. The aim is to organize 4 -6 events or workshops at the partner institution, lasting from two hours to a whole day. This enables students to establish a theory-praxis transfer and design inclusive settings. The format offers a great opportunity for students to develop small projects in collaboration with a partner, while allowing them to experience a new context.

When the course was piloted, three partners were collaborating for the internships: a social association working with disabled people, a social NGO working with refugees and a social association offering advice and information concerning inclusion. The next section reports on the experiences gained from the internship at the first organization.

Experiences from the participants - students

The **students planned six flexible events with their partner**. They met regularly with the contact person (approx. 1-2 hours/week) to present their ideas and plan for the session taking place the upcoming week. The partner supported the students' ideas and guided them in the right direction, giving feedback or elaborating ideas further. The contact person was always available for questions and students could get help when needed. They felt supported by the partner without being lectured.

Such a project also required students to be flexible, to adapt and change plans spontaneously, if some planned activity did not work out.

We were always supported by the partner, without being lectured; We had a lot of freedom." Student, Profiling internship – Inclusion, Vechta

The students were very satisfied with the cooperation. It provided them with **professional insights in a new area** in a relatively short time. They gained experience and knowledge as to how to deal with people, how to approach them and learned about their interests. The students were positively surprised about how open and friendly the disabled people welcomed them and worked together with them. It was a very interesting experience for the students to learn how people with disabilities live in a different life world.

"If I do such a project again, I know much better how to deal with people, how to approach them and what their interests are." Student, Profiling internship – Inclusion, Vechta

---

Good practice example

One of the events organized by a student team was related to the world championship in soccer. In preparation for event, a wooden soccer goal wall was built. Then the students planned and arranged a soccer tournament on a summer afternoon to which the disabled, their parents and all employees were invited. All involved greatly enjoyed the event.

Teacher experiences

The teacher shared that the cooperation has been running for three semesters. All along, **partners have been very engaged and supportive**. One reason for the good collaboration may be that the teacher had **consulted the partners already when designing the course**. Partner characteristics such as openness, flexibility and spontaneity further facilitate the collaboration. Naturally, partners must invest quite some time in the collaboration, but they also see concrete results. The projects developed by the students **meet a concrete demand with the partner**. As to the students, the teacher realizes that a critical point may be that **students have a lot of autonomy**, which makes them more motivated. She is positively surprised when comparing her expectations with the actual outcome. Also since students have **responsibility for the whole life cycle of their project**, from idea to realization, the results are very good. Given the success of the format, the teacher advocates a more frequent use of **theory-practice transfer as pedagogy**.

"A lot of creativity is set free!" Teacher, Profiling internship – Inclusion, Vechta

Partner experiences

The partner appreciated that the cooperation at their site was organized very openly by the teacher, **strengthening the independence and self-responsibility of students**. The students conducted the project highly autonomously in consultation with the employees. Students were well-organized, and the projects were well-developed and carried out professionally. Another benefit reported by the partner was that he was given **new ideas for his own educational programs**. Moreover, the employees can interact with students fairly frequently and get a counterbalance to their daily routine.

"The students organized themselves very well, were prudent and thoughtful in the collaboration."
Partner, Profiling internship – Inclusion, Vechta

"Our organization benefits from the professionally well-developed and carried out project offered by the students" Partner, Profiling internship – Inclusion, Vechta

Supporting material

- Syllabus

K.   Austrian Pilot Highlights: ECN TryOut

The TryOut course, using the Internship format, is an optional offer, additional to the universities' course program. The overall goal of the course is to give students the opportunity to experience entrepreneurship in the context of sustainability and enable interdisciplinary exchange within and in-between universities. The TryOut offers students the possibility to follow a young and innovative enterprise during a period of approx. two months. At the outset, both start-ups and students were carefully selected. Three sustainability oriented start-ups and one from the biotech sector could be recruited for the course period investigated. Students had to apply with their CV and a motivation letter and could mention their preferences for the start-up to work with. They were briefed concerning the expectations and the procedures. The selected participants were then invited to the kick-off event, where everybody got to know each other. After the definite choice of students by the start-ups, the internship itself began. Students were introduced to suitable challenges in the companies that they could find creative solutions to, working in interdisciplinary teams. That way, they could assist with problem-solving based on the knowledge gained from prior studies, each team member contributing with his own perspective and expertise. At the mid-term meeting, especially teambuilding was trained. Feedback had to be given every two weeks by both students and start-ups. All participants presented their work and shared their experiences at the final event. Course participants came from three universities, the University of Natural Resources and Life Sciences, Vienna, the Vienna University of Economics and Business and the University of Vienna and had diverse backgrounds. Currently, no ECTS credits are granted, but a diploma is handed out at the end of the course.

Experiences from the participants - students

The students were satisfied with the way the cooperation worked as it was **organized in a very flexible and interesting way**. Students were also happy with the choice of start-ups. The practice partners were selected with great care by the teachers, **carefully matching student profiles with start-ups' needs and expectations**. For obvious reasons, the integration of student teams in the companies differed depending on the organizational structure, the culture and the tasks at hand. The intention of the teacher

was that the tasks should allow the application and deepening of existing knowledge gained from the university. A **clear definition of tasks, responsibilities and goals** is important to give orientation to the students. Examples of tasks performed are marketing, e.g. design and production of stickers, performing an inventory of the stock, conducting surveys, maintaining the Facebook page, organizing a lottery, and searching for sponsors. Some students were able to deepen their computer knowledge, e.g. working intensely with Excel. Students found the tasks useful and practical. They **learned to work independently and to build trust**.

Students were able to practice intercultural exchange and tackle practical obstacles. All in all, the students could apply knowledge of their studies, learn about perspectives from other disciplinary backgrounds, get insight into the structure and functioning of companies, and improve their competencies in teamwork, communication and presentation techniques. Overall, experiences were positive, and students were looking forward to further cooperation.

A small change suggested by the students was to reduce the number of feedback rounds, especially in the beginning when there was not much to write about. Generally, the internship was considered to be rather short. Therefore, some students continued to work at the company until the end of the semester, although with reduced intensity.

Experiences from teachers

Teachers carefully planned and designed the course. In preparation, start-ups were scouted and selected within the universities' and personal networks. A pragmatic approach was used to get a **variety of start-ups as partners**. Thanks to the network of ECN, the coordinator, setting up the course went quite fast.

"The most important take-away from the course is the transdisciplinary approach, enabling students to take a look at and "try out" the start-up world." Teacher, ECN TryOut Vienna

Prior to the course, the start-ups were **briefed concerning the expectations and the procedure**. The briefing was performed with special care, making clear what the companies could expect (interdisciplinary motivated student teams), what the aim of the internship was (tackle challenges within their companies) and the **added value for the company (new ideas, innovative approaches, and solutions)**. Also, it was emphasized that students should be given a challenge, that they were not meant to just assist with basic tasks. The teacher however mentioned that the briefings concerning the student tasks and challenges did not work out well with all partners. Some of the tasks were more of an executive nature instead of creative and problem-solving.

The course was promoted through newsletters and social media to attract students from four different universities. Also, the students were thoroughly briefed about what they could expect (solving challenges at the companies and working in interdisciplinary teams), and about the aim of the course, **gaining practical entrepreneurial experience**.

According to the teacher, the **kick-off event**, where the teams came together with the founders, was a special moment. There he could see for the first time who was going to work with whom and what everybody was interested in and motivated by.

The matching of students and partners was however quite a challenge. There was a lack of students with a technical background, which was why one partner jumped off at the very beginning. It would have been desirable to have a more diverse and balanced set of participants, given that the course attracted mostly students from one university. Generally, the teacher expected the cooperation to be more intense with higher student engagement, now it ranged from 2 to 20 hours per week. This

however very much depended on the start-up, its field of activity and location. The teacher also realized that requiring fortnightly feedbacks from students and partners was too frequent.

Another event that worked well was the complementary mid-term meeting for students, working on and learning the formal and character part through **team-building games**.

"Practical experience for students should be possible more often and in various formats. Providing this other perspective leads to an enormous increase in students' knowledge and experience." Teacher, ECN TryOut Vienna

The most important take-away from the course is the **transdisciplinary approach, enabling students to look at and "try out" the start-up world**. Students could authentically experience entrepreneurship at eco-social or biotech enterprises. Another strength is the **interdisciplinary nature of the student teams** from different universities and various backgrounds. The teacher is positive that added value could be offered to both students and start-ups, given that all participants were content. He also felt that practical experience for students in various formats gives an enormous increase in knowledge. He would however like to extend the timeframe to a minimum of four to six months.

Partner experiences

The cooperation partner responding was invited to take part by the coordinator, who was himself a former intern at their company. The possibility to cooperate sounded exciting, especially getting the **opportunity to work with young, motivated people** and taking advantage of their creativity and potential to contribute to product development.

"The cooperation sounded exciting, especially the fact of working with young motivated people and their possible contribution to product development." Partner, ECN TryOut Vienna

The partner found the **cooperation easy and uncomplicated** for them; it was not perceived as particularly intense either. The partner and students agreed on specific days of the week when students would be present at the workplace, and the overall timeframe of the cooperation. This worked out quite well and resulted in "**some concrete and very beautiful results**" that were valuable for the company. The students were able to assist in construction work, which is one of the company's core activities. They realized a product development in the form of a **wine barrel as a compost toilet**.

The partner saw the collaboration as a nice form of exchange. She liked the idea that students should get the opportunity to gain an insight into practice. At the same time, she regretted not having any budget for internships, mentioning that this is impossible for a young firm like themselves. Instead, there is always something to do and to learn for the students. The success of the cooperation is also dependent on the personalities of the students, but having the students at her company was very pleasant.

To improve the cooperation, the partner would prefer a more specific focus on certain topics, either from the courses or based on the start-up's needs, which could bring higher added value. This shows that the **transfer of knowledge works best in a specific contextual setting**, which makes it necessary to give careful consideration to the coordination of the start-ups' needs and the students' disciplinary specialization and interest.

Summing up, the start-ups can work with young, creative people, who may contribute to the progress of the company. Although the contribution to the work of start-ups is limited, the interns bring in

ideas, new concepts, and alternative approaches, especially through the interdisciplinary teams. Results may be limited, but are possible and appreciated by partners.

Suggestions for improvements were to **extend the internship** as the overall period of three months was too short for this type of cooperation. Setting a longer timeframe and providing adequate resources (ECTS or payment) might improve students' engagement. It would also value their effort and work more explicitly.

3.3.2.2 Format 7: Field trip complemented by case study

The format provides an interactive journey outside the usual environment, which is complemented by a case study.

Effectiveness of the format Field trip complemented by case study for sustainability-driven entrepreneurship education

The format combines the benefits of an **informal learning setting in an authentic environment** with conducting a case study, which deepens the learning experience. Prior theoretical input, e.g. readings and reflections, and active participation and interaction with the partners, are prerequisites. The format is interactive and based on different forms of learning, e.g. questioning and experiencing.

Besides conducting the research activities required for the case study, students could also **experience the enthusiasm and entrepreneurial spirit of the partners**. They represent role models of sustainable entrepreneurs, showing commitment and inner motivation, both towards their enterprise and the cooperation. Using **story telling** as a communication tool proofed very effective to transfer knowledge and experience in a convincing and engaging manner.

The format has great potential to **give inspiration for students' own start-ups** and to lower the barrier for taking own action. Students realized that great projects can develop simply from an idea.

From the point of view of the partners, the format is quite convenient as it is **not very time-consuming** and the arrangements with the university are easy and flexible. Other important conditions for a successful cooperation are good prior experiences and a positive attitude towards cooperation by the partners. Good timing is another issue to consider as the possibilities may differ depending on the season of the year.

Potential of the format Field trip complemented by case study to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High

The format strengthens the **strategic competencies** of the students, enabling them to connect what they learned at university with how things work in the real world. A further benefit was that students learned about what the critical factors for entrepreneurship are. The format also fostered their **critical and innovative thinking**.

Interpersonal competencies were enhanced in various ways. Firstly, the case study developed students' teamwork skills. Also, practical research skills were fostered, such as preparing and directing an interview, as well as evaluating data.

Secondly, students' **discussion skills** and ability to argue improved, for instance exchanging thoughts about the concept of a sustainable society. Sometimes students were even expressing their

disagreement with the partners. Furthermore, students learned about the importance of cooperation for overcoming barriers.

The format allowed students to gain a more realistic and in-depth view of environmental businesses in a specific area, for instance how sharing services in the transportation sector work in practice. This experience was strengthened by students getting involved in the partners' activities, e.g. by watching them performing their handicraft or by testing bikes.

From a broader perspective, the format offered strong inspiration and led to **changes in mind-sets**, potentially leading to behavioral changes. The field trip also **sparked students' interest in new topics**.

Pilot course L, Studying Local Rural Systems, relates to Module 2.1 of the CASE master program: Processes and Management of Innovation (see Biberhofer & Bockwoldt, 2016, p. 76).

The course should give specific insights into the following themes of the pedagogical framework:

- *Real-world orientation: Inter- and transdisciplinary project work*
- *Learning to learn: anthropological and social-ecological field methods*
- *Role models: Interact with role models from local small enterprises in their authentic environment*

L. Czech Republic Pilot Highlights: Studying Local Rural Systems

This course aims at providing an insights and methodological training in studying local communities using anthropological and social-ecological field methods, and interpret the results within the framework of sustainability, environmental and development studies. Taking a systems perspective, the students are encouraged to look at rural systems as coupled socio-ecological systems (SES) with material, energy, land, labor, and technology as relevant variables.

Following the 1-day pre-seminar at the home university, the actual field trip takes place as a 5-day block in a culturally challenging environment (for example: Františkov village, near Třeboň, Czech Republic that is part of a Protected Landscape Area and Biosphere reserve area Třeboňsko) where further inputs are given, and actual field work is undertaken. Here students learn and experience how to establish contact, build rapport and interact in a culturally sensitive way. They also learn to design innovative field methods of generating data that provides relevant information on the functioning of local rural systems such as material and energy flows, time use, land-use, and to estimate quantities of society's stocks such as population, livestock, land, and artefacts. The seminar concludes with reflection on students´ experiences and results, and tries to interpret them within the framework of sustainability interventions.

For the case studies, students work in groups of 3-5 people and they can choose from the following real-life local small enterprises:

- a relax pension and a restaurant,
- a pottery and
- hobby farmers.

The experience is arranged according to inquiry-based principles. In working groups, students prepare their own research questions and learn how to design innovative field research methods for generating data that provides relevant information on the functioning of local rural systems, such as material and energy flows, time-use and land-use. Students conduct interviews and field research focused on the sustainability challenges and the social metabolism of the selected local enterprises. The results are interpreted within the framework of sustainability and development studies. This should give students an understanding as to how small enterprises and the local economy work and which contemporary topics and problems within the local economy are relevant to sustainability.

