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WP 3 REPORT

Transformative Learning Environments, Methods and Tools for Implementing the SDGs in the Agribusiness and Food Production Sector

With the support of the Erasmus+ Programme of the European Union

SDGs Labs
Making the SDGs our business

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SUMMARY

The project “SDGs Labs - Making the SDGs our business” is carried out by eight European partners from four countries (Austria, Germany, Italy and Portugal), involving Higher Education Institutions, businesses as well as other actors from the field. It aims at the integration of the 17 Sustainable Development Goals (SDGs) into business practices of the agribusiness and food production sector. In order to reach this, the project “SDGs Labs” seeks to translate the SDGs into day-to-day business practices, by employing co-learning and co-creation. Ideally, the SDGs can provide business opportunities and support innovation in the sector.

The project is carried out against the background of increasing sustainability challenges of the agribusiness and food production sector and the high importance and potential of this sector for contributing to the SDGs.

This report outlines the work of work package three (WP3) and its results, focussing on the search for and review of methods and tools supporting the SDGs, as well as their assessment with regard to the applicability in the context of this project and the planned educational formats (‘labs’ and ‘academy’).

The report highlights how the tasks of this work package have been carried out, as well as its results. It describes the steps undertaken for the analysis and review of methods and tools, by including both desktop research as well as drawing on practical experiences of the project partners. To address a broad range of methods, tools as well as approaches to learning in the context of the SDGs and innovation, while also including various learning environments, the review and analysis task was split up into four sup-topics. The outcome of this resulted in an extensive list of methods, tools and learning approaches, that have been consequently assessed with regard to their applicability and usefulness in the context of this specific project and its planned Co-Learning and Innovation Labs. The categories for the assessment were (derived from quality criteria of the labs) developed during a common workshop (D3.1). The assessment itself was carried out as an internal online-survey, and the results were included in a list of methods (cp. annex of this report).

Moreover, the compilation of a translation framework to translate the SDGs into concrete priorities of action for companies builds upon already existing SDGs translation frameworks, and was started as a beta-version, which will be continuously fed with new knowledge gained throughout the project and adapted accordingly.

1. INTRODUCTION

1.1. THE PROJECT SDGS LABS – MAKING THE SDGS OUR BUSINESS

The project 'SDGs Labs – Making the SDGs our business' is an Erasmus+ Knowledge Alliance, linking eight partners from universities, business and NGOs:

- Vienna University for Economics and Business (project coordinator), Austria
- University of Vechta, Germany
- Universidade de Trás-os-Montes de Alto Douro, Portugal
- Terra Institute, Italy
- ISEKI Food Association, Austria
- Wiesenhof, Germany
- CEIFAcoop, Portugal
- Regia – Douro Park, Portugal

The project targets the integration of the Sustainable Development Goals (SDGs) into business practices of the agribusiness and food production sector. In order to reach this, the project seeks to translate the SDGs into day-to-day business practices. By this, the SDGs ideally can provide both business opportunities while also supporting innovation in the sector. Linking to this, co-learning and co-creation play an important role, as the project aims to build a culture of collaboration and knowledge exchange between businesses, higher education institutes, non-profit institutions and other stakeholders.

The project is carried out against the background of increasing sustainability challenges of the agribusiness and food production sector and the high importance and potential of this sector for contributing to the SDGs. Moreover, the project aims to contribute to the search for adequate methods and tools to address the SDGs by business actors. Correspondingly, innovative educational formats ('labs' and 'academy') will be developed to test identified promising methods and tools and to adjust them further, if needed.

In order to meet challenges of sustainable development, the United Nations adopted the "Agenda 2030 for Sustainable Development" with its 17 Sustainable Development Goals (SDGs) (UN, 2015). Because of their comprehensive nature, the implementation of the SDGs requires far-reaching changes in all sectors of the economy.

Sustainability challenges in the agribusiness and food production sector are manifold and vary widely across different regions, products, production system as well as stages of the value chain. Among them are not only a growing scarcity of elementary resources such as water, land, soil and the loss of biodiversity. "Agriculture both contributes to climate change and is affected by climate change" (Böll Foundation et al., 2019: 62). Likewise, also for other sustainability topics, challenges of the agribusiness and food production sector encompass both, challenges to which the sector contributes, as well as challenges that the sector faces. These include above all environmental problems, scarce resources, and climatic changes (Böll Foundation et al., 2019). Overall, the European agribusiness and food production sector is facing an uncertain future and multidimensional challenges (Ernst & Young GmbH 2019:12-13). Moreover, changed expectations to-

wards agriculture and increased criticism by society (e.g. Thünen Institute, 2019, Christoph-Schulz et al., 2018) and a lack of trust in the food sector (IPES Food, 2019) demand for steep adaptation. Such concerns are voiced against the prognosis of a continued global population growth, resulting in an increased demand for food (FAO, 2017). At the same time, the agribusiness and food production sector is connected to a particularly large number of the SDGs, as it is predicted to deliver more than a quarter of the 169 targets associated with the SDGs (Alphabeta 2016:9).

Achieving the SDGs and addressing the complex global problems is therefore urgent, and "transformative change [...] is necessary" (UN Environment, 2019: 18). Therefore, a fundamental change in the usage of natural resources is needed (cp. ibid: 19). There are numerous calls transforming agriculture, however, very different approaches for changes and solutions are discussed (McNeil, 2019, Béné et al., 2019).

Corporate social responsibility and sustainable business in the agricultural context (FAO, 2017) require that sustainability is incorporated in all processing steps – from field to the plate at local, regional and international levels (cp. FAO, 2017). However, with regard to the engagement of companies with the SDGs, current studies indicate: while a high share of businesses (71%) are planning to engage with the SDGs, it seems more difficult to "embed the SDGs into strategy" (planned by 41% within five years), and especially tools for assessing a company's impact on the SDGs are known to a lesser extent (13%) (PWC, 2015: 1).

1.2. CONTEXT OF WP3 WITHIN THE PROJECT SDGS LABS

WP3 on 'Methods: Translation Framework and Transdisciplinary Learning Environments' aims at contributing to the project by gathering knowledge on and experience with teaching, training, learning and co-learning methods and tools that are potentially applicable for the translation of the SDGs in the agribusiness and food production sector. Moreover, it addresses compiling methods and tools that are well applicable for the following work packages and the educational formats ('labs').

Subsequent to the first work package 'Common Knowledge Base & Needs Analysis', which was dedicated to the creation of a "common knowledge base" embedded in desktop and empirical research, WP3 is thus another content-related work package.

Tasks of the work package and main expected results

Task T3.1 'Translation of the SDGs into day-to-day practices of enterprises in the agribusiness and food production sector' aimed at creating a 'translation framework for the SDGs', supporting businesses that want to implement the SDGs. It supports them to connect the abstract SDGs to their business and to identify key actions and/or measures within their sector, which are relevant for their specific part of the value chain.

Task T3.2 'Analysis and development of transformative methods and tools' included an analysis of four thematic areas to cover a broad thematic range (see section 3.2 of this report). The expected results of this task were to get an overview of the literature on methods and tools, as well as to collect good practices and experience of the consortium partners. By doing this, both practical and scientific resources were sought to be brought together. In addition, the outcomes of this collection were used for an assessment carried out in T3.4.

Task T3.3 was a 'Workshop on transformative methods and tools for the SDGs', which took place in November 2019 at the University of Vechta and is equivalent to deliverable D3.1. The workshop had the objectives to discuss the results of the review, analysis and development of different methods, and to examine how the different methods and tools can be best applied in business processes and HEIs courses. The workshop

was also facilitated to draw conclusions from the previous needs analysis and common knowledge base (WP1) for the application of methods, as a preparation for the upcoming work packages WP4 and WP5.

Task T3.4 ‘Assessment of transformative methods and tools for the SDGs’ builds on the analysis and development of methods and tools in task T3.2. The applicability of the previously selected methods, tools and learnings approaches was assessed through an online assessment tool, gathering the experience and evaluation/estimation of all consortium members. Consequently, this task serves as important basis for the upcoming work packages WP4 and WP5.

1.3. AIM OF THE REPORT

The aim of this report is to enable an overview and understanding of the carried out research and analyses, the key insights that were gained during the work flow of WP3 as well as lessons learned that are relevant for future work packages. Moreover, it describes in detail the methods and tools that were gathered, reviewed and assessed by the project consortium.

1.4. STRUCTURE OF THE REPORT

The report is structured in accordance to the chronological order in which the tasks (introduced above) were carried out. Subsequent to this first introductory chapter, the review and analysis of learning methods and tools for the SDGs, as well as the results are described (T3.2). In the next part of this report, the workshop on methods and tools (T3.3) is depict, in which the reviewed and analysed methods of T.3.2 were discussed in terms of their further application in the project. This is followed by a chapter on the assessment of the above-mentioned methods and tools (T3.4), also by applying criteria developed in the workshop. The chapter illustrates the methodology applied for firstly gathering methods and tools relevant to this project, and secondly assessing them consequently via an online assessment tool. The search for a translation framework for “translating” the SDGs into day-to-day business practices of the sector in the different regions is described consequently, and a first version is presented. The report concludes with summarizing the main outcomes of this work package as well as lessons learned and implies implications for the following work packages.

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2. REVIEW AND ANALYSIS OF THE TRANSFORMATIVE METHODS AND TOOLS

2.1. METHODOLOGY

As this task aimed to cover a broad range of topics and perspectives, the first part of the research was divided into four research groups. These four groups were:

Group 1: Methods and tools of innovation and transformation

The objective of group 2 was to analyse and develop methods and tools of innovation and transformation in the context of applying the SDGs into business processes and HEIs courses.

Group 2: Transformative methods and tools of learning

The task of group 1 was to analyse and develop transformative methods and tools of learning in the context of applying the SDGs into business processes and HEIs courses.

Group 3: Innovations concerning linking virtual learning spaces with real social learning experience

Group 3 had the task to analyse and develop innovations concerning linking virtual learning spaces with real social learning experience.

Group 4: Learning environments in order to implement the translation of the SDGs into the workplace

Group 4 aimed at analysing and developing learning environments in order to implement the translation of the SDGs into the workplace.

Those four groups were all provided with guiding questions on what needs to be researched. The methodological approach to this first task can be described as literature review combined with online research and fed by own practical experience.

2.2. AREAS OF THE RESEARCH

2.2.1. METHODS AND TOOLS OF INNOVATION AND TRANSFORMATION IN THE CONTEXT OF APPLYING THE SDGS INTO BUSINESS PROCESSES AND HEIS COURSES

Before clarifying what methods and tools of innovation and transformation can look like, here in a first step, the terms innovation and transformation are clarified. An understanding of innovation and transformation was started, and important aspects of it are outlined in the following section.

Innovation and transformation are both important theoretical concepts in the context of the SDGs, however, an innovative process does not necessarily need to support (socio-environmental) transformation, and vice-versa a transformative sustainable change, does not automatically

entail innovations, in the sense that these could be transferred into business opportunities.

Closely interlinked with the term 'transformation' is the term 'transition'. Both are in practice or every-day context at times used interchangeably, even though they have different theoretical backgrounds. Transition towards sustainable development (Grin et al., 2010) as well as the socio-ecological transformation (e.g. Brand, 2016) have experienced increasing attention and use, in academia as well as in politics (WBGU 2011).

As notions of how change towards a more sustainable development are part of both concepts, they are depicted here in brief and some main differences are outlined.

Transformation and transition, both concepts deal with the need for profound changes, that are required to address the need for a more sustainable development. Hence, both start out with stating an unsustainable state of the world of interrelated ecological, economic and social problems, named as "multiple crises" by Brand (2016), while Grin et al. also describe "persistent problems [that] express themselves into crises, such as food, water, mobility and health crises, as well as energy and climate crises" (Grin et al., 2010: 1). Hence, the interrelatedness of the problems is key in both concepts. Moreover, both concepts point out that these problems are of a global nature. Both look at long-term, fundamental change, with processes that are non-linear, i.e. non-incremental processes and changes are irreversible in time and space.

An etymological approach provides a first idea on the difference of both 'change concepts': while transition stems from (lat.) 'transire' meaning 'go or cross over', i.e. passing from one point to another, transformation stems from (lat.) 'transformare', which means 'change in shape, metamorphose' (Online Etymology dictionary: 'transition', 'transform').

This is in line with the theoretical approaches of the transition management concept (for a much referred to concept cf. Grin et al., 2010) that conceptualize change towards sustainability by enquiring the processes at stake when 'transitioning' from one state of the socio-economic system to another (more sustainable one).

Yet, theories employing transformation claim for more radical changes as e.g. Stirling outlines in his paper "Emancipating Transformations: From controlling "the transition" to culturing plural radical progress " (2014).

The transition management approach focusses on "the dynamic and governance of long-term transformative change" (Grin et al., 2010: XVII). The term transition towards sustainability, was decisively coined at first by Kemp, Schot and Hoogma in 1998. An important theoretical concept to describe the "dynamic of change" in transition management is the multi-level perspective, an evolutionary economics perspective (Geels and Schot, 2010: 23 ff.). Change is conceptualized to take place at three different levels: niche, regime and landscape. These three levels are in an equilibrium but mutually influence each other. A transition occurs when change from one (relatively) stable configuration into another configuration takes place. This can be initiated from all levels, and by "dynamic multi-level interactions" (ibid: 24). Either niche actors provide innovative approaches to solve certain problems, and these are eventually challenging the existing solutions and replace them after a while. Instead, it can also occur that external factors such as changed legal requirements or changed societal demands exert pressure on the existing configuration and hence call for new solutions, and modifications, i.e. 'change'. Changes occur here as "emergent", the perspective on science is dominated by "evolutionary economics" and "system theory"; and it is assumed that steering and governance of change is not possible on a large scale (Grin et al., 2010: 3-5). Changes are initiated as well by impulses from niches, as well as by changes on regime level (e.g. by changes in law or institutional frameworks). Big societal trends manifesting in the so-called landscape level, can as well show,

but they are rather long-term, and slowly changes (Grin et al., 2010: 1-4).

The term transformation is both used to illustrate a radical and capitalism-critical vision of change that is needed (e.g. Brand et al., 2013), at the same time it is also prominent in documents of the United Nations and often used in the context of the SDGs. E.g. explaining their vision for a future agriculture also the FAO draws on this term in their report "Transforming the world through food and agriculture. FAO and the 2030 Agenda for Sustainable Development" (FAO, 2019).

On a more detailed level, differences between the concepts are e.g. that in the transition management approach, changes are often induced by innovations, that are not only, but often understood as technological innovation. In contrast, transformation literature emphasizes the role of social innovations (e.g. Jaeger-Erben et al., 2015, 2017). Moreover, transition management assumes that transitions can be (at least to a certain degree) managed, and that e.g. actors from the three levels (niche, regime, landscape) can strategically influence the process, e.g. by providing new solutions (innovations) at a moment of increased need for new solutions or increased openness, i.e. while a "window of opportunities" (Geels & Schot, 2010: 21) opens up, and facilitates the success of establishing new socio-technological configurations (ibid: 20f.). Yet, transformation literature conceptualizes the possibilities of influencing change to a much more limited extent. Also, rather than focussing on innovations as inventions that economically succeed (as traditionally conceptualized in economics) (cp. Bormann et al., 2011: 22 with ref. to Schumpeter 1987), they add the aspect of sustainable practices as innovations (e.g. Shove et al., 2012; Jaeger-Erben & Offenberger, 2014). This broadens up the discussion on ideas for a more sustainable future and also involves the perspective of learning by actors as well as communities that are part of and affected by this transformation.

The term innovation is likewise important for this project, since the project aims to foster innovations in the agribusiness and food production sector. Following this project's idea innovations are relevant for implementing the SDGs because they are considered a means to push forward the SDGs and to identify opportunities to implement the SDGs. Moreover, they can present a contrasting perspective to the perception of the SDGs and sustainability to not or no longer regard them as 'an additional burden and obligation' for companies. Instead, by finding innovative ways to implement the SDGs, business opportunities could arise which are attractive to companies and support the implementation of the SDGs.

The literature on innovation is very extensive, and addressed by different perspectives of businesses, while different scholarly economic directions prevail. Some main theoretical strings of argumentation are exemplified in the following.

As already mentioned above, in traditional economic literature, an invention became an innovation when it was economically successful and had established at the market (cp. Bormann et al., 2011:22 with ref. to Schumpeter 1987). In contrast, the above-mentioned evolutionary economics provide a system approach and consider the context in which this innovation takes place. It starts from the assumption that (similar to evolutionary processes in biology) complex systems have developed a set of mechanisms that ensure their own survival (reproduction) in the context where they are existing. Thus, in a changing world, 'adaptation, flexibility, and resilience mechanisms' are important to preserve a system's reproduction capacity. Evolutionary theory analyses the role of 'selection' and 'variation' (which novelties undergo) in such evolving development processes (cp. Douma & Schreuder, 2017).

Yet other strings of innovation theory focus on innovation within companies. E.g. the well-known

definition of Katerva merges the concepts of innovation and sustainability as follows:

> *"Sustainable innovation is a process where sustainability considerations (environmental, social, financial) are integrated into company systems from idea generation through to research and development (R&D) and commercialization. This applies to products, services and technologies, as well as new business and organization models." (Katerva, n.d.)*

Yet, against this background, the question arises, if such process driven by the idea of sustainability necessarily also leads to sustainable outcomes.

Referring these theoretical ideas to practical application and to the project context the following aspects are important:

- It is of practical relevance to be able to distinguish innovations that have a positive impact on sustainability (from those that only intent to do so).
- It is important also to look on the consequences of innovation. In this project, one cannot assess which effects an innovation has on the market. Also, long-term changes will (probably) only be visible after the end of this project. Yet, it is important to estimate and at best guide what impacts an innovation has on the SDGs which go beyond market effects. As an example, changes in the diversity management of employees of a company may have no market effect but can positively contribute to SDG 5 'Gender Equality'.
- Companies can play an active role in implementing sustainability goals, yet they are part of a bigger system, that influences the company's decision for sustainable innovations and changes. All levels, 'niche', 'regime' or 'landscape' can influence them.
- Depending on their orientation, goals and activities, companies or associations themselves can be understood as part of either niche actors or regime actors.
- It is necessary to both look at company internal process of change, as well as on longer-term and more systemic changes for reaching progress towards sustainable development.

For relating these concepts to the project and to the task of this work package, several questions were addressed.

How do (sustainable) innovations emerge (within the company, the value chain or in the whole sector)? Who induces them or demands them?

This question relates to concepts of business management as well as to evolutionary economics (outlined above). On a theoretical level, probably many important relations between innovation theory, sustainable economics and the SDGs can be found. Yet, this question is primarily a theoretical one, and hence too specific for the context of this project and the task of this work package. Yet, it was found that these topics may be of relevance again in a later phase of the project, when working in a concrete situation with a company on the topic of innovation.

Yet, some implications from the theory introduced above can be drawn: The question of how innovations emerge, and the evolutionary theory that addresses this aspect call for methods to take into account changes, needs, requirements addressed (from niches as well as from landscape, in form of laws or regulations, and in form of societal trends).

Experience from a regional development process in north-western Germany showed that scenario workshops can help to visualize such long-

term trends (Strategy council on bio economy in Weser-Ems-region, 2015).

Scenario workshops can be conducted both, in formal and informal learning settings and can provide a learning setting for sustainable development (Burandt, 2011: 4). In a scenario workshop, the description of the status quo is an important first step, before clarifying interrelations and possible future developments, and hence, consequently developing future options from this analysis. A systemic perspective (as emphasized by the evolutionary economics theory and transition management) can be found e.g. in the fact that stakeholders different backgrounds, e.g. different stages in the value chain, politics, companies, association etc. are present and hence need to go beyond their single-actor evaluation. (Example from the project 'Master plan bio economy Weser-Ems region 2020'). Moreover, on a company level, analysis tools that help for orientation of a company along future needs and external forces (of which sustainability challenges can be an important part of) are useful.

How can (day-to-day) processes within the business be directed towards sustainability?

This question is primarily a theoretical one, too. For the application in the project, it is important to have tools that at first help to evaluate the sustainability impact of a project, company, activity or innovation. This seems important especially on a rather small scale, meaning company not sector-wide, it might be easier to assess the effects then. Secondly, relevant for the application in the project are tools and methods that can help guide future development processes, and decision-making.