Experiences from the participants - students

Overall, the students appreciated the experience of the five-day field trip. The use of an **inquiry-based learning method** was very valuable in this context. Students liked the friendly and comfortable atmosphere in which the interviews took place, the nice locations, and the interesting topics. Visiting the potteries in Klikov, one notable example of student learning is that a deeper insight could be gained into how the pottery trade works regarding sustainability. Students also became aware of the importance of cooperation and the challenges to overcome the barriers between old-timers and new-comers in the handicraft.

Preparing for the field trip, students **learned to design their own research** according to inquiry-based principles. However, they struggled with the task to come up with questions that had not already been examined by prior student groups. Preparing for the interviews with the respondents was experienced as both challenging and very enriching. The challenging part was to direct the interview where the students wanted it to go and prevent it from derailing because of respondents' stories. It seemed that the partners wanted to stay in charge and provide their expert knowledge, which is interpreted as a top-down way of presenting, while students aimed at conducting their research with a bottom-up, emancipatory approach, based on their own interests. In any case, the collaboration provided students with experience as to how to conduct interviews and furthermore, they learned how to carefully evaluate data.

"Thanks to my cooperation with the respondents I have learned to conduct an interview, and I have learned more about how the pottery trade works in regard to sustainability." Student, Studying Local Rural Systems, Brno

According to the students, their most meaningful experience was the discussions with teachers and other student, **exchanging their thoughts about a sustainable society**. Students appreciated being allowed to fully devote themselves to this topic for a period of five days. Still, they would have liked to extend the visit to have some more time to explore the countryside.

Teacher experiences

Much like the students, also the teacher found the cooperation valuable and is satisfied with the way it worked in practice. From her perspective, everything was running smoothly. She shared that the cooperation is long-term and most of the partners have been part of the course already for four or five years. Moreover, it was convenient that the cooperation could be conducted together with an external partner from another university.

"The preparation before the personal interaction with the enterprises is crucial for the students to be clear on what they want to learn." Teacher, Studying Local Rural Systems, Brno

According to the teacher, the initial preparation phase when the research and personal interaction with the enterprises is planned is crucial for the students. It helps them to be clear on what they want to learn and to get the most out of the interview and the field observations. Nevertheless, she believes that the experience that is most valuable for the students is the **chance to visit the enterprises and directly interact with the people in their local environment**. Thanks to the chosen format, the role of the cooperation partners changes – they are not only the source of expertise, but also turn into students' research partners.

The teacher thinks it is advantageous to plan the field trip at the end of the course as this helps to better frame the students' experience. She further underlines that the **mix of partners chosen made the experience more interesting for student**s. In her view, a key prerequisite for the cooperation is the inner motivation of the partners who were willing to devote their free time to answering students' questions.

Furthermore, the teacher sees it as useful to invite the representatives of the enterprises for the presentation of the results of the working groups, taking place at the end of the course. Although they do not always show up, it is a gesture of making them partners in the students' research. For the students, this creates motivation to take the presentation seriously and think more deeply about what they are going to present and how.

"I believe most valuable is the direct interaction and the chance to visit the enterprises and talk to the people in their own environment." Teacher, Studying Local Rural Systems, Brno

Experiences from partners

Overall, the cooperating partners liked the cooperation and the way it was managed. Everything was planned well and in good time. From their perspective, they felt that all the participants were satisfied. Partners valued that the **students were intelligent, curious, and open to new perspectives**. The questions they asked were well-prepared. Furthermore, the international students who participated in the course contributed to a higher diversity of the group, which was appreciated by the partners.

The partners have a **positive attitude towards cooperating** with the students. The joint discussions helped the partners to reflect on their own work and its meaning, which made them re-evaluate their own motivations.

"Activities like this one always help me realize what it is that we do and why, and I can see things in a broader context." Partner, Studying Local Rural Systems, Brno

The only problem mentioned by one of the partners was that the timing of the experience was unfortunate. The students arrived at a time when most of the animals were out on the summer pastures, about 8 km away. As a result, students missed experiencing the most important attraction. The partner thinks it would be better to do a field-trip to the summer pastures next time. Hence, especially in the agricultural area that follows natural rhythms, it is important to choose the season of the year for a visit with great care.

"It is always enriching to meet with intelligent people who have a different cultural background but are open to new perspectives." Partner, Studying Local Rural Systems, Brno

Supporting material

- Excursion program

M. Czech Republic Pilot Highlights: Successful Environmental Projects

Environmental projects, particularly related to the sharing economy and a community approach, have gained in popularity in big cities such as Brno, Prague, and Vienna. This course reflects this increased interest, having as a main aim to present successful environmental companies or projects to students by way of field trips. This enables students to gain an in-depth understanding of the subject of the companies, for instance by studying their budgets and economic data. Student visited a car sharing and two bike sharing companies. During these visits, the company representatives were presenting their company and shared their experiences with the students. The director of the car sharing company also showed a car sharing vehicle to the students, whereas at one of the bike sharing companies, students were visiting the workshop and had the opportunity to ride the bicycles. The open format allows for interaction and questions to be asked which facilitates conducting a case study that students subsequently work on in groups. An outcome of the case study is a set of recommendations for the companies that are presented to them at the end of the course. To sum up, the course offered students, cooperating partners as well as teachers a fair range of opportunities for sharing their experiences. For most of the students, the course offered strong inspiration, encouraging them to start using sharing services or to run their own business in the future.

Experiences from the participants - students

Students very much appreciated the field trips, being able to **experience reality** rather than receiving a lecture in the classroom. The open format allowed for talking, listening and plenty of space to ask questions about multiple aspects of interest about the businesses. This allowed students to **gain a more realistic and in-depth view of environmental businesses** with a focus on transportation services. Most of the students described their experience with the cooperating partners as educational, inspiring, and enriching. All **partners were well-prepared**, enthusiastic presenters and clearly loved their job or their enterprise. The students appreciated the opportunity to meet people directly engaged in environmental projects and the possibility to have a discussion, sometimes even expressing their disagreement. The field trips helped students connect what they learned at school with how things work in the real world.

"The most meaningful experience was that a great project can develop from an idea. All it takes is not to be afraid and go ahead and do it." Student, Successful Environmental Projects, Brno

The students found it useful to **learn hands-on how sharing services work**, making it superfluous for people to buy and own stuff. Testing some of the bikes made the experience even more real. After the visits, some students intended to start using these services or even start a business of their own in the future. By emphasizing the fact that cycling in the city is safe, the presenter inspired one of the students who was afraid of cycling in the city to overcome her fear. This shows that interactive collaboration formats can lead to changes in mindsets and potentially to behavioral changes. Moreover, even students not particularly interested in transportation issues were inspired and pleased with the field trips, which also speaks in favor of the format.

The management of the course was simple, practical and not too time consuming. Students highlighted the clear structure and the pleasant and helpful teachers. Dates were communicated well in advance, which allowed students to conveniently arrange their semester schedule. Students were also happy that the field trips to the various places around Brno only incurred low costs.

For next time, the students recommended promoting the course more effectively so that more students could participate in it. The only suggestion for improvement was related to splitting the students into groups. More joint meetings should be arranged to get to know each other better and allow more time for discussing the projects. Also, the range of projects could be broadened.

"I have gained information about what goes on behind the scenes of making such project work, that the success of the project is based on hard work and much effort, but also people's enthusiasm and the team are important" Student, Successful Environmental Projects, Brno

Teacher experiences

According to the teacher, the strategies and methods for collaborating with the business partners fulfilled the course objectives to share the partners' experiences with the students during the field trips and to enable students to prepare their case studies. When preparing for the course, the teacher reported that partners responded to his inquiries on time within the limits of their availability, although many of those contacted did not show any interest in participating. Those who did were well-prepared for their presentations and willing to spend time answering students' questions.

The teacher experienced the cooperation with the external presenters as smooth and efficient. However, it was difficult to explain to some of them what kind of information that is relevant for the course and to ease their feeling that the information provided may harm their business or is not important for the students.

A strong feature of the course is that students can discuss their questions directly with the partners. According to the teacher, this **improved the students' discussion skills and their ability to argue**. It also inspired them to actively participate in the environmental projects. The students' active engagement in preparing the case studies also **developed their teamwork skills** and their critical and innovative thinking. The teacher was not quite sure about the most useful aspects of the course for the students after one semester, but presumed that group as well as individual work on projects probably were the most useful parts.

The **strategies, methods and tools used in the course were simple and effective**. A key attribute of the course was good organizational and time planning as well as clear communication with partners and students. Communication took place via e-mail, telephone calls or the Information System of Masaryk University, which is used mainly for students. Moreover, enough space and time was reserved by the teacher in case any problems would have to be dealt with.

Next time, according to the teacher, the splitting of students into groups as well as choosing specific case studies could be based more on discussions with the students. But in general, the students, the cooperating partners, and the teacher were satisfied with the strategies, methods and tools used during the course.

An open question is whether it would help to financially compensate the external presenters for the time they spend on the field trip to make collaborating more attractive. To improve the course, the teacher would further like to allow **more time for feedback** and to use additional teaching platforms apart from the Masaryk University Information System.

Experiences from partners

The cooperating partners likewise appreciated the cooperation with students and teachers. The **arrangements were easy and flexible**, and the university staff was helpful. Everything went smoothly and did not consume too much time. Partners were also quite satisfied with the thematic focus and appreciated the discussions with students about how the company works and its cooperation with other organizations and the city. The students' interest in these topics also gave them the insight that there is no need to be afraid of the leakage of information. Partners, however, would like to have more students taking the course. Despite the positive experience, the partners were not sure about or did not clearly see any benefits for their business from cooperating.

Supporting material

- Instructions and literature list for Reaction Paper

3.3.2.3   Format 8: Excursion

Students experience working environments and can exchange with people on the job

Effectiveness of the format Excursion for sustainability-driven entrepreneurship education
Excursions have the capacity to **fully immerse students in a learning experience**. This makes the format highly effective to develop student learning through experiencing people, often sustainability-driven entrepreneurs, in their authentic environment. At the same time, the **informal real-life learning setting** creates different and favorable conditions for learning. Excursions can provide students with a **holistic perspective**, addressing all senses (visual, sensory, smell), but also providing emotional engagement. The personal interaction with entrepreneurs on their job is not only about work practices, although students can benefit from practical knowledge and experience. What is just as important is the strong impact these people have on students by way of their personality, dedication, and enthusiasm. The people they meet often leave a lasting impression. Students hear about the different life experiences and **learn from personal stories**. Hence, excursions are a source of various insights. They provide **room for reflection** which, for instance, can help students to get rid of prejudices. Students get sensitized for various issues which can pave for **different ways of thinking**. Excursions allow students to gain a lot of new impressions that may take some time to fully digest. Therefore, a debriefing of the experience may further enhance student learning. Some aspects to take into consideration for enhancing the effectiveness of the cooperation is to 1) **keep the collaboration simple** with as little paperwork as possible; 2) make a **purposeful selection of the partner** and 3) give the **timing of the excursion** due consideration as learning opportunities differ depending on season and agricultural cycles, for instance. The duration is also an issue. Obviously, a longer duration allows for more profound knowledge and understanding to be gained.

Potential of the format Excursion to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High
		Medium		

With respect to competencies for sustainability-driven entrepreneurship, excursions create favorable conditions for developing mainly **systematic and normative competencies**. Students **learn about complex issues and their interlinkages, allowing for a systemic perspective to be developed.** For instance, awareness was created about the interrelatedness of sustainability problems, such as food production and climate change. With regard to **normative competencies**, the format facilitated

critical reflection on prior theoretical knowledge and assumptions. Also in a broader perspective, students developed a critical attitude and became more self-reflective. For instance, they learned what a sustainable lifestyle means and that it not necessarily requires large personal sacrifices, but rather being open to different solutions. Moreover, through fostering personal and emotional engagement, excursions also enhanced the interpersonal competencies of the students.

Apart from developing concrete competencies, other effects recorded were changes in behavior. Students learned about different sustainability practices that they partly started to integrate into their own lives. The format thus allowed for inspiration and new perspectives to be gained.

N. Vechta Pilot Highlights: Sustainable Communities

The course Sustainable communities navigates the discourse between strong and weak sustainability and community responses to it. It investigates top-down and bottom-up sustainable design approaches, such as ecological design, permaculture, and the Natural Step. Through a series of block seminars (two days each) students work on a project that investigates community sustainability responses. The teaching style is constructivist education with a large amount of group work to cover initially to develop an overview of the interdisciplinary topics. After the block sessions, the whole course runs an excursion for three days to live and learn within a sustainable community. The students visit the established ecovillage Lebensgarten in Steyerberg for immersive learning in how eco-villages can be living laboratories of sustainability. There, the partner presents their concept and activities, reports about experiences and participates in discussions with the students about sustainable communities. Students engage in a series of workshops and activities on themes such as sociocracy, Terra Preta and permaculture planning. For the sustainable design project, student groups mapped the use of open space in the local town, coming up with suggestions that were later discussed by community members at their group meeting.

Experiences from the participants - students

Leaving the classroom and getting a real-life experience of what "sustainable living" means, how it is built up and structured, was a great experience for students. The excursion gave a holistic impression of what eco-villages are about. Students were very interested in visiting the different sites, for instance the Energy-plus-houses. They realized that this was achievable without large difficulties. The permaculture also created curiosity. Awareness could be raised about interrelated sustainability problems, such as climate change and food production. Students gained many practical insights about different life styles and consensus-oriented decision-making processes that they started integrating partly into their personal lives.

"I liked the way knowledge was conveyed to us. It was not a relationship like teacher and students, but instead they treated us like being on the same level and they also tried to explain everything in the most interesting way." Student, Sustainable Communities, Vechta

Another take-away was the recognition that leading a sustainable life is less related to renouncement than to using different products. It is not about switching off the light or turning off the heating. Rather, it is about walking through life with open eyes, being curious about different approaches to sustainability. The experience helped students to dismantle prejudices against so-perceived 'radical sustainable life-styles',

On a personal level, the partner and founder of the eco-village made a strong impression on the students. Living in the village for already 30 years and being part of building up a global network, he is

truly a pioneer! His **strong personality, dedication and enthusiasm** made all the difference for the students. He gave students an impressive example of an entrepreneur who is fully dedicated to sustainability and sustainable living and follows a collaborative, non-hierarchical style of leadership, meeting students on the same level. The partner was also **open to debating issues** that students criticized and did this in an engaged way.

Being able to see in practice what you have studied and discussed theoretically before, made a real difference. Students also learned that not only they benefit from the cooperation. It also gives the community feedback from outside and other perspectives that might be helpful for further planning within the community.

Several students welcome the opportunity to practice English without having to think about grammar. Also, the good collaboration within the group and the emergence of new ideas were positive. Overall, the excursion presented the students with a lot of new impressions that took some time to fully digest.

Teacher experiences

As eco-villages are **living laboratories**, the teacher thinks that they are really interesting for a sustainability project. They are about **experimenting to find out what works**.

"We can live sustainably (..) we just have to make different choices. I think that is a really interesting switch for students" Teacher, Sustainable Communities, Vechta

Prior to visiting the eco-village, all the paperwork was sorted out and the essence of what students should learn was discussed with the partner (co-founder of the eco-village). This covered for instance concepts of permaculture and the ecological self, giving students the understanding that they are part of nature rather than separated from it. How these ideas are conveyed through the excursion needs to be thought through as well.

"This idea of experiential learning, of place based learning is very important, especially the idea of sustainability competence" Teacher, Sustainable Communities, Vechta

The cooperation with the partner was good, partly because the partner knew what the teacher wants: **immersing the students in a learning experience**. At the same time, the partner wanted to "slow down" the students, letting them explore the eco-village by themselves. The partner was very open and incredibly flexible, playing around with ideas and giving feedback on educational goals. He also treated the students in a respectful way. Thanks to his broad experience, he could also make valuable contributions when students held their presentations about other eco-villages. He had himself visited some of the sustainable communities that the students had investigated. Beyond the planned activities, **informal discussions took place spontaneously**, for example during meals or in the evening. The teacher was proud to see the students develop, reflecting on ideas and questioning them. The block seminars seemed to provide a solid baseline from which students could talk from.

"The questioning and the real critical thinking that just bubbles up in the students is wonderful" Teacher, Sustainable Communities, Vechta

As to methods, **sociocratic methodology** that students earlier discussed theoretically could be applied, experiencing how sociocratic groups would work in practice. The teacher learned that only giving

theoretical knowledge showing examples of sustainable communities (e.g. case studies or videos) from around the world is not enough. You cannot give students what they learn from living in an eco-village in any other way. It is important to **get "out there" and down to the ground**, ideally for one or two weeks instead of only three days. An aspect to take into consideration is when to visit the eco-village. During the summer, the possibilities to be active outdoors, e.g. do classic gardening, are much better than during autumn. There are more activities and meeting younger community members is possible, for instance different youth groups with people who want to live there for a little while.

In all, the excursion exceeded the teacher's expectations and the students were very positive and enthusiastic about the location. Thanks to the partner's responsiveness, the cooperation worked very well.

Pilot course O, Management of Rural Space, relates to Module 2.1 of the CASE master program: Processes and Management of Innovation (see Biberhofer & Bockwoldt, 2016, p. 76).

The course should give specific insights into the following themes of the pedagogical framework:

- *Real-world orientation: Students are fully immersed in a learning experience*
- *Role models: Interact with role models and listen to their stories in an authentic environment*

O. Czech Republic Pilot Highlights: Management of Rural Space

At the end of the course, 39 students from Master's degree program on environmental humanities conducted a one-day visit to two bio-farms in the region. One of the farms aims at breeding cattle and sheep in a natural way, which helps to revive the soil after many years of intensive farming. Since 2015, the farm produces milk and dairy products, all labeled BIO. The second farm is active in the revitalization of the rural landscape. The owner wants to "give back a face" to the landscape which was devastated in the 1950ies. In practice, this means to revive the soil, reduce the impacts of floods, and increase biodiversity. This farm also focuses on eco-farming, especially breeding cattle and sheep on grass cover, orchard farming and brewing. In line with the course's focus on sustainable agriculture, the purpose of the visit was to study how bio-farms work in practice, what kind of problems they deal with and how to solve these problems.

Experiences from the participants - students

Overall, students found the experience enriching and meaningful, providing them with **a deeper insight into the working context of organic farms**.

"It was really interesting and enriching to meet the farmers and listen to them talking about their experience in the authentic environment on the farm, where we could see how everything works." Student, Management of Rural Space, Brno

---

The most important qualitative feature of this experience was its **authenticity** – the students could speak with the farmers in their real-life settings and see how they work. Students thus developed their learning through experiencing the authentic environment.

Teacher experiences

Also from the teacher's point of view, the excursion was a useful experience for the students. The practical demonstration of the landscape rehabilitation program, the discussions about the rules and the pluses and minuses of subsidy policies were seen as important takeaways. The teacher himself benefitted from the excursion by getting to know a new company close to his area of interest and by improving his understanding of current issues connected with governmental agricultural policies.

Furthermore, the teacher appreciated the **simplicity of making the arrangements** with the farms, which were solely based on exchanging e-mails. He thus does not see any need for change in how the excursion was arranged.

"In the future, I would recommend doing it the exact same way as this year." Teacher, Management of Rural Space, Brno

Experiences from partners

The cooperation partners enjoyed having the opportunity to share their work with the students.

"I believe that the students got a real-life insight into my work." Partner (Bio-farmer), Management of Rural Space, Brno

All involved appreciated the simple and smooth way of facilitating the cooperation with a **minimum of paperwork**. The collaboration was facilitated by the partners' **positive attitude and willingness to cooperate with the academic world**. Although all parties involved seemed satisfied with the collaboration and no negative reflections emerged, the power of the experience was clearly limited by its short duration.

P.   Italian Pilot Highlights: Communication and cultural processes

The course deals with the scientific analysis of current cultural and communicative processes. It includes a one-day excursion to a Non-Profit Organization (NPO), which was chosen to link theories, relating to migration, to real life. At the NPO, students were shown around, and the institution, its main goals and projects were explained to them, particularly elaborating on projects for economic self-employment plans and integration. In the second part of the visit, the students were able to work with a gardening project at the NPO. The excursion enabled students to discuss and critically reflect upon current social, cultural, and communicative change processes of the society, such as migration, globalization, individualization and digitization.

Experiences from the participants - students

Students were very satisfied with the excursion to the NPO. They found the experience interesting and inspiring. The excursion helped students to **critically reflect on the theoretical background studied earlier** in the course. It was very helpful for them to get a new perspective on everyday life, which also made them learn for their personal life. Students were most impressed by the fact that essentially different people with various cultural and social backgrounds together develop economic and social

sustainable projects. The gardening project for example allows the participants to earn money and being part of a team and on the other hand to recycle and revitalize land to productive use. Another meaningful part of the experience was to see how children grow up within this multicultural context. Overall, the experience **helped students to develop a more critical attitude**.

"We learned to become more critical with ourselves and the way we behave with others." Student, Communication and cultural processes, Bozen

The fact that students were directly involved in the gardening project helped them to identify with and become a part of this NPO. Students were very positive to prolonging and expanding the collaboration and would greatly welcome, if such trips were organized also in other courses.

Teacher experiences

Also, the teacher found the experience valuable, both for herself and the students. The NPO represented a completely new setting, enabling students to **learn about different life experiences**. The NPO was chosen because of its strong interest in cooperating with the university and students and for having a good feeling for the students. The teacher learned from the cooperation that was organized for the first time, that the **preparation prior to the personal interaction with the NPO is crucial**. It is also important to know the NPO as well as its workers very well. The excursion was not strictly organized but rather easy-going. The informal setting and the **open-mindedness of the workers** affected the collaboration in a positive way. From the teacher's perspective, the cooperation also went smoothly because she has known the NPO for many years.

"I would highly recommend such collaboration formats for other courses." Teacher, Communication and cultural processes, Bozen

Partner experiences

The collaboration partner appreciated that **the cooperation was clear and well-organized**. The visit to the partner was beneficial for the partner and he was satisfied with how the collaboration turned out. From the partner's point of view, nothing needs to be changed.

3.3.3   In the classroom

When investigating possible cooperation options in the classroom the evaluation focused on courses that added a transdisciplinary perspective by inviting experts and guest lecturers as external sources of expertise. The format is described in more detail in section 2.2.6.

3.3.3.1   Format 9: Guest lecture

Guest lectures allow for inspiring exchange between practitioners, scientists, and students

Effectiveness of the format Guest Lecture for sustainability-driven entrepreneurship education

The format is **relatively easy to implement** and has at the same time a good potential to foster students' learning towards sustainability-driven entrepreneurship. Students get the opportunity to meet passionate, committed, and critical persons and learn from them in various ways. Guest lecturers can act as **role models** and bring an **authentic, vivid picture of the real world** to students, thereby enabling **transdisciplinary learning**. Experiences and perspectives from local actors and entrepreneurs **inspire students** in their own (entrepreneurial) projects, creating motivation and an action-orientation. They bring in **special expertise** and experiences that teachers cannot provide. The extent to which guest lecturers' inputs are valuable depends however on the guests' personal skills (e.g. as a speaker), their experience and personality.

For setting the practical aspects of this cooperation, fast, paperwork-free communication based on personal contacts works best. At the same time, the personal network of the teacher can be limiting the choice of inspiring speakers. Although arrangements are made more easily if trusted earlier contacts are invited, a **mix of proven and new lecturers** is recommendable.

Despite the relative simplicity of the format, **careful preparations** of the setting are required to harness its full potential. An **extensive briefing** of guest lecturers is key to **clarify expectations** and set a fruitful frame for the cooperation.

The format works well **in combination with project work** or a case study. The guests' knowledge should not only have relevance for the broader course topic and objectives, but also for the students' own project work. Ideally, students prepare for each guest lecture by doing some selected readings. To make optimal use of practitioners' knowledge and experience, guest lecturers can be asked to give feedback on student work. This should be communicated in advance and sufficient time must be reserved.

A reflection on the format is that the effectiveness of the cooperation strategies cannot be assessed without analyzing the broader context, i.e. the aims of the program and the course. It assumes a **careful balancing of theory with practice**, and such balance should form the basis for designing a format for cooperation with people working in the real world of sustainability-driven organizations. By bringing theory and practice together, students can get valuable insights as to how their future working life could look like regarding both practical and emotional aspects.

Potential of the format Guest Lecture to foster students' development of competencies for sustainability-driven entrepreneurship

Low	Low-medium	Medium	Medium-high	High
		Medium		

The format has the capacity to foster several competencies for sustainability-driven entrepreneurship. **Strategic competencies** are improved by enabling students to connect theory and practice. Furthermore, students could link their own ideas directly to the input of the practice actors and gained knowledge as to how companies' actions can be evaluated. From the interaction with the guest lecturers, students gained a wide range of experiences from the real world, learning that reality is more complex than theory, which contributes to building **systemic competencies**. Students' **normative competencies** were nurtured by providing opportunities to discuss important topics in a respectful but critical environment. The format also improved students' ability to think critically. **Interpersonal competencies** grew from making new contacts and having to deal with different opinions and points of view. Communication and discussion skills were also fostered. Students learned both to have a **dialogue** at the personal level and to **contribute to a larger discourse** at an abstract level. Learning however not only occurred at the level of competencies, but also had an impact on students' personal development, **attitudes, and motivations**. For instance, students turned more action-oriented and developed courage and motivation. Some of the lecturers put strong emphasis on collaboration, aiming at the **development of the heart** and cordiality.

Pilot course Q, Sustainable Development in the Oldenburger Münsterland (NEiOML), 1st edition, and R, 2nd edition, relate to Module 5.2 of the CASE master program: Personal Development and Coaching 2/3 (see Biberhofer & Bockwoldt, 2016, p. 83).

The courses should give specific insights into the following theme of the pedagogical framework:

Role models:
- *guest lecturers act as role models, presenting an authentic picture of sustainability and its challenges*
- *young sustainability-oriented entrepreneurs from the region present their start-up and share experiences*

Q. German Pilot – Highlights: Sustainable Development in the Oldenburger Münsterland: solving problems with innovative projects (1st edition)

The course addresses the need for new ideas and strategies as to how the society can live and organize itself to meet social and environmental challenges not only at a global level, but also at a local one. In the course, students develop ideas for projects that can contribute to solving societal challenges connected to sustainable development. To begin with, theories and concepts of sustainable development and the idea of "sustainability-driven entrepreneurship" are discussed. Then, a variety of local entrepreneurs are invited as guest lecturers to speak about a vast array of sustainability related

topics and their daily work. Students can interact with them and discuss the topic at stage and raise their questions. Following this exchange with local and regional actors, students then act as entrepreneurial change makers, developing a project that addresses local issues related to sustainable development.

The cooperation format builds on the participation of local and regional players, acting as expert guest speakers and workshop facilitators. For the course piloted, four partners representing different sectors and facing varying sustainability challenges were invited:

- a social NGO dealing with migration and social inclusion,
- an agricultural association for small farmers,
- an expert for local sustainable mobility, and
- a local common-welfare economy group.

Each guest had between one to three hours at his disposal to introduce regional challenges of sustainable development from his perspective. Two partners talked about their field of work with some background information for about one hour, the two others prepared interactive workshops with the students.

In preparation, students were asked to do some desktop research around the working field of the guests. Student groups that develop projects related to the guest's field of expertise are encouraged to connect with them for feedback after the workshop. During the remainder of the semester, student groups work on a concept for their start-up or (entrepreneurial) project. The course is a good example as to how experiences and perspectives from local actors and entrepreneurs can be brought into lectures to inspire students for their own (entrepreneurial) projects.

Experiences from the participants - students

Students appreciated to have guest lecturers in the course. They commented positively about the very good support and how it allowed **deepening their knowledge on sustainable business topics**. Students were also happy with the selection of lecturers and the **variety of sectors** that they represented. The different guests provided **fresh perspectives** that enriched students' project work. Thanks to the guest speakers, students deepened their knowledge of certain themes and their interest in new topics was sparked, e.g. sustainable economy, migration, farming, and mobility. Students learned from the experts' experiences and were able to **make new contacts**. Students further acknowledged that the workshops improved their communication skills and helped them to resolve conflicts.

"The insights into the professional field of the speakers and their perspectives made me learn something personally." Student, Sustainable Development in the Oldenburger Münsterland, Vechta

Furthermore, the students **received feedback from guest speakers** as to whether their project ideas could be implemented, which was valuable. Nevertheless, some students were disappointed, either because the lecturers did not match their topic or because they were not available for discussions after the session. Students would have liked to get in closer contact and obtain more feedback on their project work. To make use of the experts' full potential it would be preferable if they were available for feedback also after their session and perhaps via e-mail contact.

The interaction with the guest speakers was well-organized and well-structured. Moreover, students appreciated the involvement of the teachers and their compact knowledge on sustainability. Teachers gave continuous feedback and were questioning in a friendly and open way. Their warm commitment was encouraging.

Students would appreciate to get to know even more examples of successful sustainability efforts. They suggested that still more guest lectures could be organized, covering an even bigger thematic spectrum.

"The interaction was helpful to see how the project could be applied." Student, Sustainable Development in the Oldenburger Münsterland, Vechta

Experiences from teachers

The teachers were enthusiastic about the cooperation, especially seeing that **students were really interested and fascinated by the guests' experiences**. They acknowledge that guest lecturers have special expertise and experiences that teachers cannot have. Thus, **guests can act as role models** and **bring an authentic, vivid picture of sustainability** and its challenges into the course.

According to teachers, meeting passionate and critical persons who do not falter in the face of the great challenges in their work is meaningful to students. Also, students are encouraged when hearing their authentic opinions in strong favor of social justice and sustainability. Getting to know perspectives from practice, students can directly link their own ideas to the practical input of the guest speakers. However, for some students the sessions did not match their topic of interest, making the sessions less meaningful for them.

The teachers were very grateful that practice partners could be relatively easily committed to participate in a seminar. Nevertheless, it is important to **keep an early eye out for appropriate practice partners and contact these well ahead**.