In business management, for starting a new business, developing a business plan as well as to explain this to external stakeholders, several tools have become a standard repository. Such tools have also been adapted for sustainable businesses. Requirements for such business analysis tools are that they need to be "easy to use, familiar and can represent a common language", they show "links between sustainability, business opportunities and risk", give simple guidelines for day-to-day practice, and should be applicable by persons from different levels of hierarchy. Moreover, enable exchange with and comparison to other stakeholders or competitors, and they should link strategic to operational aspects of a business (Gerlach, 2019). Standard tools include the business model canvas and the SWOT analysis, which saw a "widespread adoption in the start-up community, in companies and in consultancies" (ibid.)

The need to assess the sustainability impact of a "sustainable innovation" and to develop a framework that can be applied by different actors, companies, academia, politics as well as civil-society was also addressed in the EU horizon 2020-project "CASI - Public Participation in Developing a Common Framework for the Assessment and Management of Sustainable Innovation". As a practical outcome, the project developed a website with a database of sustainable innovations in various sectors in Europe. Such a database can provide inspiration for sustainable innovations, and the framework can also help for orientation on how to assess sustainability aspects of innovation (cp. Anttila, 2016).

'Which methods do support innovation and transformation for achieving the SDGs?'

Similar to above, assessment and guidance tools such as business canvas, swot analysis and orientation frameworks for sustainability can be useful. Moreover, to support transformative processes, design thinking methods as well as systemic methods are very useful, as these can help to initiate a process of change and of new orientation.

In the context of company internal, as well as mixed-stakeholder groups, furthermore the change of perspectives was reported from practical experience as an important element. This can

help to gain access to new approaches and ideas and is fundamental to start an innovative process.

The question **'Which methods of innovation and transformation are already applied in business processes and HEI courses as well as in related associations and how can they be directed towards achieving the SDGs?'** aims primarily at gathering for good practices of methods and tools from experience of the project partners.

Moreover, the question "What is a ‚good practice'? How to evaluate practices and what make them sustainable?" was addressed. For this end, some approaches and tools were as well collected, that might help assess sustainable innovations and that shed light on the question of how innovations can be characterized and classified as 'sustainable'.

Overall, despite the start of reading theoretical literature on different definitions of innovation, it remains to be clarified, what exactly will be understood as innovative in the context of this project, and this will be an important aspect during the labs.

2.2.2. TRANSFORMATIVE METHODS AND TOOLS OF LEARNING IN THE CONTEXT OF APPLYING THE SDGS INTO BUSINESS PROCESSES AND HEIS COURSES

The fact that learning methods are innovative or transformative does not mean that they are good methods for learning processes to promote SDGs. Moreover, it is important to recognize that "innovative" and "transformative" are quite different things: there are innovative learning methods that are not transformative (e.g. memorizing learning contents with help of digital technologies), and there are well-performing transformative methods that are not innovative (e.g. role playing).

Some methods may induce transformative processes that are not empowering but indoctrinating. An example of this is the use of "soul work" in religious sects, which often apply strong transformative techniques - like fear and psychologic blackmail – to manipulate learners' minds.

Being aware that transformative learning can be misused to manipulate people, it is a believe, however, that – in certain conditions – it may become an emancipatory and enriching process. Theories on transformative learning do provide some orientation in this sense.

From the literature review the following theoretical roots of "transformative learning" were especially retained.

- **Perspective transformation** (by Mezirow 1991) explains the process of how adults revise their meaning structures. Meaning structures act as culturally defined frames of reference that are inclusive of meaning schemes and meaning perspectives. Meaning schemes, the smaller components, are made up of specific knowledge, beliefs, value judgements, and feelings that constitute interpretations of experience. Changes in our meaning schemes occur frequently. In opposite, meaning perspectives are more stable: they provide us with criteria for judging or evaluating right and wrong, bad and good, beautiful and ugly, true and false, appropriate and inappropriate. It is a general frame of reference, world view, or personal paradigm which has been often acquired uncritically in the course of childhood during significant experiences with teachers, parents, and mentors. In essence, they provide a rationalization for an often irrational world, and we become dependent upon them. However, it may happen that a radically different and incongruent experience has a disruptive effect and cannot be assimilated into the meaning perspective; then it will be either rejected or the meaning perspective is transformed to accommodate the new experience. It is the change in our meaning perspectives that build the heart of Mezirow's theory of perspective transformation. (Adapted from

Mezirow, 1991, pp 5-6, quoted by Taylor, 1998, pp 6-7).

- **Emancipatory transformation** (by Paulo Freire, 1970) is much more concerned with a social transformation via the unveiling or demythologizing of reality by the oppressed through the awaking of their critical consciousness, where they learn to perceive social, political, and economic contradictions, and to take action against the oppressive elements of reality. For Freire there are only two ways how humans relate to the world: integration and adaptation. Integration involves the critical capacity to act on the world as a subject; adaptation is an object, acted upon by the world. The perception of the learners as subjects is therefore a central issue by Freire. His philosophy of education reflects an emancipatory perspective inherent of both personal and social transformation of which neither can be separated. It is the combination of both - the personal and the social - that sets the stage for emancipation. Like Mezirow, Freire also sees critical reflection as central to the transformation in context of problem-posing and having dialogue with other learners. However, whereas in Mezirow's theory personal transformation is, in and by itself, sufficient, Freire sees the purpose of transformative learning based on a rediscovery of power, such that the more critically aware learners become able to transform society, and subsequently their own reality.

Summing up by aggregating both theoretical backgrounds, it can be concluded that four main elements build the essentials of transformative learning processes (Malamed, 2015) (and can be helpful for SDGs actions):

1. centrality of experience (learner's experience is the starting point and the subject matter of transformative learning);
2. critical reflection (refers to questioning the integrity of assumptions and beliefs based on previous experiences; in case of personal transforming learning, critical self-reflection of assumptions is most essential for the transforming of meaning structures);
3. questioning power relationships (is crucial in every emancipatory process; critical reflection includes critical analysis of the political, economic and social roots of the identified problems);
4. finally, rational discourse (is the essential medium for promoting and developing transformation; it must be integrating part of transformative learning processes).

Methods supporting learning for applying the SDGs

The Sustainable Development Goals (SDGs), set out by the United Nations, bring the focus to education practices and to the teaching methodologies implemented in order to reach the Education for Sustainable Development (ESD) goals. The inclusion of global development topics in education aims to foster the attitudes, skills and knowledge about global issues, critical thinking and analytical skills (O'Flaherty and Liddy, 2018). Thus, the learning process can be viewed as transformative, mediated by critical, open-ended and pluralistic approaches (Mogensen and Schnack 2010). Indeed, within ESD, a holistic perspective, considering the relationships between environment, economy and society, is often emphasized as being essential. Accordingly, teaching based on holistic approaches may create opportunities for a more integrated understanding of Sustainable

Development (SD) issues from a learner's perspective.

The new understanding of the quality education for SD has led to the development of **different approaches and innovative teaching models** to support the learning process. In this review only the teaching methodologies, which demonstrated significant impact, referring to the knowledge type acquired, will be considered. This is an important factor when considering their applicability in learning for sustainable development.

Among the learning approaches, researchers tend to agree that multimedia extends the amount and type of information available to learners. Thus, using **information and communication technologies** such as online educational tools, screencast or recorded videos, the learners are able to acquire the learning outcomes outside of the classroom (Quadrado and Zaitseva, 2018). Using an **online problem based learning environment**, simulating international negotiations, Ioannou et al. (2009), within the GlobalEd Project (www.globaled.uconn.edu), demonstrated that the students obtaining the information through multimedia had marginally larger gains in knowledge and interest than their counterparts in a text group.

Problem-based learning assumes that learning is a product of cognitive and social interactions in problem-centred environments. This approach, rather than focusing on a problem that has a definite answer, emphasises the understanding of a problem as opposed to the solution to a problem. It is already used in a variety of settings, ranging from schools of education and medicine, and at a variety of academic levels, including middle and high school, college and postgraduate school (Johnson et al., 2011). The problem-based learning outcomes, within a collaborative learning environment, have proven more effective in promoting retention, transfer and reasoning strategies than traditional methods of instruction. Indeed, these environments provide scaffolding for students to work collaboratively towards building new knowledge and skills (Johnson et al., 2011).

Whether and how **experimental problem-based learning** can be promoted in complex domains that are part of the natural science curricula is an important issue, highly relevant for science teaching. Indeed, inquiry-based science education seems to be suitable for promoting experimental problem solving ability. According to this approach, teaching and learning processes focus on science investigation processes (Roesch et al., 2015). Thereby, students acquire science content knowledge, and simultaneously become trained in inquiry skills and methods. Inquiry-based science education includes, among other principles, autonomous learning: the students should not only act according to the teachers' detailed instructions, but also make decisions on their own as often as is reasonable. This aspect aims to enable the students to apply their inquiry skills and problem-solving ability independently. This educational approach raised competences in generating epistemic questions, planning experiments, identifying controls.

As the availability of new online learning programmes and tools is constantly increasing, global organizations can choose from a wide range of new ways to train their workforce effectively. Indeed, currently, organizations can readily create **virtual communities of practice (CoPs)** to teach and train their staff. In essence, CoPs constitute 'groups of people who share a concern, set of problems or passion about a topic and who deepen their knowledge and expertise in this area by interacting on an ongoing basis' (Wenger et al., 2002). Virtual CoPs belong to the most important and popular e-learning methodologies that have been developed in the field of professional training in recent years (Allan and Lewis, 2006), with numerous organizations implementing such communities to enhance the capacity of their staff.