Some learnings from the cooperation were for instance that **sessions must be well-planned**, otherwise not all issues can be covered. At least one hour of the session should be reserved for the guests to present themselves and their field of work. A further experience made was that not all guest speakers are experienced educators or used to speak in public. Teachers realized that it is their responsibility to **make the guests feel comfortable within the course setting** and sometimes also facilitate interaction with the students. At the same time, teachers must be flexible as some guests can be very skilled in facilitating a dialogue and discussion with the students whereas others are not.

Another challenge is to **secure the quality of the external input**. Practice partners may not always act in the way intended and planned by the teacher, resulting in a poorer learning outcome for students. It is therefore important to discuss with partners what the expectations on their participation are from a student and teacher perspective, as well as to carefully think through the course of the workshop beforehand. A further important point to remember, as already pointed out by students, is to make sure that practice partners also are available for **questions after the seminar**.

The extent to which the expert input is valuable to students very much depends on the guests' personal skills, experience and personality. While the cooperation was beneficial to provide a more authentic picture of the real world to students, teachers realized that **there should also be a debriefing session after the guest(s) left**, making students reflect on the input in terms of the course and their personal learning. Overall, teachers became more knowledgeable as to what are important success factors for this kind of cooperation.

"I think most valuable for the students was to meet passionate and critical persons who do not struggle in face of the great challenges in their work." Teacher, Sustainable Development in the Oldenburger Münsterland, Vechta

Experiences from partners

Partners generally seemed to be satisfied with the cooperation. They really liked the cooperation format and felt that the thematic focus of their workshop was well chosen. Furthermore, they appreciated that the **cooperation was very well-organized and professional**. There was a good flow of information in the preparation phase and the support on the day of the seminar was excellent.

They **appreciated the support granted by the university** staff and see only a minor need for better coordination. This regards the timeframe of one of the workshops. As the time needed for the whole content was underestimated by both teachers and the guest, not all the planned content could be communicated.

As to the benefits for the partners, one guest stated that he did not get anything out of the cooperation. The reason for this was that students first had to become familiar with the issues taken up and hence, no new insights could be gained by the partner. It was further reported that it was at times difficult to attract students' attention. Nonetheless, it seems that partners did not really expect to gain anything for their companies or themselves. It seemed rather more important for them to pass on their knowledge. Partners see it as their duty or **mission to pass on their knowledge to younger generations** and thereby contribute to a better society and a sustainable development. They thus were satisfied given that their inputs enabled students to gain a better insight into how companies' actions can be evaluated.

R. German Pilot – Highlights: Sustainable Development in the Oldenburger Münsterland: solving problems with innovative projects (2nd edition)

The 2nd edition of the course had a similar set-up as the first one, but instead of solely cooperating with local actors for the guest lectures, also young entrepreneurs from the Yooweedoo Project presented their work and shared experiences. After the presentations, students could exchange ideas with them and ask questions in small conversation circles. The vivid experiences from earlier entrepreneurship projects were a good starting point for the students' own projects and gave valuable input regarding their feasibility and realization.

Experiences from the participants - students

The students highly appreciated the interaction with cooperation partners that were invited as guests to the seminars. Getting examples from practice right at the beginning of the semester was very helpful. Receiving **input about projects that made a difference** and achieve something was interesting and exciting, and gave students inspirations for their own projects. They could get all the information about what really belongs to project management and start-up enterprises, as well as how the realization works in practice, which was encouraging. For instance, they learned how to do a business plan and calculate costs, amongst other aspects.

"We did not talk about things and people, but together with those from the source." Student, Sustainable Development in the Oldenburger Münsterland, Vechta

Furthermore, students realized that being an entrepreneur means a lot of work. But they also reasoned that **if you work on an idea that you are burning for, the work is very compensating**.

The students were positive about the variety and diversity of projects and partners. They further appreciated that some of the presenters were of similar age. The exchange was very constructive,

including getting hints about problems that may occur.

"We could reformulate the presented ideas and it was useful to realize that these (partners') projects also started at zero. You don't need a big idea, the small things in life are mostly more effective." Student, Sustainable Development in the Oldenburger Münsterland, Vechta

---

The practical organization of the seminar was also appreciated. It was well-moderated and followed a clear structure and period. The only aspect that students regretted was that they had to choose between two entrepreneurs for the discussion rounds, which meant that they could not learn more about the other entrepreneur's perspective.

Some suggestions from students as to what could be improved were to cover even more topics in the presentations, which would give students broader inspiration for their own project ideas. They would also have liked to meet the partners again along the course to ask further questions as they were progressing with their own projects.

Experiences from teachers

The teacher reported that guest lecturers were invited to two sessions during the course. In the second session, earlier students from the Yooweedoo Project were sharing their experiences, whereas in the 4th session, **young sustainability-oriented entrepreneurs from the region** presented their start-ups and reported about their experiences as entrepreneurs. After the presentations, there was a deepening conversation in groups. According to the teacher, this structure worked very well. First students gained an overview, and then they got the possibility to ask deepening questions.

The **small conversation circles** helped to create a more intimate atmosphere. Students and guests came into the flow of chatting and discussed much further than the teacher had expected. The teacher does not want to change this set-up, even though some students would have preferred not having to choose between the two guests.

Careful preparations were important for the smooth running of the seminars. The teacher first briefed the guests with a guide, outlining the gist of their presentation. This was then discussed in detail over the phone. Also, the objectives of the seminar as well as information about the students and their level of studies was shared with the guests up front. For the discussion circles, questions were prepared beforehand to direct the discussions towards aspects that might be relevant for students' learning, which proved to be very useful.

The exchange with the guest lecturers was very productive for the seminars. The students could **get insights into the real practice of sustainable entrepreneurship** and were very motivated to assess their own projects more thoroughly according to the criteria of relevance and practicability.

The teacher believes that one of the best aspects for the students was the **personal exchange about what creates motivation**. The guests were very enthusiastic about their work and success. They functioned as inspiring examples.

"Peers can really spread their enthusiasm!" Teacher, Sustainable Development in the Oldenburger Münsterland, Vechta

---

The students also listened to the guests' stories about their own weaknesses as well as failures. Thereby, they received useful and **pragmatic real-life tips**. These real-world examples helped students in their project development, their learning process and to better assess the practicability of their

ideas. In sum, the guest were **enthusiastic role models** that strengthened and motivated students to go after their own project ideas and to consider their realisation.

"It is very rewarding to invite enthusiastic role models!" Teacher, Sustainable Development in the Oldenburger Münsterland, Vechta

Such guest lectures and the exchange between students and guests seems to be fun for all parties involved. The guests were very interested to get to know more about the students' development and the realisation of their projects.

Experiences from partners

The partner gave a 20-minutes presentation about the foundation of his start-up, the challenges, and the financial realization. This was followed by a question round. The session worked perfectly well. The partner explicitly mentioned the **good preparation beforehand**, talking through everything over the phone. The thematic focus of the cooperation was well-chosen, and the partner very much appreciated the cooperation and the positive exchange with the students.

Supporting material

- Syllabus

S. Czech Republic Pilot Highlights: Ethical and Local Economy

The course is designed especially for students who have a deeper interest in practical socio-ecological economic alternatives and already have attended a basic undergraduate or graduate course on economics in the environmental studies program. The course uses interactive methods based on student activities, presentations of guest speakers who have practical experience with grassroots eco-social initiatives and projects, and a case study of a selected community economic project or a description of an own potential project.

The goal is to foster students´ knowledge about practical models, solutions, and approaches in the field of ecological economics (so-called alternative economic projects or projects of the social/solidarity economy) as well as their contextualization in terms of ecological economics and other current streams of thought.

The guest speakers represented alternatives such as car-sharing, a business cooperative managing hospitality and catering facilities, and a HUB (accelerator) for social enterprise. The students were asked to read and comment some texts (in Czech or in English) before each guest presentation to become more familiar with the related theoretical framework. The texts formed the basis for discussions in class. Students were encouraged to participate actively and to discuss the topics with the guests.

Furthermore, the guest speakers commented on what was interesting about the Case study that the students were planning and preparing in pairs. Some short reflecting sessions were always taking place in the next class. The case study-type essay allowed the students to apply the principles of ecological economics and the models of community economies in practice, as well as to make a realistic evaluation of benefits and limitations of such projects in managing the transition to an environmentally and socially more sustainable economy. Overall, students learned how alternative enterprises work in the Czech Republic and abroad, gaining a deeper understanding of what comes into play in the ecological crisis.

Experiences from the participants - students

The students described the course as open, covering many formats and themes, and being interactive. The experience of the guest lectures was pleasant and beneficial, making the theory covered in class available in an authentic way. The **guest speakers came well-prepared** and presented the topic of the specific class in an interesting way.

"I learned from interacting with the cooperation partners that reality is always quite a bit more complicated than theory, it always depends on the context." Student, Ethical and Local Economy, Brno

On top of meeting with people working in the real world, students were provided with a diverse **overview of the various possible economic alternatives** without idealizing them. It was interesting for students to see actual examples from the real world, anchored in the environmental context. Providing illustrations of how these enterprises operate and the pros and cons of such organizations made students aware of the broader context and the possibility of alternatives. This provided various perspectives on the topic, broadened students' knowledge and **fostered their ability to think critically**. Students not only learned to categorize various projects and alternatives, but also to recognize their main characteristics and the differences among them as well as the conditions required for the effective work of the alternatives. The format fostered their ability to elaborate on comments, their ideas or criticism received in a clear way, also orally.

"I understood how social, radical ecological, and other organizations work, and what the pitfalls are." Student, Ethical and Local Economy, Brno

Furthermore, being a small group facilitated an **interactive approach and discussions**. Students experienced **being motivated and developing courage**. Students reported that the format drew them directly into the action, there were no boring moments.

They stressed the opportunity to compare theory with practice and to see the practice in a wider perspective. For one of them, the course was also an opportunity for changing attitudes, as the student realized the practice that had seemed hard to believe in might be realistic.

Although group discussions and activities were meaningful, some students felt that sometimes too little time was allocated for the guest lectures, both for the presentations themselves and for reflections on the topics.

For future courses, the students recommended continuing with the current course structure and method. Some suggestions for improvements related to changing some of the readings and providing future students with examples of feasibility studies and some case studies from the previous years, which could be discussed together in the first session. Also, one student suggested adding another section to this course, covering more examples, even international ones, or to work on these topics in more depth.

Experiences from teachers

The teachers' approach is to mainly invite people that they have met personally, collaborated with earlier and about whose activities they have some idea. This makes the cooperation pleasant and the arrangements easy. The presenters are happy to accommodate the teachers' assignment and at the same time, they bring in their unique perspectives. One of the teachers also highlighted that it was helpful to **agree in advance on the goal of the lecture** and the focus of the content that the invited guest is to speak about. The cooperation was arranged primarily by e-mail, and if needed, details were

discussed over phone. The effective communication with **as little paperwork as possible** was appreciated by all.

The students knew in advance who is going to come to class and they also read in advance some required materials. This helps with **theoretically framing the discussions as well as reflecting on the readings in class**. As a result, students' understanding of "what it's about" goes deeper, and they can ask more knowledgeable questions. The teachers encouraged the students to be active and discuss the issues with the guests. The final paper, a case study of a selected initiative or enterprise, or feasibility study of one's own project worked also out well, and teachers recommend this set-up also for other courses.

The teachers see the **wide range of experiences from the real world** as most useful for the students. The experiences included both the more radical and the more mainstream initiatives. According to the teachers, students are active and very interested in the topic. Some of them even participate in the initiatives. However, it may also be mentioned that an opportunity to ask questions is a rather limited approach compared to some other possible models.

Experiences from partners

For the partners, the collaboration involving a lecture and sharing their experience was generally a good experience. As to organizational issues, all partners appreciated that the communication was fast and effective, with a **minimum of bureaucracy**. Further, it was **based on personal contact** and the teachers' knowledge of the field. For one of the presenters, the cooperation was based on knowing one of the teachers very well. This resulted in that the presenter knew exactly what the teacher was looking for, being on the same "wave-length".

The partners found the cooperation beneficial either because the goal of their company is to **increase people's awareness of social enterprises** or because they got to practice their presentation skills. The process of thinking about the students' questions was beneficial for them, too. One of the partners mentions that his comments on the assigned case study were well received, to judge from the relevant discussion that developed afterwards.

"For me, the cooperation (giving a lecture) was useful because speaking out loud about some things helps me to sort out my thoughts. Quite often, they ask me questions that I still haven't settled for myself." Partner, Ethical and Local Economy, Brno

Furthermore, partners were satisfied with the cooperation as the **students got actively involved**, which they see as the most important thing. However, one of the partners regretted the lack of discussion culture at Czech universities in a broader sense, whereas she appreciated that the students were asking questions during her presentation. There was however a desire from the part of the presenter to improve her presentation and make it more interactive.

Generally, the partners would like to have some more knowledge about the context of the course and the topics of the other lecturers so that they could adjust their talks to what the students already know. One partner was interested in the materials that the students read in preparation for the class which were new to her.

Whereas students generally appreciated the opportunity to compare theory with practice and found such a comparison relevant, two of the cooperating partners reflected on this approach from a broader perspective, mentioning the **clash between a theoretical system based on categorizing a reality**

that cannot be categorized. This opens some challenging questions for a possible modification of the course design, one that would be based on seeking a different balance between theory and practice.

T. Vienna Pilot Highlights: Change Management: Shaping a sustainable world by innovation, participation, and leadership

Change processes play a key role in sustainability-driven business ideas, both on a personal level and in an organizational context. This course is an elective at the master level given by the Centre for Global Change and Sustainability at the University of Natural Resources and Life Science, Vienna, with the aim to create an understanding of the role of innovation and participatory processes for sustainability. This issue is explored from a scientific, business, and civil society perspective. Examples of topics dealt with are idea management, open innovation, and crowd innovation. Besides lecturers from university, numerous external guests from diverse backgrounds are involved in the course to give practical insights (e.g. a Sustainable Development Consultant and Educator, an Organizational Development and Training Consultant etc.). They give a picture of the diversity of innovation management and create inspiration for students to innovate. Students were invited to find, realize, and evaluate their own projects of change. All participants presented their project work at the final unit of the course, sharing their experiences.

Experiences from the participants - students

Students appreciated the guest lectures, providing exciting insights into the various thematic fields of the speakers. The different guests pointed out various perspectives to change management, sharing their practical knowledge and life-experience. The **diversity of the speakers' fields of expertise was positive** and offered students many different lessons to learn.

Guest speakers had different approaches to convey their message. It was valued by students that speakers did not try to be persuasive; rather they **created a cooperative atmosphere**. They encouraged reflection and exciting discussions, sometimes also by being provocative. The lecturers seemed **personally interested in the opinions and ideas of the participants**. The fact that speakers stayed until the end of the teaching unit indicated to students that they also wanted to take something with them from the discussions.