One specific derivative of this movement is the notion of the **'community of learning' (CoL)**, defined as a group of people 'engaging in collab-

orative learning and reflective practice involved in transformative learning' (Paloff and Pratt, 2003). The main additions and adjustments of this approach were expressed as three broad factors. First, it acknowledges that organizational learning requires a certain amount of structure if it is to work effectively and yield the envisaged results. Without clearly defined boundaries and time limits, participants may well lack the necessary drive to participate actively, share their knowledge and expand their expertise. Second, CoLs incorporate into the methodology the facilitation of participants by support staff: this adds another dimension of structure and support that are of vital importance for organizational training initiatives. Finally, given the official nature of such training programmes, any kind of contribution within the community will automatically be checked and validated, and this eventually legitimizes all newly gained knowledge and expertise (Rehm, 2009). In this study, the notion of the 'community of learning' was used to assess the perceived effectiveness of a global learning programme. Five key factors were taken into account in organizing the e-learning phase that were considered important in stimulating an effective and successful CoL. First, an **open dialogue** should be encouraged between all participating parties. Second, adult learners are likely to exhibit fluctuating **levels of participation**, due to their busy work schedules, and an effective CoL should cater for this. Third, participants should have **access to both public and private spaces**. This will facilitate the creation of a shared repertoire of resources and tools and will allow participants to develop a degree of 'commonality'. Fourth, participants need **spaces for an informal discussion** to create a sense of belonging and trust, which is necessary if they are to share information and contribute to the CoL. Finally, and reflecting the concept of 'situated learning', adult learners will benefit greatly from working on real-life and current problems to which they can relate (Rehm, 2009). Participants' attitudes towards group collaboration were generally positive – achieving better results by working collaboratively. The e-learning phase was also positively evaluated.

Another approach, able to support the SDGs learning, is the one proposed by Seeberg and Minick (2012), that integrates **experiential learning of cross-cultural competence (CCC)** with the use of **computer-mediated communication (CMC)**, including videoconferencing, in teaching education programs. The CCC approach aims to challenge teacher candidates' abilities to interact and cross social boundaries. To meet this challenge, the authors set up experiential learning opportunities via CMC tools that provided direct contact with other partners, across geographic and cultural distance. The contact with others that culminate in video conferences, requires students to develop critical thinking skills, an essential element of transformative learning. As positive outcomes, attributable to this intervention approach are the enhanced affective and cognitive CCC and the recognition of cultural stereotypes.

To enable learners to acquire the values required for a sustainable future (UNESCO, 2006), all students should have access to curricula and pedagogies that promote sustainability-related knowledge, skills and values. The research by Murray and colleagues (2014) reports an initiative that seeks to respond to the values element of ESD within a professionally focused undergraduate discipline, at an England university. In order to fill the gaps identified in the contents of the discipline, considering the generic aspects of sustainability and values, **a series of open-ended learning activities (workshops)**, loosely branded as Sustainability Training, was devised. Although the effects of this learning initiative were small, the greatest shifts occurred towards potentially pro-sustainability intrinsic motivations, and all the average scores for the main pro-sustainability values increased, suggesting that reflection took place.

Systems thinking is another essential key to handle complex natural scientific, economical

and sociocultural questions, which is especially important in ESD. Systems thinking is a holistic approach that focuses on the way that a system's constituent parts interrelate and how systems work overtime and within the context of larger systems. This approach contrasts with traditional analysis, which studies systems by breaking them down into their separate elements. Systems thinking can be used in any area of research. Riess and Mischo (2010) evaluated the integration of systems thinking approach in biology lessons, using different methods: special lessons designed to promote systems thinking, computer-simulated scenario and a combination of both, special lessons and the computer simulation. Based on the pretest posttest control group design, the authors concluded that the integration of systems thinking in the study of biology, raised the achievement score. However, only the students receiving both special instruction and worked with the computer simulation showed a significant increase in their achievement scores, highlighting the need for lessons to support stimulation.

Recently, an alternative teaching model has been developed – **the inverted or flipped model** – helping the students with the process of learning, in order to acquire a deeper knowledge of the syllabus and extra motivation (Quadrado, Zaitseva, 2018). With this methodology, the students can acquire the learning outcomes outside of the classroom, usually **using information and communication technologies**. In this approach, class time is reserved for practice assignment or activities designed to promote higher-order cognitive skills (Quadrado, Zaitseva, 2018). The flipped classroom has the additional goal of motivating the students for learning and can be used in combination with different education methodologies such as gamification and expert workshops. The authors consider that this is an innovative educational methodology, suitable to support learning for applying the SDGs.

Approaches supporting learners to meet the objectives of critical thinking, creative problem-posing and reflective discourse are embedded in learner-centricity, group-orientation, interaction and participation. Herein, 'discovery learning' can be of supportive nature, including methods such as role-plays, case studies, simulations, group projects and collective problem-solving tasks. (cf. Jones, 2015: 272; Mezirow, 1997: 10) Still, it is important to note, that there are no educational approaches and teaching methods that per se result in a Transformative Learning process. (cf. Cranton, 2002: 65)

Behavioural science research further demonstrates the necessity to move beyond the single focus on ecological and technological knowledge transfer when educating for sustainable transformation, since sustainable behaviours depend on a broad range of multiple aspects beyond declarative knowledge. Hence, to overcome the current state of education's narrow-mindedness, transdisciplinary approaches and alternative forms of knowledge are required, as well as the adaptation and profound change of values, attitudes, habits and behaviours (cf. Blake, Sterling, Goodson, 2013: 5370; Frisk, Larson, 2011: 1, 4; Lundqvist, Williams-Middleton, 2013: 1; Sterling, 2010: 511). In fact, educational pedagogies should be problem-driven and solution-oriented while taking place in participatory, advisory and adaptive settings, to enable a holistic understanding of interconnected and complex systems (cf. Crow 2007: 32; Frisk, Larson 2011:6; Wiek et al. 2011: 203, 207).

Building upon the theoretical background described above and the descriptions of many documented experiences, the ideal framework for

transforming learning for SDGs can be described as follows (cp. Taylor, 1998: 48-49):

- Ensure a learning environment that promotes sense of safety, openness, and trust;
- Use instructional methods that support a learner-centred approach;
- Promote learners' autonomy, participation, and collaboration;
- Promote activities that encourage the exploitation of alternative personal perspectives, problem-posing, and critical reflection;
- Create learning situations that are democratic, open, rational, have access to all available information, and promote critical reflection;
- Be based on trainers/educators that are trusting, empathic, caring, authentic, sincere, and demonstrating a high degree of integrity;
- The learning process is group-situated, emphasizing the role of (controversial) dialog, and promotes the acceptance of dissonance and conflict as natural elements of transformative learning processes in groups;
- Create experiences that can facilitate understanding among the participants.

Need for further development of methods and tools for learning in the context of the SDGs

One of the concerns of this methodological research approach was also to have in mind what needs to be done for the further development of methods aiming the learning of SDGs. This concern is connected not only with enterprises, but also directed to HEIs, which have an important part in the process of forming future entrepreneurs and employees.

HEIs need to create space for pedagogical transformation that supports transformative and transdisciplinary learning. The space needed is not just physical, but also the time for learners to engage in reflection, dialogue and action. Opposing to conventional pedagogies that view learners as passive depositories, these transformative pedagogies transform learners into inquisitive, reflective, experienced and critically thinking individuals (Pace, 2010). Indeed, high quality levels of Education for Sustainable Development (ESD) cannot be achieved by merely learning things in a traditional classroom experience, rather requiring active engagement with the world (Seeberg and Minick, 2012). However, according to these authors, socio-historical and socio-cultural knowledge of a multicultural globalizing world continues, to be conveyed in traditional ways, despite of the transformative rhetoric. Global learning is taught as an intellectual exercise, relying on course readings, for example, and has not been approached as a transformative exercise. Indeed, although the availability of information and communication technologies makes the implementation of new learning methodologies feasible, most educators are still adopting technology passively as a learn-from medium (Quadrado and Zaiteseva, 2018).

Moore (2005) identified four barriers that university-based education programmes face: monodisciplinary organisational structures, that determine funding, may limit student mobility from one area to another; competition between and within students, faculties, departments and universities; misdirected criteria for evaluating staff and student abilities and achievements; too many priorities, unclear decision-making and hierarchical power structures. This also applies to the workspace, where sometimes similar preconditions exist.

Indeed, traditional forms of education are increasingly criticized. This is resumed by Ofei-Manu and Didham (2018) as follows: 1) it fosters a "competition" mentality among learners; 2) education is imposed from above and from outside; 3) it has a structure under which the principal is viewed as boss and the teacher is under pressure to deliver good test results; 4) emphasises cognitive learning based on rote learning and measures student performance through standardized test-

ing; 5) it gives control to the central government regarding curriculum development and standards and is inaccessible to many due to increasing cost. These critiques contrast with the vision of quality education, advocated in SDG 4. Thus, the successful implementation and measurement of the quality education, will depend on developing novel set of effective tools and approaches, while enhancing the existing ones, emergent from ESD, to provide guidance for education policy, practice and research, to be able to reorient education and learning systems towards sustainability (Ofei-Manu and Didham, 2018).

Although quality educational objectives are normally achieved more effectively at the local classroom, national level support is crucial for providing policy mandate for adoption by all stakeholders and for sufficient financial and human resource allocation. Thus, a strong political leadership will prove instrumental in incorporating sustainability education strategies into national education and sustainable development plans. Furthermore, strengthening the vertical and horizontal multi-stakeholder linkages and multilevel coordination of inter-agencies. Another important factor is improving the number and quality of teachers through teacher training, continuous professional development and curriculum overhaul. Finally, the establishment of platforms for reporting and assessment on the educational initiatives and development of progressive indicators and assessment frameworks which may be used to assess progress across the various educational initiatives at global, national and local levels are fundamentally critical (Ofei-Manu and Didham, 2018).

The engagement of the academic staff in ESD is also crucial in the development and new learning methodologies. A study by Cebrián et al. (2015) suggests that although academics might have a personal interest and motivation to engage in ESD, factors such as the lack of time and financial resources, lack of deep understanding of sustainability, current curriculum structures and ways of delivery, academic pressures, external factors, lack of organizational support and existing organizational conditions block their engagement in ESD. Organizational support and leadership, quality assurance processes, professional development and creating reward structures are necessary strategies towards academic staff engagement with SDGs and ESD.

In order to further explore the above mentioned barriers, it is detrimental that co-learning processes are implemented to create beneficial synergies between HEIs and businesses.

2.2.3. LINKING VIRTUAL LEARNING SPACES WITH REAL SOCIAL LEARNING EXPERIENCES

In essence, virtual learning spaces open up the learning environment to a larger, broader and even more international group of learners which in essence can be a benefit for them in comparison to real-world learning spaces. It is possible to form groups of learners which may not have been possible with real world learning spaces and accommodate the specific needs of the specific target group – and let them exchange knowledge and experience.

Linking virtual with real-working learning spaces allow learners in the virtual learning space to work independently, when and where they want, eventually through non-written learning materials (videos, tutorials, podcasts etc.) and use the real-world learning space for exchange of knowledge, experiences which may not be easy in the virtual learning space.

Learning about good practice examples and other companies' experiences and lessons learned in the implementation of the SDGs through videos, audio materials or others (virtually), could be combined with discussions and workshops in the real-world learning environment.

Another idea would be setting up of an online game where the purpose is that learners learn about good practice examples, how to set up

an SDG strategy for their own business and in a physical workshop they can develop their own road map and discuss obstacles, problems, ideas with other participants and get input/feedback from experts[1].

Linking virtual and real – world learning spaces will contribute to understanding the SDGs themselves and their possible alignment with their own business strategies. Some companies recognize that incorporating the SDGs into their businesses is an exercise that required internal reflection and time. Only when the company employees are fully aware of the SDGs and knowledgeable of their potential impact, they can work to improve performance and to think more strategically about how to maximize the positive social, environmental and economic contribution.

Mutual learning between HEIs and businesses

Mutual learning between HEIs and business is an important step to create an efficient tool for mapping the SDGs to the company, linking its business areas to the new goals.

The cooperation between HEIs and enterprises, using virtual learning and real-life learning contexts, is important to make the bridge with companies, and can be one of the major actual objectives of many academic courses. Some experiences allowed the definition of the main advantages of this cooperation and some are indicated below:

1. Bridging the knowledge from experts and academics analysis may improve the practical implementation in each specific case;
2. HEIs could provide the companies a way for strengthening of relationships with employees, customers and other stakeholders through training and workshops;
3. Help companies to define the best way of aligning their corporate sustainability indicators with the national and global metrics (example: certificate for carbon neutrality, introduce the FSSC 22000 – complete tool for food security);
4. Securing the long-term success of business by improving the broader enabling environment and ecosystems in which business operates (linking strategic goals with its partners, including corporates, aid agencies, multilateral financial institutions, philanthropic foundations and impact investors);
5. Building reputation, strategic market positioning and safeguarding a license to operate (help in the definition of services towards systems change by utilizing clean enterprise methods);
6. Creating or accessing new markets. Technology, product, service and business model innovation that contributes to the SDGs also offers opportunities to reach new growth markets and strengthen competitiveness (developing new applications on a digital identification ecosystem to provide access to basic services and livelihood opportunities);
7. Identifying and managing material risks and costs.

There are mutual benefits to be exploited but it is necessary to create a learning space that facilitates co-creation of knowledge where both HEIs and businesses benefits. Especially for this group of business, it is important to create virtual learning spaces that:

- Focus on supporting learners rather than teaching them
- Providing leaners with a forum for presenting their experiences and progress in aligning their strategies with the SDGs
- Foster a common and trans-disciplinary work setting where HEIs and companies not only search for answers together, but also define questions together - co-creation of knowledge

Thus, it is important to set up a platform for learners to engage with industry, governments

[1] Idea developed from the Sustainability Route Map "Nachhaltigkeitsnavi" https://unternehmen.oekobusiness.wien.at/kategorie/news/2019/08/die-sdgs-als-nachhaltigkeitsnavi-im-unternehmen/

and academia – for them to feel part of the larger game in tackling our planet's sustainability issues. Co-creation workshops should be organised to foster knowledge and skills acquisition, networking, sharing experiences, peer to peer collaboration, and learning about practical actions and best practice examples.

Virtual learning and real-world learning spaces on the SDGs and/or on innovation

The following list are exemplary virtual learning spaces/platforms and real-world learning spaces.

- MOOC: Free educational resources from the world's leading experts on sustainable development (https://sdgacademy.org/)
- FAO e-learning courses on Sustainable Development Goals indicators (http://www.fao.org/sustainable-development-goals/news/detail-news/en/c/1100082/)
- UNITAR Learning Platform: online tool for business and governments supports key training to build collaboration on SDGs (https://www.sdgfund.org/new-online-tool-business-and-governments-supports-key-training-build-collaboration-sdgs)
- Gaia Education's online programme: Design for Sustainability, 4-D Framework for Integrative Whole Systems for Sustainability (https://www.gaiaeducation.org/elearning-programmes/design-for-sustainability/)
- Coursera: https://www.coursera.org/search?query=sustainability&
- EdX platform: various courses available online on sustainability (https://www.edx.org/course?search_query=sustainability)
- FAO Workshops: Workshop on Development Impact and SDGs: Water investments in the context of the SDG framework (http://www.fao.org/land-water/events/impactworkshop2/en/)
- Workshop with Good Practice examples (https://www.wko.at/branchen/t/industrie/sdg-workshop-2019.html) – Smaller groups, presentations on solutions

2.2.4. LEARNING ENVIRONMENTS IN ORDER TO IMPLEMENT THE TRANSLATION OF THE SDGS INTO THE WORKPLACE

A learning environment is a learning setting consisting of the physical environment, psychological factors and social relationships (Finnish National Board of Education, 2004, quoted in Aksovaara and Maunonen-Eskelinen, 2013):

- The physical environment refers to the buildings, premises, furniture and equipment used for the work. It also covers the technical learning environment, which refers to educational technology.
- The psychological learning environment covers the cognitive environment, which means the information and skills to be learnt, and the emotional environment, which includes emotions and motivation.
- The social learning environment includes the social network, structure and system, which are influenced by all people involved in the learning situation and the interaction between them.

Each of the above-mentioned aspects can be evaluated and designed following the criteria of sustainable development.

The term 'learning environment' occurs rather in the context of schools and other educational institutions than in the business context, when it is linked to sustainable development. However, in many cases the concepts can be easily transferred to other types of organizations and enterprises alike.

The following characteristics define a learning environment (adapted from Aksovaara and Maunonen-Eskelinen, 2013):

- Constituents: Considering the learner's personal skills, interests, attitudes and goals
- Didactic functions in the teaching-learning process: Arousing attention and curiosity,

information about the learning content with clear objectives, feedback/assessment
- Situational context: Knowledge construction, reflection of your own point of view, everyday relevance
- Authenticity: Orientation to real facts
- Cooperation: Communicative collaboration of all those that are involved in the learning process, disclosure of solution variants
- Information processing: Enabling of adequate information processing and situation-related information application

The external conditions of learning are summarized under the term 'learning environment'. This includes, above all, the learning materials and learning tasks as well as their respective design in a learning situation. The learning environment also includes the socio-cultural context and the current learning situation. The external conditions of learning have an impact on the learning process itself. In this sense, the learning environment should be designed in such a way that it allows a focus on learning. For example, a constantly changing or inhospitable environment makes the learning process difficult. Therefore, tools relevant for the learning process should always be accessible. Motivation, i.e. the willingness to learn, also depends on external learning conditions. If one experiences the place where learning is supposed to happen as pleasant, the learning itself will also perceived as such.

When creating an environment conducive to learning, individual abilities, motivations, interests, attitudes and goals of the learners must be considered (constituents). In this sense, the learning environment should be able to provide learning tasks with different levels of difficulty and complexity.

The learning environment should also be suitable for fulfilling certain didactic functions in the teaching-learning process. These include e.g. awakening attention and curiosity, naming clear objectives of the learning process and building on what has already been learned. It is important to give the learner feedback about his/her learning development, to ensure that what has been learned is safeguarded through targeted practice and to enable the learning to be applied to new problems (transfer performance).

The learning environment should continue to adapt to the learner's situational context. Instead of merely reproducing knowledge, the learners should be enabled to construct new knowledge. In this sense, the learning environment should support learners' creativity. In addition, the learning environment must be designed in such a way that several perspectives of the presented facts can be perceived. By showing alternative possibilities, the reflection of one's own point of view should be encouraged. Finally, the learning content should be experience-related so that it can be incorporated into the context of everyday life.

In this sense, learning environments should also have a certain degree of authenticity, meaning that they are based on real facts. Accordingly, the learning situations should not be too easy, since only complex situations allow the learner to recognize or establish linkages between different areas of knowledge. Insofar, as the acquired knowledge is to be applied in real situations, the learning context should be as similar as possible to the real situation.

Learning is an interactive process in which the teacher and the learner are equally involved. Knowledge is formed both individually and through social exchange. The social context must therefore be considered when designing the learning environment. Learning environments should be set up in such a way that they enable cooperation and promote communication between those involved in the learning process. Cooperative work on specific tasks requires learners to explain their proposed solutions to others. This concretises ideas and makes alternatives more recognizable. The cooperation thus optimizes understanding of

the problems to be dealt with and increases the range of possible solutions.

Another characteristic of the learning environment relates to information processing. It is assumed that there are general laws of human learning that should be considered when designing the learning environment. Above all, it should be ensured that the learner can process the information adequately, i.e. it can be stored in the memory so that it can be called up and used again depending on the situation.

Starting points for learning for the transfer of the SDGs into different workspaces

Learning and behavioural change are essential for achieving sustainable thinking and living (learning to live sustainably), which is inextricably connected to transformative perceptions of learning. Transformative learning focuses on learning-based change that involves 'learning to know', 'learning to do', 'learning to live together' and 'learning to be'. It is a shift of consciousness that alters: our way of being in the world (learning to be), our way for discovering others by discovering ourselves (learning to live together), our way of learning how to learn as well as acquiring, constructing, disseminating and managing knowledge (learning to know) and our way of putting knowledge into action (learning to do) (Makrakis and Kostoulas-Makrakis, 2012).

Concerning the European countries and according to the study of the European parliament (Niestroy et al., 2019), countries have different starting points. Whereas some have a very long tradition of sustainable development strategies, others joined more recently. The year of first commitment to sustainable development does not necessarily correlate with how operational SDG strategies or plans are in the countries today. Sustainable development strategies can be valuable tools for giving a long-term overarching strategy. However, their impact on concrete day-to-day policy choices tends to remain in general limited. Important indications for a more operational strategy are high level and strong political leadership, concrete measures, actions and targets, as well as a link to the national budget and an involvement of the Finance Ministry. In countries where there is a national development plan, and where the SDGs have been integrated into this plan operationalization seem to come more naturally. However, whether these plans really integrate the SDGs in a holistic way or just vaguely map the links to the SDGs is not always clear. The comprehensive and all-encompassing nature of the SDGs requires leadership and coordination across the government. Not all Member States have leadership at the centre of government, and for some, leadership and ownership of the SDGs remains divided between environmental aspects and the development aspects, to the corresponding Ministries, even when there is a clear coordination mechanism in place.