"The teacher did a great job by paving the way for an exchange of ideas, inspiration and knowledge." Student, Change Management, Vienna

Some learnings students took with them were that change management is an extremely complex subject with multiple possible strategies. There is no "right" path – different approaches can work out. Dealing with specific solutions and learning how participation can look like in reality, e.g. through sociocratic models, was considered particularly meaningful. Also exploring philosophical questions was important - who is responsible for change and how could it work out in a society?

Regarding the course organization, students appreciated the choice of speakers and the small rounds **enabling personal interaction**. It was enriching to meet a new actor in every unit. Students felt that the teachers had put a lot of energy and effort into the course.

"I particularly appreciated that the atmosphere was great, and people were friendly and respectful in their contact, at the same wavelength." Student, Change Management, Vienna

Some suggestions for improvements were to stay closer to the course topic and focus more strongly on relevant input. Furthermore, when there were several practical partners present in one unit, the time for discussion got too short. Also, this resulted in a poorer coordination of the speakers. Moreover, many speakers had prepared far too much material to present. To give speakers the opportunity to interact, it was suggested to have a panel discussion at the end of the session or course. A further suggestion was to extend the course over a whole semester to let things settle and allow for deeper discussions.

Teacher experiences

The **teacher sees her role as a facilitator and coordinator**, rather than as an educator. Having carefully prepared the course, she was also satisfied with how it worked out in practice. Initially, the concept, including the propositions for guest speakers, was developed in accordance with the feedback from the vice-rector and colleagues. Suitable guest speakers were contacted. Some were already proven ones from the personal network; others new actors based on their relevance and reputation for a specific topic (e.g. sociocracy). Then the topics were communicated, and dates fixed. Subsequently, the topics were adjusted in detail – propositions and considerations of both guest lecturers and the teacher were considered. **Each guest should have no more than 3-4 key messages**. Finally, the didactical elements and interactive exercises were prepared.

> *Best practices: preparations for inviting guest lecturers*
>
> 4. Contact suitable guest speakers, preferably finding a balance between proven speakers from earlier years and new actors that can add fresh perspectives. Aim at a good gender balance.
>
> 5. Communicate the desired topic of their speech.
>
> 6. Adjust and fine-tune the topics more in detail, accommodating both the teacher's and the guest lecturer's interests and needs.
>
> 7. Identify 3-4 key messages or issues per guest lecture.
>
> 8. Prepare the didactical elements and interactive exercises. Discuss and coordinate them with the guest lecturers beforehand.

The teacher **encouraged the guest lecturers to apply creative teaching methods**, discussing the possibilities together beforehand. Some guests who were familiar with interactive and creative methods made own propositions. For others, these were developed jointly, or already proven methods were suggested.

Some of the methods and tools working very well were the "World-café" and the dyad, i.e. having a structured one-to-one conversation. Also working in small groups to identify drivers and barriers of processes of change worked well. For the "World-café", time was however rather short. More time for both input and discussions should be planned for. Overall, the methods were appropriate and worked fine, although some more innovative methods could also be integrated.

The teacher believes that the students benefitted very much from the collaboration with the partners. She felt that the **students were strongly engaged and activated**, listening to and questioning the speakers. The guest lectures set a good frame for learning at eye-level.

Another experience the teacher made was that the **development of the heart** is a really important issue. It is however not evident how this best could be implemented – through methods, contents, setting the frame or providing space. This aspect was particularly noticeable when students presented their projects. The teacher found the **project presentations emotional and touching**, which left a lasting impression. A few students really had the courage to speak from his/her hearth.

Regarding the organization of guest lectures, the teacher shared that it would be preferable to limit the number of guest speakers per unit to one only, especially when combined with the "World-café" format. More than one speaker leads to an information overload. Each guest speaker deserves his own unit. Another problem was that sometimes guests did not stick to the agreed content, which can be difficult to handle for the teacher.

Experiences from partners

Partners were very satisfied with the cooperation with students and happy with the organizational aspects. Partners applied different strategies for their guest lecture. One of them was to strongly challenge the students and thereby create a vivacious atmosphere, trying to consciously break patterns and guiding principles. This **evoked emotional responses** and encouraged students to demonstrate their projections against the guest speaker, in this case regarding their attitude towards money. The guest lecturer aimed at **enabling both dialogue and discourse** - dialogue at the personal level and discourse at an abstract level. Working with these two levels creates tension, polarity and raises consciousness. Students were asked how they felt and what they sensed, which adds the "**thinking of the heart**" to rational thinking for gaining wisdom.

Another strategy was to create a harmonious atmosphere in class and to follow the principles of sociocracy, i.e. based on questioning current knowledge and a permanent, institutionalized feedback process. The **"World café" as a participatory method** was very suitable in this regard and worked well. By strengthening cooperation, you can also strengthen cordiality and the development of the heart. Students can gain pleasure from realizing that someone has supported them and that they can give back.

This speaker also liked the setup allowing teachers and speakers to discuss in front of the students. This showed them that mutual learning and learning from students was taking place. The intense discussions could widen the guests' view and the young, motivated students helped them reflect their opinions. Permanent learning in several directions is what the speaker believes to be the core of the university of the future.

Furthermore, the speaker highly valued that the course was prepared jointly by teachers and guests, **using circular and participative organization** instead of linear communication. In addition, the sessions allowed discussions between teachers and speakers in front of the students. Optimally, in her view, the whole course could **follow the method of sociocracy**. This would also signal that the university is prepared to experiment and can learn.

Suggestions for improvements related to providing even more training, exercises, and space for dialogue. Personal encounters are necessary to let knowledge and ultimately wisdom emerge.

U.   Italian Pilot Highlights: Teamwork

Teamwork is an essential component of most professional activities. This course held at the Faculty of Education at the Free University of Bolzano is an introduction to teamwork skills for future social agents, helping students to improve their own work performance. It covers why teams are important, the roles of individuals in a team, systems and processes for effective teamwork and communication, and methods for addressing team conflict. During the course, four experts were invited working in different fields and in different contexts (NGO, social services, and social agriculture). The students got a feeling of what working in a team means in different working contexts (formal and informal).

Experiences from the participants - students

The experiences shared by the invited experts from different institutions were appreciated by the students. Apart from being a very interesting complement, they enabled students to **connect theory and practice**.

The most meaningful part was to **get an insight into the real working realities**, which student see as extremely important for their future work after university. The expert shared their experiences as to how practice works, **how to deal with personal doubts** in the working routine and how different institutions work.

"I learned that having doubts and uncertainties is part of the everyday working reality and that you can learn to deal with that." Student, Teamwork, Bozen

According to student voices, everything was great in the way the university managed this interaction. If they were to change something, then they would like the experience to be continuous or at least made longer. It was further suggested that this kind of interaction could be repeated in future courses.

Teacher experiences

The teacher was also satisfied with the way the cooperation worked in practice, even though she had very short time to organize the interaction. From her perspective, listening to the invited experts was a valuable experience for the students.

In the teacher's view, the most significant part of the encounter for students was to **get in contact with people who already have working experience** and could deal very well with students' fears and doubts. The teacher agrees with her students that the interaction was too short. Also in her opinion, it would be good to have more time available. It would be desirable to continue this kind of collaboration in the coming year, not only inviting experts but also doing excursions.

"The most meaningful experience for students I think was to get in contact with people who already have a working experience and who could perfectly deal with students fears and doubts." Teacher, Teamwork, Bozen

Partner experiences

One of the external experts, a social worker, presented her institution and her work, **sharing positive and negative experiences** with the students. She appreciated that the cooperation was well-organized and that it was more of a discussion than a presentation. The social worker was satisfied with how the

cooperation with the students worked out and felt that the thematic focus of the interaction was well-chosen.

3.4 Summary of the findings as to the effectiveness of different teaching strategies and cooperation formats

In entrepreneurship education in general there is a need to better understand the question how to teach and/or learn entrepreneurial and enterprising behavior (Klapper & Farber, 2016). For sustainability-driven entrepreneurship education in particular the development of competencies but also values needed for dealing with (un)sustainable development in order to support economic, social and ecological well-being, hence an entrepreneurial mindset, is crucial. This makes it vital to identify the most effective teaching strategies in order to design appropriate modules and curricula for the education of sustainability-driven entrepreneurs.

The research conducted in WP6 of the CASE project has assessed the effectiveness of teaching strategies and cooperation formats for fostering sustainability-driven entrepreneurship in various aspects. The main interest lay in assessing success factors for the effectiveness of the formats and evaluating the effects on student learning in terms of competencies for sustainability-driven entrepreneurship fostered, but also other learning effects with students, i.e. personal development and emotional effects, all with respect to educating students for sustainability-driven entrepreneurship. Also, teacher learning, partner experiences and benefits, as well challenges with the formats have been evaluated to give a more holistic picture of the effects and effectiveness of the teaching strategies and formats.

In total 21 courses have been piloted, testing nine different cooperation formats. In the previous sections, the formats and courses were presented, and an analysis of each format was provided, discussing the effectiveness and strengths of each format and its effects on the development of competencies for sustainability-driven entrepreneurship. In this section, the key findings are summarized, and overarching lessons will be shared with regard to the key elements of the pedagogical framework of the Case master program (Figure 1.3) presented in section 1.3. Thus, this summary follows the structure of the pedagogical framework, discussing the effectiveness in relation to its five pillars, **competence orientation, learning to learn, real-world orientation, role models**, and **coaching**. These pillars all provide strong underpinnings for sustainability-driven entrepreneurship education and have been prominent features of the courses and formats analyzed.

3.4.1 Competence orientation

Competence orientation is seen to increase the students' potential to act in accordance with their knowledge in the real world (Biberhofer & Bockwoldt, 2016). Active, student-centered and experiential learning are at the core of competence orientation. This orientation also reflects the understanding that competencies for sustainability-driven entrepreneurship are a prerequisite for the transition towards a sustainable economy. The identified competencies bear the promise of enabling people to effectively solve problems related to real-world sustainability challenges, which we see as the core of sustainability-driven entrepreneurship. As discussed in analyses for each format in section 3.3, the five competencies for sustainability-driven entrepreneurship – systemic, anticipatory, normative, strategic and interpersonal competencies – outlined in section 1.3.1 were broadly fostered through the cooperation formats evaluated in the project, although, quite naturally, there were

differences in the breadth and depth of such effect. Conclusions as to when and how these competencies were fostered are integrated in the following sections.

3.4.2 Learning to learn

Learning to learn relates to self-directed, reflective learning in groups and with mentors. Many of the formats evaluated encourage and enable students to take responsibility for their own learning. According to our findings, especially the formats granting a **large degree of freedom** to students as to the design and implementation of their project (e.g. internship, service learning, entrepreneurial projects, case study in sustainable development, etc.) fostered self-directed learning to a high degree. These formats build on high independence and **self-responsibility**, whereas students planned and conducted their project work from beginning to end. The independent work of students with developing their entrepreneurial idea or taking responsibility for managing the whole process of their project helped students to build up self-esteem and self-efficacy. They acquired self-confidence and developed a **feeling of autonomy and mastery**, which is a sign of entrepreneurial values development according to Klapper and Farber (2016). For some students, this also lead to inner motivation for self-directed learning beyond the course-related tasks.

Learning to learn is connected to the interpersonal competencies built with the help of the formats, as exemplified in tablesTable 2.2 -Table 2.6. Different ways of learning are activated, triggered by various learning settings, which is seen as beneficial to create an entrepreneurial mindset (Klapper & Farber, 2016). **Interdisciplinary learning** is fostered by working in mixed teams with students from different disciplines. Students are required to relate different disciplinary perspectives to each other and work effectively in teams. Thereby they developed interdisciplinary skills and cooperation capabilities. Interdisciplinary teams were also seen to foster intercultural learning, and from this broad diversity, creativity emerged. Students simultaneously grew and learned as team members and as individuals. At the same time, the **management of group processes** was an issue. Students learned to handle both positive and negative group dynamics. In this process, team-building exercises were employed, which seems a highly recommendable strategy. Especially long-term interdisciplinary work with a large degree of freedom granted to students needs facilitation

Also other teaching strategies fostered students' ability to learn. For instance, intense and long- term formats, such as service learning, fostered different ways of thinking (e.g. creative thinking, network thinking, out of the box thinking), enabling a deep learning process. Furthermore, students learned through emotions and from making mistakes, which is why coaching is a vital tool for reflecting on those experiences, enabling personal development. Moreover, Individual or group reflection tasks were used to deepen the learning experience. The need for teaching strategies that facilitate reflection cannot be overstated, given that competencies are developed based on experience and reflection (Biberhofer & Bockwoldt et al., 2016).

Also the fact that students analyzed and worked with complex real-world sustainability issues (see also section below), lead to independent and reflective learning. Students dealt with contradictions and uncertainty. They were required to navigating through complex and confusing settings and often had to deal with information deficits, experiences that nurtured students' systemic competencies. Having to **make sense of complex information** in a real learning situation trained students' problem-solving competence (i.e. their ability to reflect on, analyze and solve emerging problems), which is a dimension of strategic competencies for sustainability-driven entrepreneurship (please refer to section 1.3.1).

In sum, many of the formats studied and teaching strategies applied enabled students to build their own toolbox for sustainability-driven entrepreneurship, consisting of skills (e.g. project management skills in a broad sense) and assorted competencies for sustainability-driven entrepreneurship. Self-directed, reflective learning, singly, in groups and often through dialogue with of a coach was a key enabler for building this toolbox for sustainability-driven entrepreneurship.

3.4.3   Real-world orientation

The formats tested, and their underlying teaching strategies provide a real-world orientation by their very nature since they all involve cooperation with business or other practice partners in different ways and with varying complexity and intensity (see Figure 2.3. for an overview). **Transdisciplinary learning** is a key outcome of this real-world orientation, allowing to close the theory-practice gap in university teaching.

In the courses and formats evaluated, the real-world orientation and the resulting transdisciplinary learning built on the collaboration and interaction with practice partners, predominantly in their working environment. In this context of transdisciplinary teaching and learning, **practice partners** performed different functions and offered various benefits depending on the format and the practical context in which the collaboration was implemented. Some benefits of the interaction with practice partner were that it allowed students to critically reflect on prior theoretical knowledge in a practical setting. Through active participation and interaction with the partner, the theoretical input could be contextualized and was critically questioned, which is a strategic competence and a prerequisite for acting in accordance with prior knowledge. Furthermore, practice partners served as role models (which is discussed more in detail below). They can spread the entrepreneurial spirit and provide motivation and courage, amongst many other benefits.

The formats "in the field" (internship, excursion, field trip combined with case study) and accompanying teaching strategies offer a context that is particularly suited for **experiencing** things. They provide an informal learning setting in an authentic environment, offering the capacity to fully immerse students in the learning experience. Students were thus able to meet sustainability-driven entrepreneurs, amongst others, in their context-specific environment. This is in line with Klapper and Farber's (2016) statement that the ability to translate students' individual predispositions to entrepreneurship into effective action is context-specific. Hence, such change in environment can enhance the possibility and space for reflection, creating room for developing new lines of thinking and acting.