Normally "starting points" refer to the individual experience on a certain issue that learners bring with them to a new learning process. Speaking about starting points in SDGs Labs refers, however, to the initial conditions existing in an enterprise where a new learning process is to be implemented. Starting points are, therefore, the learning environments already existing, and the former experience with new learning processes in the enterprise. For example, openness toward SDGs depends on experiences already made on environment and social issues in the past. If enterprises already have implemented an EMS (Environmental Management System) or seek for a quality certification system, it is probably easier to extend those experiences to the SDGs. It will also be easier to start a critical reflection on the SDGs from the social perspective, too, if enterprises already have projects regarding their social responsibility.

Starting points for a new learning process in enterprises emerge from real situations, which may be endogenous and exogenous nature. Exogenous starting points could be, for example, a new legislation that obliges enterprises to imple-

ment sustainability-oriented measures, or market-driven situations (for example, if consumers change their preferences to more sustainable products from competitors). Endogenous situations depend on the awareness of enterprise's leaders about learning needs of the staff. A decisive starting point is, certainly, the willingness of the enterprise management to address challenges of sustainable development and to involve the staff in that learning process. If enterprises have an Innovation & Development department, these workplaces will probably be the starting point for SDGs-oriented (technical) innovation.

The role of associations in the design of such learning environments

Associations, enterprises and HEIs play a part in the definition of their roles in designing the best learning environments, which also cannot be seen outside governmental policies aiming at full implementation of the SDGs in the different countries. The participation of stakeholders is integral to contribute to the implementation of the Agenda 2030. Participation and inclusion of stakeholders in SDGs governance is important to create ownership and hence foster that policies and targets are pursued across multiple levels of society. In addition to the key principles of inclusiveness and leave no one behind, additional aspects of SDGs governance are relevant to stakeholder participation: multi-stakeholder partnerships, and shared responsibility.

The principle of "leaving no one behind" can be manifested into various actions, such as: a broad public consultation on a strategy, the inclusion of experts in a decision-making or monitoring body, or forums with a broad participation of civil society organization, private sector, and including minority groups, religious communities etc. Often, participation is used as a tactic to increase ownership of a political agenda. However, it is also a crucial tool for inclusiveness – both of these approaches facilitate leaving no one behind. Participation in the SDGs can also create a sense of ownership. This key outcome of participation is where the link can be seen with policy coordination and resulting in a sense of shared responsibility. Aligning stakeholders and non-state actors with governmental policies, through meaningful participation, can be a way to ensure policy and goal coherence beyond the national government and facilitate meaningful multi-stakeholder partnerships. Accordingly to the study for the European countries, several types of mechanisms allow the participation of stakeholders in the governance mechanisms and implementation of SDGs in their countries: through a consultation (sometimes one-time off), through an enhanced process of participation as forum, or other informal body, through a dedicated body established as independent sustainable development council, or as a body intertwined with the government coordination structure which also includes stakeholders in an integrated manner.

Needs and suggestions for the (practical) design of learning environments

Change in education towards sustainable development is not an easy task and numerous facts can obstruct its implementation. In a first glance,

- → The adaptation of existing curricula is always seen with reluctance, since many times other existing disciplines must be removed from the plan. To overcome this difficulty, a top-down approach and support (and sometimes forcing) of the senior management of the university is vital to get the course organized and implemented;
- → Never underestimate the time needed to plan and organize courses in ESD area.
- → Teaching sustainability concepts requires much inter-disciplinary knowledge. So, fac-

ulty members should familiarize themselves with the other member's fields of expertise;

→ Stakeholders are of some importance in the definition of policies and courses aiming at the full implementation of SDGs;

The above-mentioned facts are oriented towards HEIs as a workplace for students, and the students being potentially future entrepreneurs.

According to Giesenbauer and Müller-Christ (2018) small and medium sized companies (SMEs) encounter educational issues, particularly when it comes to activities in the low-wage sector, when selecting and accompanying trainees and when it comes to opportunities for further training. So far, most companies have been active in the dual training system when they have offered apprenticeships. Up to now, further training and higher education has taken place outside of companies with little influence.

In particular, the heterogeneity of people in the low-wage sector and the different conditions that young people bring to the transition to the training system are clearly challenging SMEs today. People need more guidance in their transition and learning processes and especially in creating and maintaining the willingness to keep learning.

SMEs can choose different approaches to achieve SDG 4:

- Online training modules can be used during working hours
- Encourage collegial learning and on-the-job training
- Let trainees work on the topic of sustainability
- Enable employees to take educational leave
- Provide more support to trainees in difficult situations
- Owners and managers act as role models and also continue their training as a matter of course and visibly
- communicate sustainability goals to customers, corporate partners and employees

Educational processes are psychologically complex and cost money. Educational results are tied to people and therefore, when people leave a company it also looses this knowledge and experience. Investments in the skills of the employees are investments in the labour market, which then offers a larger selection of well-trained applicants. It is not easy to keep the advantage of investing in the education of employees in the company.

SDGs Labs
Making the SDGs our business

3. WORKSHOP ON TRANSFORMATIVE METHODS AND TOOLS FOR THE SDGS

The workshop on transformative methods and tools for the SDGs (T3.3, D3.1) took place at the University of Vechta from 13th - 15th November 2019. All consortium organisations were represented.

During the workshop, the outcomes of WP1 and implications for the upcoming tasks were reflected, as well as connections between WP1 and WP3. Furthermore, the results of the review and analysis of methods and tools (conducted in T3.2) were discussed, and first insights into the development of the translation framework were presented.

Additionally, requirements and desirable contents of the 'Co-Learning and Innovation Labs' were taken into account and first ideas were developed, which then later were translated into assessment criteria for the labs in task T3.4 (see chp. 4).

Among them were:

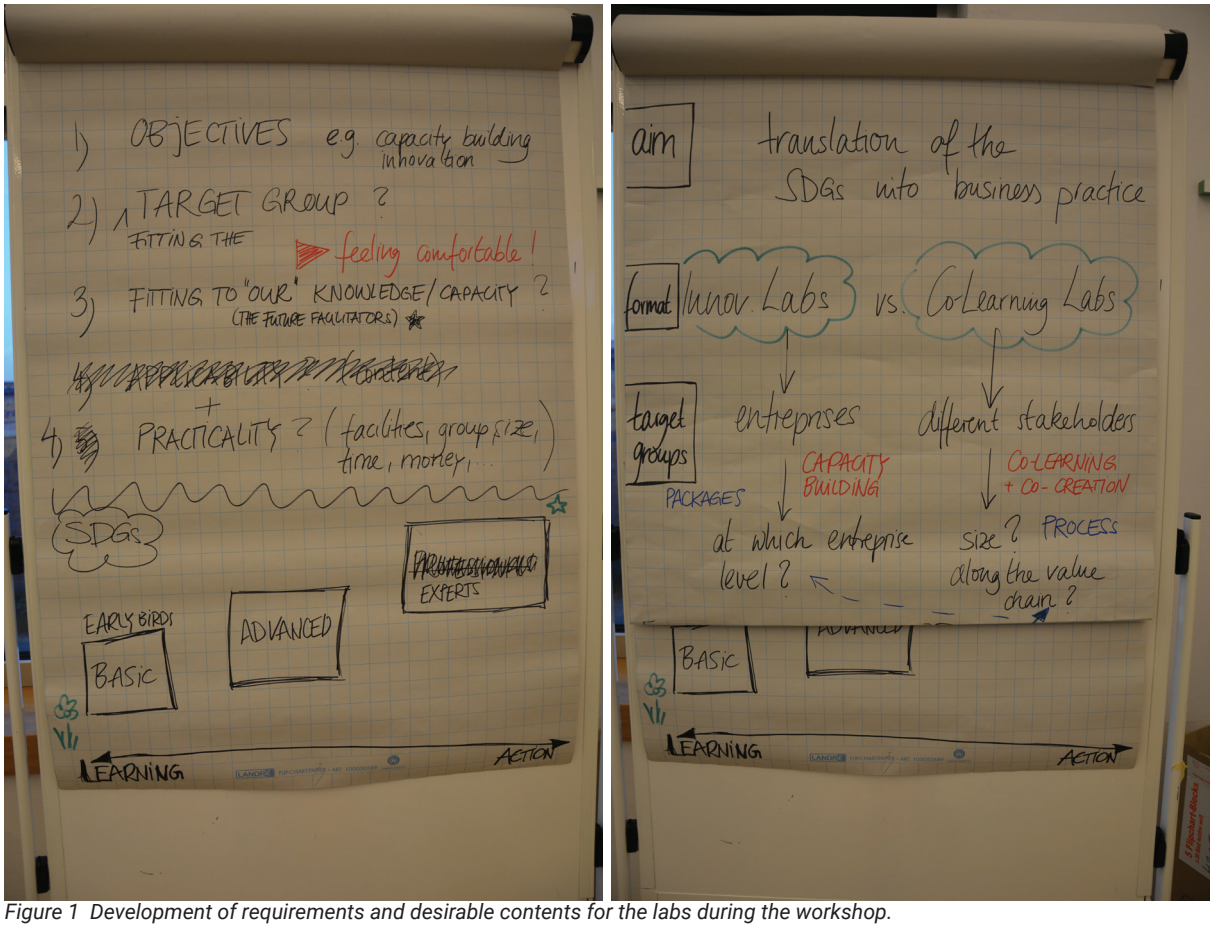

Figure 1 Development of requirements and desirable contents for the labs during the workshop.

- previous knowledge
- capability of application
- suitability of methods for either the Co-Learning Labs and/or the Innovation Labs.
- aims of the labs:
  - capacity building,
  - creation of innovation,
  - co-learning,
  - process optimization and
  - reflection
- practicality of the methods in terms of transformative processes, on individual and/or institutional level and also concerning the implementation of the SDGs in various contexts.

Moreover, as part of the workshop, two field excursions were carried out, in order to gain insights into practical examples on the broad range of innovations that can be found in the agricultural sector. At the same time, these excursions also served as a new learning field, and they showed new perspectives and approaches to learning contexts. By this, we could exchange with a broader range of actors and thus also include a broacher range of perspectives into our ideas for the 'labs' and other learning settings.

One adjustment that was needed to be made, compared to the outline in the application, was the fact that it was only an internal workshop. The involvement of external stakeholders (associated partners) was not useful at this stage of the process, as there was not enough progress yet in the evaluation of possible methods. However, an exchange with the associated partners will take place in Vechta at the end of March 2020, as more insights about the methods will be available at that time, and hence, can then be discussed with practitioners.

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4. ASSESSMENT OF TRANSFORMATIVE METHODS AND TOOLS FOR THE SDGS

The aim of the assessment and utility for the project can be described as follows:

- An overview of methods that are useful for the project, and can be tried out and applied as part of the Innovation Labs and Co-Learning Labs (WP4) and having been tested and adapted to the specific context of the two SDGs Academies programmes and the knowledge platform 'SDGs Academies' (WP5)
- Including methods for specific educational formats, specific target groups (etc.)
- In WP4 one can refer to this assessment and use it as a guide for choosing methods for the different lab formats and situations. In WP4 furthermore, an applicable introduction to how to apply this method is needed.
- In WP5 one can refer to this assessment and use it as a guide for choosing an innovative and user-friendly format for the online learning tool 'Making the SDGs our business'.
- The aim of the assessment is therefore, to assess suited methods for the project, and to assess the application options of methods in the planned labs and further in the SDGs Academies. The aim is not to find the best methods at all.

The online questionnaire helps having a structured overview and is a useful tool to include the opinions and experience of all the project partners. It builds upon the review of methods and tools (as described in section 2) and on the categories developed for the assessment during the workshop (as described in section 3).

4.1. METHODOLOGY OF THE ASSESSMENT

There was a total of 47 methods, tools, innovations and learning environments identified (Annex A gives a short profile of these 47 methods, tools and approaches). The 47 methods, tools and approaches were once again split up into four already mentioned thematic groups that were also used for the literature review:

- Group 1: Transformative methods and tools of learning
- Group 2: Methods and tools of innovation and transformation
- Group 3: Innovations concerning linking virtual learning spaces with real social learning experience
- Group 4: Learning environments in order to implement the translation of the SDGs into the workplace

This selection was then made available to the project members through an online survey tool, where the task was to evaluate these 47 methods, tools, innovations and learning environments. The evaluation criteria were divided into four sections. The criteria arose from the requirements and contents desirable for the future labs, which can be translated into quality criteria of labs, and which were developed during the workshop (see chapter 3). Section one of the questionnaire examined previous knowledge and the capability of application of these methods, tools, innovations and learning environments. The second section looked at the suitability for using these

methods, tools, innovations and learning environments for either the Co-Learning Labs and/or the Innovation Labs. The third section looked at various aims (capacity building, creating innovation, Co-learning, process optimization and reflection). The fourth and last section reviewed the practicality of these methods, tools, innovations and learning environments in terms of transformative processes, which are initiated through them (on individual and/or institutional level and also concerning the implementation of the SDGs in the various contexts).

The results were evaluated in an Excel sheet, where the most suitable methods, tools, innovations and learning environments, based on their ranking (highest to lowest) were identified. Group 1 and 2 had more tools and methods to evaluate, therefore, the best five items were identified, for group 3 and 4, with lesser innovations and learning environments to look at, the best three items were chosen.

These will now be presented in the results section, which is divided into three parts, where in each part the results of each of the groups will be presented

4.2. RESULTS OF THE ASSESSMENT

4.2.1. CAPABILITY AND USABILITY

This section highlights the results of the various groups, looking at the capability of applying these methods, in terms of previous knowledge and competencies. It also looks at the usability of the various methods, tools, innovations and learning environments in regard to the Innovation Labs and the Co-Learning Labs.

Group 1: Methods and tools of innovation and transformation			
	Capability in application	Innovation Labs	Co-Learning Labs
Methods	MC20 Brainwriting 6-3-5: Encourage Equal Opportunity Ideation MC29 Tools for sustainable innovation - The Sustainability SWOT Analysis MC21 6 Thinking Modes: Put on a Different „Hat“ MC15 Brainstorming: The Walt Disney method MC25 Opposite thinking - reverse brainstorming	MC24 Design-Thinking MC20 Brainwriting 6-3-5: Encourage Equal Opportunity Ideation MC23 Analogy Thinking MC27 Tools for sustainable innovation - The Sustainable Business Model Canvas MC47 Scenario workshop	MC47 Scenario workshop MC24 Design-Thinking MC20 Brainwriting 6-3-5: Encourage Equal Opportunity Ideation MC23 Analogy Thinking MC29 Tools for sustainable innovation - The Sustainability SWOT Analysis

Group 2: Transformative methods and tools of learning			
	Capability in application	Innovation Labs	Co-Learning Labs
Methods	MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC06 Project-based learning MC07 Learning from experience through reflection MC02 Critical (Self-) reflection MC01 „Discovery learning“ methods	MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC01 „Discovery learning“ methods MC03 Holistic system understanding/foresighted thinking MC09 Dialogue-oriented Methods MC06 Project-based learning	MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC09 Dialogue-oriented Methods MC05 Customer Co-Creation MC03 Holistic system understanding/foresighted thinking MC01 “Discovery learning” methods

Group 3: Innovations concerning linking virtual learning spaces with real social learning experience			
	Capability in application	Innovation Labs	Co-Learning Labs
Methods	MC33 Online Course: Transforming Our World: Achieving the SDGs MC34 Online Course: Driving business towards the Sustainable Development Goals MC32 Online Course: How to achieve the SDGs	MC35 Collaborative Learning (blended learning) MC32 Online Course: How to achieve the SDGs MC34 Online Course: Driving business towards the Sustainable Development Goals	MC32 Online Course: How to achieve the SDGs MC30 Connected Learning: MOOCs, Learning Labs, Learning spaces - merging the real and the virtual in connected learning MC35 Collaborative Learning (blended learning)

Group 4: Learning environments in order to implement the translation of the SDGs into the workplace			
	Capability in application	Innovation Labs	Co-Learning Labs
Methods	MC42 Erasmus+ exchange collaborator programme MC43 Meeting of Environmental Corporate Office of SONAE Sierra1[1] MC44 Universities using eco-campuses	MC38 Theory U as an organizational development process MC43 Meeting of Environmental Corporate Office of SONAE Sierra MC41 Collaborative Inquiry Learning	MC40 Conferences as Collaborative Learning spaces MC43 Meeting of Environmental Corporate Office of SONAE Sierra MC42 Erasmus+ exchange collaborator programme

1 Exemplary meeting with stakeholders in various learning environments (inside, outdoors, on-site)

4.2.2. AIMS

This section highlights the results of the various groups, looking at the various aims that can be achieved with the selected methods, tools, innovations and learning environments. These aims are: capacity building, creating innovation, co-learning, process optimization and reflection.

Group 1: Methods and tools of innovation and transformation					
	Aim: Capacity building	Aim: Capacity building	Aim: Co-Learning	Aim: Co-Learning	Aim: Reflection
Methods	MC47 Scenario workshop MC15 Brainstorming: The Walt Disney method MC29 Tools for sustainable innovation - The Sustainability SWOT Analysis MC24 Design-Thinking MC28 Tools for sustainable innovation - The Sustainable Business Innovation Game	MC24 Design-Thinking MC23 Analogy Thinking MC28 Tools for sustainable innovation - The Sustainable Business Innovation Game MC18 Remember the Future MC45 CASI	MC47 Scenario workshop MC29 Tools for sustainable innovation - The Sustainability SWOT Analysis MC15 Brainstorming: The Walt Disney method MC20 Brainwriting 6-3-5: Encourage Equal Opportunity Ideation MC24 Design-Thinking	MC29 Tools for sustainable innovation - The Sustainability SWOT Analysis MC46 Pest(l) analysis MC24 Design-Thinking MC26 Tools for sustainable innovation - Impact Canvas MC45 CASI	MC29 Tools for sustainable innovation - The Sustainability SWOT Analysis MC47 Scenario workshop MC15 Brainstorming: The Walt Disney method MC46 Pest(l) analysis MC26 Tools for sustainable innovation - Impact Canvas

Group 2: Transformative methods and tools of learning					
	Aim: Capacity building	Aim: Capacity building	Aim: Co-Learning	Aim: Co-Learning	Aim: Reflection
Methods	MC06 Project-based learning MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC01 „Discovery learning“ methods MC09 Dialogue-oriented Methods MC10 (Online) problem-based learning methodologies	MC05 Customer Co-Creation MC06 Project-based learning MC09 Dialogue-oriented Methods MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC01 „Discovery learning“ methods	MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC06 Project-based learning MC09 Dialogue-oriented Methods MC03 Holistic system understanding/ foresighted thinking MC05 Customer Co-Creation	MC14 Learning from failure MC09 Dialogue-oriented Methods MC06 Project-based learning MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC03 Holistic system understanding/ foresighted thinking	MC02 Critical (Self-) reflection MC07 Learning from experience through reflection MC14 Learning from failure MC01 „Discovery learning“ methods MC06 Project-based learning

Group 3: Innovations concerning linking virtual learning spaces with real social learning experience					
	Aim: Capacity building	Aim: Capacity building	Aim: Co-Learning	Aim: Co-Learning	Aim: Reflection
Methods	MC35 Collaborative Learning (blended learning) MC30 Connected Learning: MOOCs, Learning Labs, Learning spaces - merging the real and the virtual in connected learning MC34 Online Course: Driving business towards the Sustainable Development Goals	MC35 Collaborative Learning (blended learning) MC36 Virtually there: Making virtual and blended learning work for adult learners MC34 Online Course: Driving business towards the Sustainable Development Goals	MC35 Collaborative Learning (blended learning) MC30 Connected Learning: MOOCs, Learning Labs, Learning spaces - merging the real and the virtual in connected learning MC32 Online Course: How to achieve the SDGs	MC35 Collaborative Learning (blended learning) MC34 Online Course: Driving business towards the Sustainable Development Goals MC30 Connected Learning: MOOCs, Learning Labs, Learning spaces - merging the real and the virtual in connected learning	MC35 Collaborative Learning (blended learning) MC36 Virtually there: Making virtual and blended learning work for adult learners MC32 Online Course: How to achieve the SDGs

Group 4: Learning environments in order to implement the translation of the SDGs into the workplace					
	Aim: Capacity building	Aim: Capacity building	Aim: Co-Learning	Aim: Co-Learning	Aim: Reflection
Methods	MC42 Erasmus+ exchange collaborator programme MC44 Universities using eco-campuses MC38 Theory U as an organizational development process	MC38 Theory U as an organizational development process MC39 Sociocracy and tools to use that MC41 Collaborative Inquiry Learning	MC42 Erasmus+ exchange collaborator programme MC43 Meeting of Environmental Corporate Office of SONAE Sierra MC38 Theory U as an organizational development process	MC44 Universities using eco-campuses MC38 Theory U as an organizational development process MC43 Meeting of Environmental Corporate Office of SONAE Sierra	MC38 Theory U as an organizational development process MC43 Meeting of Environmental Corporate Office of SONAE Sierra MC39 Sociocracy and tools to use that

4.2.3. TRANSFORMATION AND TRANSFERABILITY

The last section looks at the results of the various groups, from a transformational perspective on individual and institutional level and the applicability and transferability of the SDGs in terms of previous knowledge and competences. It also looks at the usability of the various items in regards to the Innovation Labs and the Co-Learning Labs.