As an example, **excursions** of various length enabled students to interact with practitioners, typically sustainable entrepreneurs, in their authentic environment. This frequently allowed for students to observe and be exposed to the 'entrepreneurial way of life'. This kind of learning experience offered the immersion into the setting and fostered participants' engagement with the people and their trade or business, intellectually and emotionally. This kind of interactive format allows for different forms of learning, e.g. by questioning and experiencing. The interaction with practitioners is the key pillar of the formats' real-world orientation, allowing for a link to be established between the teaching and the real-life world of practitioners.

In a setting where students and business partners collaborate to solve a sustainability challenge experienced by the partner (e.g. service learning, participatory research project, sustainability screening), close insights into the structure and functioning of a company could be acquired. Students learned about different roles and the dynamics within organizations. They also gained an insight into how organizations deal with different sustainability dimensions, and learned to handle different

dilemmas in the sustainability area, which requires judgment, a normative competence. Furthermore, students learned to assess the future impact of possible changes relating to sustainability issues, a skill belonging to the dimension of anticipatory competences.

The collaboration also clearly fostered students' action competence. Hence, the transdisciplinary setting is capable of empowering students. In the future, purposeful collaboration can be facilitated further by using the CASE Sustainability Performance Tool, specifically developed for the evaluation of corporate sustainability.

Some formats (e.g. participatory research project, sustainable development case study, service learning) allowed for interacting broadly with actors and stakeholders in society (handling contacts, communicating, arrange meetings etc.). This made students broaden their minds and gain experience in collaborating, thus acquiring the skills necessary for a cooperative mindset, which is a normative competence.

The real-world orientation was further strengthened in some formats (e.g. entrepreneurial projects, internships) by recruiting **external coaches** who work as sustainability-driven entrepreneurs themselves. This link to practice proofed highly effective for the purpose of sustainability-driven entrepreneurship education. Students gained first-hand experience of entrepreneurial thinking and acting. The external coaches enabled a natural socialization into the entrepreneurial approach. For instance, they could serve as a sounding board to test students' ideas and refine their business model, especially given their profound knowledge on the economic challenges of start-ups. They triggered students' motivation, invoked courage, commitment and self-discipline. Ultimately, their contagious enthusiasm increased the willingness of the students to initiate change and go for the realization of their idea, triggering goal and success orientation.

This determination was reinforced by the coach providing a link to the regional start-up scene, getting students connected with relevant contacts. Coaches with entrepreneurial experience significantly strengthened students' practice-orientation and added invaluable real-world orientation, hence representing a highly beneficial element of a teaching strategy for sustainability-driven entrepreneurship education.

Last but not least, by offering a real-world orientation, students gained a profound **contextual understanding of sustainability challenges**, learning about complex issues and their interlinkages, either related to an enterprise or organization, or in a regional or local setting. In their project work or start-ups, students were aiming for a positive impact as to the development of the organization or geographical area in question with the intention to contribute to a transformative society at local level.

Students were able to work hands-on with a complex sustainability-related task and learned to use their skills and strategic competencies to solve it. For instance, project management skills resulted in action competence to address sustainability challenges, which is a prerequisite for acting as change agents. This, in combination with acquiring an entrepreneurial mind-set, helps students to build capacity for addressing and contributing with solutions to real-world sustainability problems (through their start-ups or other initiatives).

3.4.4   Role models

Role models are a vital ingredient of transdisciplinary and learning and were a common feature of the cooperation formats and teaching strategies, be it as **sustainable entrepreneurs**, hosts for an excursion, external coaches, guest lecturers, or in any other function. Role models bring an authentic, vivid picture of the real world to students, offering practical know-how and expertise. **Story telling** is an

effective tool that was frequently employed for the transfer of knowledge and experience, allowing role models to convey their personal stories in a convincing and engaging manner. Students gained insight into both practical and emotional aspects of the entrepreneurial journey, learning how to tackle practical obstacles and handle failures. Students identify with the partner or the organization they cooperate with. The combined experience of observing, listening to and engaging with role models in an authentic environment can lead to changes in mind-sets, potentially triggering behavioral changes.

The role models shaped the learning experience significantly and contributed to the development of an entrepreneurial mindset aligned with a sustainability orientation. For instance, role models showed their commitment and dedication to their start-up or profession. Their personality and inner motivation **created inspiration** for the students' own business ideas, emotional engagement and an action-orientation. When getting an insight into the reality of start-up life, students' start-up spirit was sparked. Students realized that great projects can develop simply from an idea.

Evidently, the interaction with the role model has to be supported by other learning interventions that provide the skills required to manage the entrepreneurial process, for instance related to discovering, evaluating and realizing innovative and sustainable business ideas. These were developed in parallel with the help of methods and tools, such as the Sustainable Business Model Canvas. Combining the interaction with entrepreneurs with learning to use appropriate methods and tools for the development of an own business idea taught student to see the whole and all the parts needed for successful sustainable entrepreneurship. Students learned about the critical factors for entrepreneurship, such as the entrepreneurial spirit and attitudes. Students became more self-reflective, increased their ability to think critically and ask critical questions. They gained awareness of their own potential, and plenty of creativity and resourcefulness was set free.

Another aspect of interacting with role models was that an insight into how future work life could look like was gained. The experience allowed students to reflect and make sense of what being and entrepreneur or intrapreneur entails. They learned that it is a lot of work and that a good work-life balance is needed. They could also learn from role models how to handle mistakes and failures and that acting in accordance with own values (sustainability-orientation) is important. The question of the entrepreneurial identity is an important aspect that students need to reflect on by themselves, in teams, with their coach and with their collaboration partner. This process can be facilitated with the help of dedicated events and tasks, such as kick-off meetings, project presentations, pitching etc.

3.4.5   Coaching

Coaches perform multiple functions that are vital for students in the process of managing a complex inter- and transdisciplinary project and developing the mindset required to become a sustainability-driven entrepreneur. In this process, **regular reflection** is a very important practice that needs to be facilitated through coaching as well as other available means or tools (e.g. learning diary, dyad).

Initially, the coach can be very helpful for **idea generation** and project framing. Further down the road, coaches provide a **trustful learning space** and tackle motivational issues. They offer reflection space and problem-solving, helping students to handle difficult situations and stress. Emotional aspects, e.g. due to failures, can be dealt with. This is facilitated by providing **dialogue at eye level**. In their role, coaches prepare the ground for students to better understand their role as potential change agents for sustainable socio-economic development.

The use of external coaches as a teaching strategy and its great merits has already been discussed under the heading "real-world orientation". It is worth emphasizing also here that the use of **external**

coaches is a very beneficial teaching strategy to guide and support students in developing their own sustainability-driven start-up already during the program.

3.4.6 The role of the teacher

In addition to the pillars constituting the pedagogical framework, other aspects contribute to the effectiveness of the teaching strategies and formats evaluated, especially organizational issues, referring to the role and duties of the teacher, and partner characteristics and preferences, referring to the prerequisites for a well-functioning collaboration between teachers, students and practice partners.

To facilitate the successful spreading of teaching strategies and good practices to other universities and contexts it is important to highlight some key organizational issues and the role of the teacher for the smooth functioning of the cooperation formats. The **organizational talent** of the teacher(s) is of vital importance for the smooth functioning of all cooperation formats studied, given that the complexity of the teaching setting substantially increases (compared to a traditional teaching approach in the classroom), if all five pillars of the pedagogical framework are fully implemented. The practical guides for implementation of the cooperation formats (see section 2.3) provide step-by-step instructions for a successful implementation of each format, also giving guidance as to benefits, success factors, and challenges associated with the format.

Teachers play multiple roles in the collaborations; they act as facilitators, coordinators and orchestrators. Evidently, meticulous preparation for each cooperation setting is key. Some overarching lessons gained from the material are that a **clear course structure** needs to be provided, including well-designed strategies for input sessions, events, etc. The recruitment of suitable cooperation partners (or external coaches) is another important and delicate task for the teachers. An already existing network and/or a good insight into the regional start-up scene greatly facilitate the selection of suitable partners. Alternatively, a facilitator, such as RCE Vienna, can help recruiting appropriate cooperation partners. **Partner characteristics** such as openness, flexibility and spontaneity are looked for. Especially for complex cooperation formats, such as Service Learning and Participatory Research Projects, it is important that the partner is prepared to put time and effort into the collaboration, while granting freedom to students to develop their own ideas.

Before the actual cooperation starts, an **extensive briefing** of and coordination with the collaboration partner or external coach must take place. In connection with intense project-based formats such as Service Leaning or Participatory Research Projects, the opportunity space with the partner needs to be assessed. Furthermore, it is important to clarify mutual expectations and agree on **shared goals** between teachers and partners. The partner should also be prepared for face-to-face meeting on site with students and the teacher, offering a learning space for the transdisciplinary setting. The cooperation with students should ideally be based on mutual trust. Thus, the partner needs to have a **collaborative attitude** and be willing to provide motivation and support to students. Getting praise and frequent feedback from the partner increases student motivation. This reflects the fact that in the cooperation, knowledge is co-created between students and practice partners.

The teacher should also pay attention to the careful balancing of theory and practice (and in the format service learning also the balance between service and learning). Moreover, sufficient time must be reserved for the collaboration, be it for the project work, the internship, a guest lecture or the interaction with a partner during an excursion.

3.4.7 Effectiveness from the perspective of the partner

Also the needs of the partners should be closely observed to ensure a successful and enduring cooperation. In our evaluation, some aspects of effectiveness were prominently highlighted by the practice partners, which are summarized here. Cooperation should be characterized by **constantly high administrative quality** from the side of the university. Preferably, the cooperation arrangement should be easy and flexible, avoiding unnecessary paperwork. Furthermore, the cooperation should not be overly time consuming. Partners are willing to put time and effort into the cooperation as long as students and university do the same. A **careful selection of students** that match the partner well with regard to disciplinary specialization and interests is a must. Partners also want to be informed about the schedules of the students, the inputs given by the teachers, as well as by other partners. Good timing in accordance with possible seasonal cycles of the partners' occupation is also a necessity. High visibility of the projects and media attention is a plus. Partners are satisfied if the cooperation contributes to problems solving or results in new concrete ideas and other tangible outcomes.

4 Conclusions regarding the effectiveness of different teaching strategies and cooperation formats

The above discussion clearly shows that the five pillars of the pedagogical framework of the CASE master program are highly interconnected and thus reflect a systemic approach for sustainability-driven entrepreneurship education.

The suggested pedagogical framework and the related cooperation formats and teaching strategies represent a qualitative change in the way of teaching and learning, which greatly differs from the mainstream learning experience. Students are enabled to practice joint problem-solving related to sustainability in a real-life, often community-based context. Learning about sustainability and the complexity and ambiguity of real-world sustainability challenges is facilitated.

All formats studied provide unique insights into the world of practice and enable inter- and transdisciplinary thinking and acting to co-create knowledge between students from different disciplines and practice partners.

Many of the formats evaluated seem to result in similar effects as to the development of competencies for sustainability-driven entrepreneurship, although with varying intensity, depth and presumably also persistence in the learning and entrepreneurial outcomes achieved. Generally speaking, the longer and the more intense the cooperation is in terms of action-oriented, experimental and reflective learning approaches, the stronger were the effects on competence development.

Another interesting observation is that formats, methods and tools can ideally be combined to enhance their effectiveness and provide a more multi-faceted learning experience. By combining formats (e.g. Field trip complemented by a Case study, Sustainability Screening combined with Service Learning), the learning can be deepened and strategic and other competencies for sustainability-driven entrepreneurship are promoted. This variety in combination of formats offers a wide range of possibilities how to implement learning processes integrating transdisciplinarity. Thus, practice partners can contribute to and participate in the process in multiple ways depending on their needs and availability. This demonstrated diversity and flexibility is one of the aspects raising the attractiveness of the practical guide on cooperation formats to practice partners. Both, external actors and students expressed the importance of bridging the gap in communication when HEI seek for

cooperation. The presentation of possible and appropriate combinations of formats, methods, and tools at the knowledge platform responds to this need. Orientation is provided by pointing out the specific highlights such as success factors and challenges. Good practices and testimonials from participants can encourage implementation or improvement of cooperation. The collaboratively elaborated CASE tools address two core processes in the context of ESD and EE. First, the development of competencies relevant for sustainability-driven entrepreneurship is supported by the CASE Sustainability Competencies Tool. It combines a comprehensive self-assessment with the opportunity of including external feedback. Second, the CASE Sustainability Performance Tool allows for a structured analysis of enterprises regarding their ecological, social, and economic dimension of sustainability. The practical guide for cooperation, the CASE tools, and other supportive elements aim at lowering the barriers to cooperate, reducing the risk of failure and providing inspiration and support for all involved actors. They have the potential to enhance the mutual learning experiences between students, practical partners, and teachers.

Furthermore, the formats and teaching strategies foster cooperation and collaboration. Students develop the capacity to address sustainability challenges in a participatory process. This reflects the understanding that cooperation is needed to overcome barriers, in particular in relation to wicked sustainability problems (Levin et al., 2012). Students learn to handle difficulties related to sustainability challenges and work in a pragmatic, result-oriented way, building capacity to address sustainability issues. Simultaneously, the development of the heart and cordiality are fostered, based on personal and emotional engagement. This is part of the personal development of the students getting ready to engage with the problems of our time and find solutions to them.

Our evaluation of the formats and teaching strategies supports that the pedagogical framework developed for the CASE master program offers a holistic learning experience for students with a keen interest to engage in sustainability-driven entrepreneurship. In sum, the CASE approach seems to reflect adequate forms of teaching and learning in the light of the grand sustainability challenges that need to be urgently addressed by future change agents. The pedagogical framework presented as well as the formats and teaching strategies tested with the help of 21 inter- and transdisciplinary courses represent a formidable contribution as to what strategies are effective in sustainability-driven entrepreneurship education to foster sustainable socio-economic change.

The findings have a number of implications for study programs in higher education institutions aiming at developing student competencies and fostering performance for sustainability-driven entrepreneurship. The joint activities of WP 5 and WP 6 resulted in appropriate solutions to facilitate and improve the quality of learning settings supporting corporation in between HEI and companies. The findings confirm the pedagogical principles formulated by the UNESCO (2014), for instance that the cooperative learning environments enhance the development of competencies beyond acquiring technical knowledge. The problem-oriented approach with local relevance integrates diversity in disciplines and methods in a participatory solution development process. Consequently, open-mindedness and holistic thinking can lead to behavioral and normative changes. The interviews with teachers, students and practical partners raised the awareness that the teaching and learning methods need to continuously evolve. Hence, the development of competencies and fostering performance for sustainability-driven entrepreneurship is an ongoing process of improvement according to changing needs.

The main objective of transdisciplinary cooperation in the context of sustainability-driven entrepreneurship education is to promote long-term change of the students' behavior to tackle

the Global Challenges and to actively contribute to the SDGs. The evaluated forms of cooperation enable exchange and enhance mutual learning between the actors, notably students, partners from business, nonprofit sector, administration, and teachers to empower the joint goal to contribute and create a sustainable socio-economic development.

Bibliography

Bernhardt, J., et al. (2015). Summary Case Needs Analysis, WP1.

Bernhardt, J. et al. (2015). CASE report – Needs Analysis, WP1.

Biberhofer, P., Rammel, Ch. (2017). 2017),"Transdisciplinary learning and teaching as answers to urban sustainability challenges ", International Journal of Sustainability in Higher Education, Vol. 18 Iss 1 pp. 63 – 83. http://dx.doi.org/10.1108/IJSHE-04-2015-0078

Biberhofer, P., Bockwoldt, L. et al. (2016) Joint CASE Report on Content and Methods for the Joint Master Program on Sustainability-driven Entrepreneurship. Deliverable of WP3 Content: Sustainable socio-economic development and sustainable entrepreneurship and WP4 Methods: Inter- and transdisciplinary teaching and learning methods, Vienna University of Economics and Business, Austria, University of Vechta, Germany.

Bryman, A. (2012). Social Research Methods (4th ed.). New York: Oxford University Press.

CASI (2016). CASI – Public Participation in Developing a Common Framework for the Assessment and Management of Sustainable Innovation. Retrieved from: http://www.casi2020.eu/

Dobson, H. E., & Tomkinson, C. B. (2012). Creating sustainable development change agents through problem-based learning. International Journal of Sustainability in Higher Education, 13(3), 263–278. http://doi.org/10.1108/14676371211242571

Economy for the Common Good (2015). An economic model for the future. Retrieved from https://www.ecogood.org/en/.

Eisenhardt, K., Graebner, M.E. (2007). Theory Building from Cases: Opportunities and Challenges. Academy of Management Journal, 50(1): 25-32.

Felber, Ch., (2015). Change Everything – Creating an Economy for the Common Good. Chicago: University of Chicago Press.

Freundlieb M, Teuteberg F. (2013). Corporate social responsibility reporting - a transnational analysis of online corporate social responsibility reports by market–listed companies: contents and their evolution. Int. Journal of Innovation and Sustainable Development, 7(1). doi.org/10.1504/IJISD.2013.052117.

Global Reporting Initiative (2016). G4 Sustainability Reporting Guidelines. Retrieved from https://www.globalreporting.org/information/g4/Pages/default.aspx.

Global Reporting Initiative (2016). Global Reporting Standards. Retrieved from https://www.globalreporting.org/standards/.

Greenaway, Roger (2008). Experiential Learning articles and critiques of David Kolb's theory. http://reviewing.co.uk/research/experiential.learning.htm.

Häcker, Thomas (2006b). Wurzeln der Portfolioarbeit. In: Brunner, Ilse; Häcker, Thomas & Winterer, Felix (Hrsg.) Das Handbuch Portfolioarbeit – Grundlagen, Anregungen, Erfahrungen aus Schule und Lehrerbildung. Seelze-Velber: Kallmayer bei Friedrich im Velber, 27-32.

Klafki, Wolfgang (1986). Die Bedeutung der klassischen Bildungstheorien für ein zeitgemäßes Konzept allgemeiner Bildung. Zeitschrift für Pädagogik, 32 (4), 455-476.

Klapper, R.G., Farber, V.A. (2016). In Alain Gibb's footsteps: Evaluating alternative approaches to sustainable enterprise education (SEE). The International Journal of Management Education 14 (3), pp. 422-439. https://doi.org/10.1016/j.ijme.2016.09.001

Kolb, David A. & Fry, Ron (1975). Toward an applied theory of experiential learning. In C. Cooper (Hrsg.), Theories of Group Process, London: John Wiley.

Kolk A. (2010). Trajectories of sustainability reporting by MNCs. Journal of World Business, 45(4), pp. 367-374. DOI.org/10.1016/j.jwb.2009.08.001

Lans, T. Blok, V., Wesselink, R. (2014). Learning apart and together: towards an integrated competence framework for sustainable entrepreneurship in higher education. Journal of Cleaner Production 62( ), pp. 37-47. doi.org/10.1016/j.jclepro.2013.03.036

Levin, K., Cashore, B., Bernstein, S., and Auld, G. (2012). Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves to Ameliorate Global Climate Change. Policy Sciences, 45(2), 123-152. doi: 10.1007/s11077-012-9151-0

Nowotny, H., Scott, P. & Gibbons, M. (2003). Re-Thinking Science: Mode 2 in Societal Context. Retrieved from http://comparsociology.com/wp-content/uploads/2013/02/Mode2-Science-Gibbons-Nowotny.pdf.

Osterwalder, A. and Pigneur, Y. (2010). Business Model Generation: A handbook for visionaries, game changers and challengers. Hoboken, New Jersey: John Wiley and Sons.

Reinmann, Gabi (2005). Erfahrungswissen erzählbar machen. Narrative Ansätze für Wirtschaft und Schule. Lengerich: Pabst Science Publishers.

Rieckmann, M. (2012). Future-oriented higher education: Which key competencies should be fostered through university teaching and learning? Futures, 44, pp. 127-135.

Rigg, C., O'Dwyer, B. (2012) Becoming an entrepreneur: researching the role of mentors in identity construction, Education + Training, Vol. 54 Issue: 4, p 324,

https://doi.org/10.1108/00400911211236181

Riess, Birgit (ed.) (2010). Using the iooi Method to Plan and Benchmark Corporate Citizenship, Bertelsmann Stiftung.

Saunders, M., Lewis, P., and Thornhill, A. (2009). Research Methods for Business Students (5th ed.). Harlow: Pearson Education Limited.

Scholz, R., Lang, D.J., Wiek, A., Walter, A.I., Stauffacher, M. (2006). Transdisciplinary case studies as a means of sustainability learning - Historical framework and theory. International Journal of Sustainability in Higher Education, Vol. 7 No. 3, pp. 226-251.

Stjernberg, T. (2006). Interviews as a Source of Knowledge. In: Löwstedt, J., Stjernberg, T. (Eds.): Producing Management Knowledge – Research as Practice, pp. 131-147, London: Routledge.

Unesco (2014). Teaching and learning: Achieving quality for all. EFA Global monitoring report. Retrieved from: http://unesdoc.unesco.org/images/0022/002256/225660e.pdf

Wiek, A., Bernstein, M.J., Foley, R.W., Cohen, M., Forrest, N., Kuzdas, C., and et al. (2016). Operationalising Competencies in Higher Education for Sustainable Development. In M. Barth, G. Michelsen, I. Thomas & M. Rieckmann (Eds.), Routledge Handbook of Higher Education for Sustainable Development (pp. 241-260). London: Routledge

Wiek, A., Withycombe, L., and Redman, C. (2011). Key Competencies in Sustainability: A Reference Framework for Academic Program Development. Sustainability Science, 6(2), 203-218. doi: 10.1007/s11625-011-0132-6

Wiek, A., Xiong, A., Brundiers, K., & van der Leeuw, S. (2014). Integrating problem- and project-based learning into sustainability programs. International Journal of Sustainability in Higher Education, 15(4), 431–449. http://doi.org/10.1108/IJSHE-02-2013-0013

Wilkinson, S. (2004). Focus Group Research. In: Qualitative research: Theory, method and practice. David Silverman (Ed.), SAGE.

Appendices

Appendix A: Questionnaires for student focus group interview (Big Foot)

Questions:

1. Let's remember the course XY, you participated in recently. Could you share with me any single experience from the course that was particularly meaningful to you?
2. Now we may focus more on the part of the course when you cooperated with a cooperating partner. Imagine I am not at all familiar with the subject of the course. A) Could you please describe in a few sentences what this cooperation was about? B) What was the aim of the cooperation? C) What was the setup of the cooperation? D) What was the outcome of the cooperation, i.e. what did you achieve? E) Were you satisfied with the cooperation with the company?
3. What do you think were the best aspects of this cooperation? What worked well?
4. Was there something that did not work particularly well? Why do you think it did not work well?
5. Which of the methods or tools applied by your teacher or university with regard to the cooperation was the most helpful?
6. Do you have any suggestions for improvements in the way the collaboration with the cooperating partner and the course as a whole was managed?
7. Is there anything concerning your collaboration with the cooperating partner that you are particularly proud of?
8. Any other experiences or suggestions you would like to share with us?

   Thank you very much for your cooperation!

Appendix B: Questionnaire for teacher interview (Big Foot)

1. Let's remember the course XY which you managed recently. Could you share with me any single experience from the course that was particularly meaningful to you?
2. Now let's focus on your experience regarding the cooperation with a cooperating partner. Could you describe shortly
   a. Based on your preparations made for the course, what did you expect from this cooperation?
   b. How did you plan and prepare the cooperation?
   c. How have you selected the cooperating partners?
   d. Were you satisfied with the way the cooperation worked in practice?
3. Comparing your expectations with the actual outcome, did you achieve your goal(s)?
4. Which of the methods and tools you applied worked particularly well?
5. Which of them did not work well? Why do you think they did not work well?
6. Would you suggest any changes to the methods and tools used for the future?
7. Is there anything concerning your students' collaboration with the cooperating partner that you are particularly proud of?
8. Any other experiences or suggestions you would like to share with us?

   Thank you very much for your cooperation!

Appendix C: Partner survey (Big Foot)

1. Please describe in a few words how you cooperated with students in the course.
2. What did you appreciate in the way the cooperation was organized by the university?
3. What do you suggest should be changed in the way the cooperation was organized by the university?
4. Based on your experience with the cooperation, is there something you consider particularly useful in a long-term perspective?
5. The thematic focus of the cooperation with the students was well chosen. (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?
6. The methods and tools applied in the cooperation worked well. (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?
7. The academic staff responsible for the cooperation with students (coaches, teachers) managed the cooperation well. (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?
8. The cooperation with the students was beneficial for the cooperating partner. (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?
9. I have personally learned something new from this experience. (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?
10. The human resources that you allocated to the cooperation were appropriate. (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?
11. The financial resources that you allocated to the cooperation were sufficient. (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?
12. I am satisfied with the cooperation with the students? (strongly disagree – disagree – Not sure – agree – strongly agree)
- Do you want to comment your answer?

Would you like to add any further comments?

Thank you very much for your cooperation!

Appendix D: Student survey (Small Foot)

1. Please briefly describe your experience with the cooperating partner(s) you interacted/collaborated with during the course.
2. Were you satisfied with the cooperation with the partner(s)? Please comment your answer.
3. What part of this experience was the most meaningful to you?
4. What have you learnt from interacting/collaborating with the cooperating partner(s)?
5. What did you appreciate regarding the way this interaction/collaboration was managed by your university?
6. What would you recommend to change or improve regarding how the interaction/collaboration with the cooperating partner(s) was managed?
7. Any other comments or ideas regarding your interaction/collaboration with the cooperating partner(s) you want to share with us?

Thank you very much for your answers.

Appendix E: Survey for teachers (Small Foot)

1. Please briefly describe your experience with the cooperating partner(s) you interacted/collaborated with during the course.
2. Were you satisfied with the way the cooperation worked in practice?
3. What part(s) of this experience do you think were most meaningful to your students?
4. What have you learned from managing the interaction/collaboration between your students and the cooperating partner(s)?
5. Which specific methods and tools applied for managing the interaction/collaboration worked well? Would you recommend these to be used in other courses?
6. Which specific method and tools you applied for managing the interaction/collaboration did not work well? How could they be improved for the future?
7. Any other experiences or ideas you would like to share with us?

Thank you very much for your cooperation!

Appendix F: Survey for partners (Small Foot)

Questionnaire:
1. Please describe in a few words how you cooperated with students in the course.
2. What did you appreciate in the way the cooperation was organized by the university?
3. What do you suggest should be changed in the way the cooperation was organized by the university?
4. The thematic focus of the cooperation with the students was well chosen. (strongly disagree – disagree – Not sure – agree – strongly agree)
• Do you want to comment your answer?
• The academic staff responsible for the cooperation with students (coaches, teachers) managed the cooperation well. (strongly disagree – disagree – Not sure – agree – strongly agree)
• Do you want to comment your answer?

5. The cooperation with the students was beneficial for the cooperating partner. (strongly disagree – disagree – Not sure – agree – strongly agree)

- Do you want to comment your answer?

6. I have personally learned something new from this experience. (strongly disagree – disagree – Not sure – agree – strongly agree)

- Do you want to comment your answer?

7. I am satisfied with the cooperation with the students. (strongly disagree – disagree – Not sure – agree – strongly agree)

- Do you want to comment your answer?

Would you like to add any further comments?

Thank you very much for your cooperation!

Appendix G: Overview on courses evaluated

Table 1: Pilot courses with Project-Based Formats

Course	Cooperation format	Region	University, Faculty & Institution	ECTS	Level	Type	Responses	Setting/place of interaction
Sustainability challenge I	Service learning	Vienna	Main Organizer: RCE Vienna/WU Vienna	4	Bach & Master	Big Foot	5 students, 1 teacher, 6 partners	Administration, NPO, Recycling company, City administration, NGOs, Energy company
Sustainability challenge II	Service learning	Vienna	Main Organizer: RCE Vienna/WU Vienna	3	Bach & Master	Big Foot	3 students, 1 teacher, 7 partners	NPO, Energy supply, city planning, consulting, community work, communications, city administration, public administration
SEEP (Service Learning I & II)	Service learning	Vienna	Department of Socioeconomics/ Institute for Ecological Economics	2,5	Master	Big Foot	5 students, 1 teacher, 7 partners	Climate protection and climate justice, online platform, environmental protection, mechatronic, food, urban development/research in city development
Outside the University Box -	Participatory Research	Vechta	General studies	6	Bach & Master	Big Foot	5 students, 1 teacher, 3	City administration,

Participatory research with people of the region	Project						partners	food entrepreneur, municipal Institution for elderly people and intense nursing.
Methods for Practical Entrepreneur-ship	Entrepreneurial project	Gothen-burg	Innovation and Entrepreneur-ship at Dept. of Economy and Society	7,5	Master	Big Foot	1 student, 1 teacher, 3 partners	Interaction with start-up or elaboration of own start-up idea in collaboration with Incubator.
Garage	Entrepreneurial project	Vienna	WU / BOKU		Bach	Small Foot	9 students, 2 teachers, 4 partners	Financing, law, consultancy, legal advice, administration, public organization, association
Sustainability Challenge – Start-up track	Entrepreneurial project	Vienna	BOKU, Vienna University of Economics and Business, University of Vienna, Technical University of Vienna	3	Bach & Master	Big Foot	4 students, 1 teacher	Students as future entrepreneurs
Case Study in Sustainable Development	Sustainable Development Case study	Gothen-burg	Dept. of Economy and Society	7,5	Master	Big Foot	2 students, 1 teacher, 3 partners	Interacting with officials from municipality and stakeholders on the Island of Öckerö
Sustainable Management	Sustainability Screening	Gothen-burg	Department of Business Administration	7,5	Master	Small Foot	15 students, 1 teacher, 2 partners	Visiting a local or regional company. Diverse sectors.

Table 2: Pilot courses with formats "In the field"

Course	Cooperation format	Region	University, Faculty & Institution	ECTS	Level	Type	Responses	Setting/place of interaction
Profiling internship - Inclusion	Internship	Vechta	General Studies		Bach	Big foot	5 students (all course partici-pants), 1 teacher, 1 partner	Social service institution, help for handicapped people
ECN-TryOut	Internship	Vienna	BOKU, coordinated by: Entre-preneurship Centre Net-work (ECN), BOKU	None		Mixed: Student question-naire, teacher interview, partner interview	4 students, 1 teacher, 1 partner	Internship in start-up
Studying Local Rural Systems	Field trip complemented by case study	Brno	Faculty of Social Studies Masaryk university, Department of Environ-mental Studies	4	Master	Small Foot	2 students, 1 teacher, 2 partners	5-day Field trip/seminar, team work, prepared their own research questions, interviewed the partners, analyzed the obtained data & presented it. Pottery, mini-farm & relax pension, small village, local level
Successful Environmental Project	Field trip complemented by case study	Brno	Faculty of Social Studies Masaryk university, Department of Environ-mental Studies	3	Bach	Small Foot	Responses: 7 students, 1 teacher, 2 partners	A car sharing and two bike sharing companies.
Sustainable Communities	Excursion	Vechta	General Studies	6	Bach	Big Foot	8 students, 1 teacher,	Semester-long course organized in block seminars with a final three days' excursion to the ecovillage Lebensgarten Steyerberg for immersive learning in how ecovillages can be living

Course	Cooperation format	Region	University, Faculty & Institution	ECTS	Level	Type	Responses	Setting
								laboratories of sustainability.
Management of Rural Space	Excursion	Brno	Faculty of Social Studies Masaryk university, Department of Environmental Studies	8	Master	Small Foot	Responses: 10 students, 1 teacher, 1 partner (farmer)	Two bio-farms, one breeding cattle and sheep in a natural way, the other working with revitalization of rural landscape
Analysis of cultural and communicative processes	Excursion	Bozen	Faculty of Education, Free University of Bolzano	6	Bach	Small Foot	Responses: 6 students, 1 teacher, 1 partner	Non-Profit Organisation which elaborates projects for economic self-employment plans and economic integration. Informal setting at NGO, gardening project.

TABLE 3: PILOT COURSES WITH FORMATS "IN THE CLASSROOM "

Course	Cooperation format	Region	University, Faculty & Institution	ECTS	Level	Type	Responses	Setting
Sustainable Development in the Oldenburger Münsterland (NEiOML) 1st edition	Guest lecture	Vechta	General Studies	6	Bach & Master	Small Foot	13 students, 2 teachers, 2 partners	Workshops in classroom. Four partners are invited as expert guest speakers and workshop facilitators to introduce regional challenges of sustainable development.
Sustainable Development in the Olden-burger Münsterland (NEiOML) 2nd edition (Winter semester 16/17)	Guest lecture	Vechta	General Studies	6	Bach & Master	Small Foot	18 students, 2 teachers, 1 partner	As above, but this time, young entrepreneurs presented their activities and then the students discussed with them.
Change Management	Guest lecture	Vienna	Center for Global Change and Sustainability, BOKU	2	Master	Small Foot	7 students, 1 teachers, 2 partners	External guest lecturers from diverse back-grounds giving practical insights and a picture of

								the diversity of innovation management
Ethical and Local Economy	Guest lecture	Brno	Faculty of Social Studies Masaryk university, Department of Environmental Studies	5	Master	Small Foot	10 students, 2 teachers, 3 partners	Presentations of guest speakers with practical experience of grassroots eco-social initiatives and projects, e.g. car sharing company, business co-operative (hospitality & catering facilities). HUB (accelerator) for social enter-prise
Teamwork	Guest lecture	Bozen	Faculty of Education	5	Bach	Small Foot	4 students, 1 teacher, 1 partner	The students got an insight into the working routine; they had the possibility to discuss their doubts and fears concerning their own future work

Appendix H: List of categories for initial coding

Code: 1	Strategies: teachers	All the means, tools, activities, plans or other strategies intentionally applied by the teachers to achieve the course aims.
Code: 2	Strategies: students	All the means, tools, activities, plans or other strategies intentionally applied by students to achieve the course aims.
Code: 3	Strategies: cooperating partner	All the means, tools, activities, plans or other strategies intentionally applied by the cooperating partner to achieve the course aims or their own needs.
Code: 4	Effects: teachers	All reported positive or negative effects of the cooperation on teachers' competence, experience, etc.
Code: 5	Effects: students	All reported positive or negative effects of the cooperation on students competence, experience, self-efficacy, behavior, etc.
Code: 6	Effects: cooperating partner	All reported positive or negative effects of the cooperation on the cooperating partner (new staff, credit…).
Code: 7	Personal meaning	Any personal meaning students, teachers, or cooperating partner staff attribute to the course.
Code: 8	Context	All the factors influencing the learning situation not intentionally chosen by responsible teachers. Further properties are defined.
Code: 9	Context: students	All the contextual factors connected with personality, expectations, initial competence of students.
Code: 10	Context: teachers	All the contextual factors connected with personality, expectations, initial competence of teachers.
Code: 11	Context: cooperating partner	All the contextual factors connected with the size, focus, staff, or needs of a cooperating partner.
Code: 12	Context: course	All the contextual factors connected with the analyzed course, e.g. objectives, credits, etc.
Code: 13	Context: university	All the contextual factors connected with the university program, needs, policy, etc.
Code: 14	Context: circumstances	All the circumstances emerging during the cooperation not mentioned above that affected the cooperation.
Code: 15	Context: other	All the contextual factors not mentioned above.

Appendix I: Missing pilots

1. Missing Pilot Course: Project Design (Master of eco-social design), Faculty of Design, Free University of Bolzano

Master description:

Format	Context	Facts	Challenges	Outcomes
Master in Eco-social design *Bolzano/Italy*	Inter- and transdisciplinary university Master of Arts focusses on the potentials of local communities and economies, and on how to unfold them in a globalized world. Eco-Social Design is not only about more eco-efficient products and services, but is striving for more social good and good life with less material goods.	ECTS credits: 120 Duration of the course: 2 years Courses will be taught in: Italian, German, English Places available: 20 EU + 2 non-EU Campus: Bozen-Bolzano Tuition fees: €1.343,50 per year	To develop transdisciplinary projects by the students which are able to approach today's issues effectively and/or co-design concrete practices and visions for tomorrow. The overarching challenge: Good life for all! – empowered and facilitated by excellent design.	Interdisciplinary and transdisciplinary projects created by the students and presented as final thesis of the two-years Master.

Course description: Project design

Students are introduced to the contemporary design research landscape, with special reference to Eco-Social design, by asking 'What is design research?' and how is it similar to or different from research in other disciplines. Different types of research (e.g. primary, secondary, qualitative, quantitative, action research, constructive), research in polydisciplinary modes, frameworks and approaches, are considered. Early teaching sessions around INITIATION and EXPLORATION are aimed at helping students to initiate a research project, develop a contextual inquiry, frame contextual insights and problems or challenges in order to generate research questions and/or a design brief. At this juncture 'research actions as design exploration or design studies' constitutes more scientific orientated content, while 'design actions as design practice or design (as) research' constitutes content orientated more towards professional skills and knowledge. However, students are expected to weave between these two orientations as demanded by their choice of project in order to develop a project phase of GENERATIVE or CONSTUCTIVE design outputs. EVALUATION, including critique, reflection, synthesis, re-framing should lead the student towards recognizing new knowledge, making it public and assessing the project's potential for societal change. This evaluation should also help initiate a concrete proposal for the THESIS project.

Students will be able to:

- Plan, prepare, scope, set intentions, define a territory or terrain, define a focus or foci, in order to initiate a design research project.

- Undertake a detailed contextual inquiry of their chosen project area, including a literature review, contextual review including knowing people, place and other specifics, define key actors and stakeholders, map the terrain, locate their position and orientate themselves.

- • Identify and frame contextual insights, map and frame the problem(s) or problematique.

- Generate research questions from the project initiation and contextual inquiry phases.

- Generate a design brief from the project initiation and contextual inquiry phases.

- Choose relevant theories, approaches, strategies and methodologies to undertake research actions. Then, devise experiments and gather data followed by subsequent analysis, synthesis and critique to understand the results.

- Drive processes of ideation, concept generation, prototyping, testing, iterating in order to frame potential solutions to problems identified in a design brief. Monitor and evaluate the impacts of their experimentation and prototyping in order to critique and reflect upon the outcomes.

In addition, depending upon the specific context of their chosen project, they will be able to:

- collaborate with experts and other designers to develop and implement an integrated project;

- take into account the environmental, social and economic impacts occurring within the tension between global and local dimensions;

- take into account the socio-economic aspects that characterize a territory, a community and a group of people;

- integrate socio-economic aspects and sustainability requirements in project design while considering the tension, which occurs between the local and the global dimensions;

- facilitate and promote the participation of different stakeholders;

- adopt and invent project methods that comply with the requirements and with the needs of the project and its stakeholders;

- work with interdisciplinary, international and multidisciplinary teams;

- develop an individual way of thinking, leading to critical judgements and self-assessments;

- balance inspiration and systematic planning;

- balance both emotions and functions in design and communication;

- communicate, multilingually in a convincing way, through a variety of modalities (written, oral, visual);

- design products, services, web platforms or other interactive applications, communication campaigns, visualization of information and/or other types of visual communication and multimedia in an integrated way;

- design by taking into account the needs and desires of a given territory, of a situation/set of circumstances, of a specific group of people, thanks to the ability of observing, listening, interacting and mediating amongst various stakeholders involved in the project;

- talk to experts about the project;

- read experts' articles, studies and reports related to one's own project issues and integrate those analyses with one's own project design;

- take into account the sustainability requirements of a product, a service, an application or an interactive system; integrate the sustainability requirements in the project and in one´s own design;

- organize a research project while identifying relevant studies and researches, experts to collaborate with, methods and instruments to adopt;

- organize and manage creative processes and adopt appropriate and relevant methods for their development (for example participatory design, user-centered design, action research, large group facilitation, project management);

- organize, manage and motivate a team;

- integrate knowledge techniques and production systems, the knowledge of materials, of their processing and of the related sustainability requirements in the design process;

- outline the cultural, social and economic territorial framework where the students will intervene;

- set up a field work or an inquiry in order define the socioeconomic framework, by exchanging ideas with researchers and experts they will collaborate with;

- understand specialist literature so as to integrate it within their own research project;

 Knowledge will be acquired in the following field:

- The relationship between design theory, practice and their application to real life contexts and managed projects.

- The complimentary relationships between design theory and other theories e.g. philosophy, sociology, transition theory, needs theory, sustainability theory, and how these are best integrated into contemporary Eco-Social design practice.

Piloting process

The course took place in the winter term 2016. The teacher was asked if the course could be piloted only at the end of the course. The evaluation of the course was sent out via e-mail as most of the student had already left the university for Christmas holidays. Only two students responded to the online questionnaire until January 2017. Therefore, the online questionnaire was sent out another time in February 2017, but also this time only one student filled out the questionnaire. With these few responses, it was not possible to do a proper evaluation process. It was decided within the CASE team to not consider this course as a pilot for the CASE project.

Lessons learned

The responsible for the pilot process should have been present during the course in order to present the CASE project and highlight the importance of piloting the course face to face to the students. Being present already during the course and to fill in the questionnaire already during one of the last lessons would probably have increased the number of replies. Hence, the presence of the responsible for the pilot process already during the course seems to be an indispensable prerequisite for a proper pilot process.

2. Missing Pilot Course: Social innovation and entrepreneurship (Master of Science in Knowledge-based Entrepreneurship), Department of Economy and Society, University of Gothenburg

Master description:

The Master's program in Entrepreneurship provides students with a dynamic learning environment, so that they may acquire scientific and practical knowledge about innovation and entrepreneurship as well as the skills to turn such knowledge into practice.

The program provides knowledge and skills relevant to developing new businesses as well as renewing existing businesses through entrepreneurship. This involves integrating knowledge about the interplay between services, design, and different types of knowledge with processes of entrepreneurship, business development and commercialization. The program provides an individual learning process so that each student can develop their analytical and reflective capabilities, in relation to entrepreneurial processes. During year 2, teams of students are engaged in developing a business project or social entrepreneurship project in connection with their courses. These projects can be ideas generated by the students, or ideas that arise externally. GU Venture provides business coaching and additional support for these projects.

Course description: Social innovation and entrepreneurship

The aim of this course is to provide students with a new orientation and way of thinking to organize and lead sustainable development, namely through social innovation and entrepreneurship. Sustainability encompasses many dimensions, including the long-term maintenance of responsibility, which has environmental, economic, and social dimensions. This course focuses upon ways in which social innovation and entrepreneurship are driving the delivery of social (including environmental) value in communities, and the way in which this accelerating economic relationship drives social changes, both globally and locally. Students conduct their own Social innovation and entrepreneurship project in groups. Moreover, guest lecturers will present their professional experience within the field. The course will help students to develop an awareness and critical understanding of the accelerating economic relationship between the government, business and the third (non-for-profit) sectors, in areas of social innovation and entrepreneurship.

Piloting process:

The course took place in the spring term 2017. It was not identified as suitable for piloting from the very beginning and came only to the evaluator's attention after participating in an entrepreneurship seminar and reading about the course in a book about the entrepreneurial ecosystem in Sweden. In the book, the interesting qualities of the course and its focus on cooperation with the local community were highlighted. It was thus decided to pilot the course Social innovation and entrepreneurship instead of another course that would add fewer new insights. During the earlier piloting work, the team had spoken to employees at the Department of Economy and Society to present CASE and make sure that it was possible to evaluate relevant courses, which was also confirmed by the Head of the Department.

In spring 2017 a new course responsible took over from the predecessor who had lead the course for a long time. A meeting was arranged with the new responsible/teacher to present CASE and outline the procedure for the course evaluation. The meeting was friendly and the course responsible was positive towards providing the support needed for the evaluation. A more detailed outline of the piloting with questionnaires was also provided after the meeting to enable the teacher to reflect on

when it would be suitable to administer the questions to the respective participants in the course. Towards the end of the course the evaluator tried to contact the course responsible again to make the necessary arrangements. However, despite several reminders by mail and telephone calls it was not possible to get into contact with the course responsible again before the summer break. It seems reasonable to assume that the circumstances had changed in a way that made it impossible for the course responsible to grant his support.

Lessons learned:

A lesson learned from the above is that more than a single meeting is required to mobilize commitment and support from supposedly already overloaded teachers. Probably, it would have been preferable to give a longer prior notice so that the additional tasks for the evaluation can be added to the planning of the course from the beginning. In that way, a higher acceptance and degree of formalization of the evaluation procedure could have been achieved. Certainly, presenting the CASE project in class could have further paved the way for a smooth evaluation. It may also simply have been bad luck that a new course responsible just had taken over the course, who may have had to cope with many other issues. The evaluation would have required additional efforts which may have been difficult to cope with.