Group 1: Methods and tools of innovation and transformation			
	Transformation: individual level	Transformation: institutional level	Applicability of SDGs
Methods	MC02 Critical (Self-) reflection MC01 „Discovery learning“ methods MC06 Project-based learning MC07 Learning from experience through reflection MC14 Learning from failure	MC06 Project-based learning MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC09 Dialogue-oriented Methods MC03 Holistic system understanding/foresighted thinking MC05 Customer Co-Creation	MC06 Project-based learning MC09 Dialogue-oriented Methods MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC03 Holistic system understanding/foresighted thinking MC10 (Online) problem-based learning methodologies

Group 2: Transformative methods and tools of learning			
	Transformation: individual level	Transformation: institutional level	Applicability of SDGs
Methods	MC02 Critical (Self-) reflection MC01 „Discovery learning“ methods MC06 Project-based learning MC07 Learning from experience through reflection MC14 Learning from failure	MC06 Project-based learning MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC09 Dialogue-oriented Methods MC03 Holistic system understanding/foresighted thinking MC05 Customer Co-Creation	MC06 Project-based learning MC09 Dialogue-oriented Methods MC04 Participatory, transdisciplinary, interactive and collaborative group tasks MC03 Holistic system understanding/foresighted thinking MC10 (Online) problem-based learning methodologies

Group 3: Innovations concerning linking virtual learning spaces with real social learning experience			
	Transformation: individual level	Transformation: institutional level	Applicability of SDGs
Methods	MC35 Collaborative Learning (blended learning) MC30 Connected Learning: MOOCs, Learning Labs, Learning spaces - merging the real and the virtual in connected learning MC32 Online Course: How to achieve the SDGs	MC35 Collaborative Learning (blended learning) MC34 Online Course: Driving business towards the Sustainable Development Goals MC30 Connected Learning: MOOCs, Learning Labs, Learning spaces - merging the real and the virtual in connected learning	MC34 Online Course: Driving business towards the Sustainable Development Goals MC32 Online Course: How to achieve the SDGs MC33 Online Course: Transforming Our World: Achieving the SDGs

Group 4: Learning environments in order to implement the translation of the SDGs into the workplace			
	Transformation: individual level	Transformation: institutional level	Applicability of SDGs
Methods	MC42 Erasmus+ exchange collaborator programme MC37 Holocracy and tools to use that MC43 Meeting of Environmental Corporate Office of SONAE Sierra	MC37 Holocracy and tools to use that MC44 Universities using eco-campuses MC38 Theory U as an organizational development process	MC44 Universities using eco-campuses MC43 Meeting of Environmental Corporate Office of SONAE Sierra MC42 Erasmus+ exchange collaborator programme

4.3. ASSESSMENT AND PRIORITIZATION OF METHODS AND TOOLS FOR THEIR APPLICATION

Based on the above presented results of the 47 approaches, below one will find two tables; one for Innovation Labs and another for Co-Learning Labs, that look at the usability of these 47 approaches linking the four research groups to each other.

4.3.1. IN INNOVATION LABS

Prioritized Approaches
MC04 Participatory, transdisciplinary, interactive and collaborative group tasks
MC01 „Discovery learning“ methods
MC03 Holistic system understanding/foresighted thinking
MC09 Dialogue-oriented Methods
MC06 Project-based learning
MC24 Design-Thinking
MC20 Brainwriting 6-3-5: Encourage Equal Opportunity Ideation
MC47 Scenario workshop
MC35 Collaborative Learning (blended learning)
MC32 Online Course: How to achieve the SDGs
MC34 Online Course: Driving business towards the Sustainable Development Goals
MC38 Theory U as an organizational development process
MC43 Meeting of Environmental Corporate Office of SONAE Sierra

4.3.2. IN CO-LEARNING LABS

Prioritized Approaches
MC04 Participatory, transdisciplinary, interactive and collaborative group tasks
MC09 Dialogue-oriented Methods
MC03 Holistic system understanding/foresighted thinking
MC01 „Discovery learning“ methods
MC24 Design-Thinking
MC20 Brainwriting 6-3-5: Encourage Equal Opportunity Ideation
MC29 Tools for sustainable innovation - The Sustainability SWOT Analysis
MC32 Online Course: How to achieve the SDGs
MC35 Collaborative Learning (blended learning)
MC43 Meeting of Environmental Corporate Office of SONAE Sierra
MC42 Erasmus+ exchange collaborator programme

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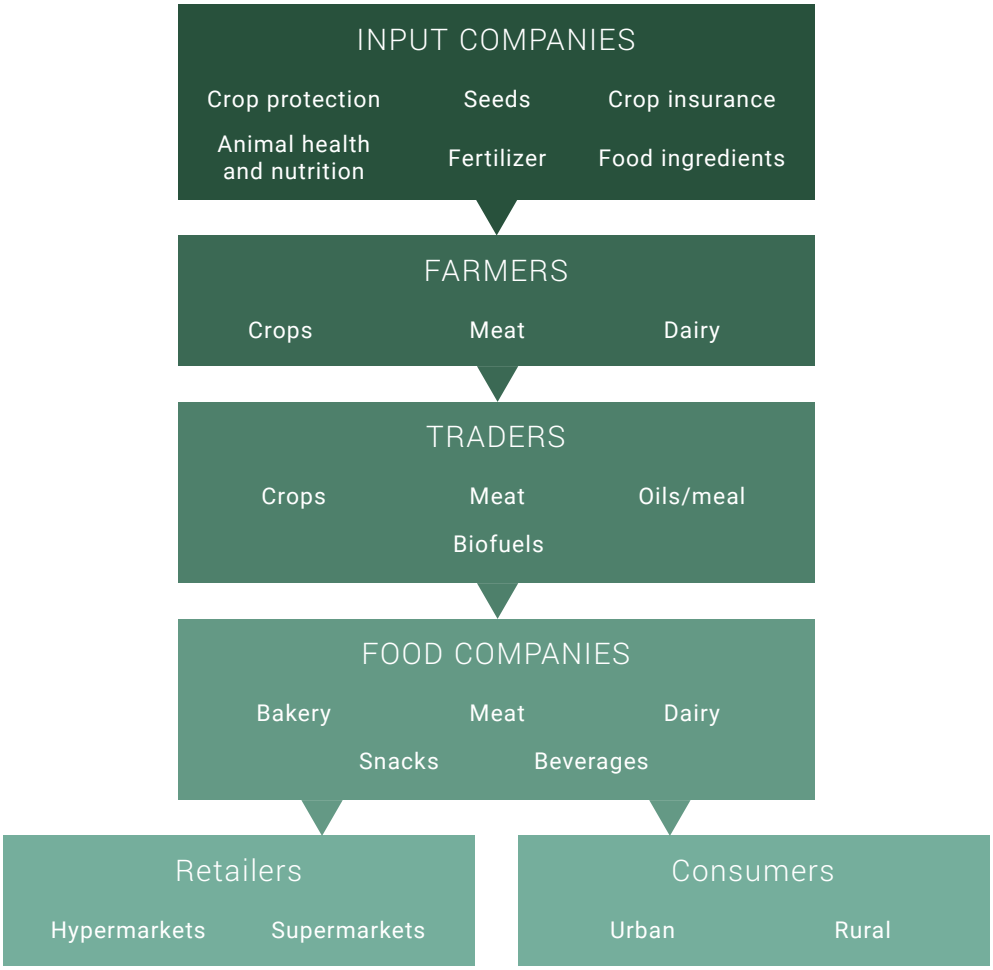
5. TRANSLATION FRAMEWORK

In this section, the search for a translation framework is described which has as the aim to help "translating" the globally applicable, yet abstract SDGs into regionally relevant aspects and into day-to-day business issues and practises of companies in the agribusiness and food production sector. A first version of a translation framework that can be useful for the application in our project is presented. Yet, this framework is constructed as an interactive tool under continuous review and improvement. The idea is, to test this beta version in the course of the further project, in particular in the different labs, and ongoingly improve and adapt this framework. The translation framework builds upon the insights of WP1. It addresses the needs of companies for translating



The agriculture and food value chain

the SDGs into business practices. The final version of the translation framework is also intended to be an interactive tool, which will be part of the knowledge platform created for WP5.

The current beta version of the translation framework as presented below, tries to highlight several aspects:

1. The importance of the 17 SDGs is not the same in each participating country
2. There are five SDGs highlighted for each of the countries (Austria, Germany, Italy and Portugal)
3. The complexity of the value chain is demonstrated and needs to be considered when looking at the various opportunities for fulfilling one of the 17 SDGs
4. Some of the SDGs are left out, as they are not seen as important to those four countries, but it must be remembered and recognized that all 17 SDGs are somehow interrelated.

	Austria	Germany	Italy	Portugal
SDG 2: NO HUNGER		mentioned		
SDG 3: GOOD HEALTH AND WELL-BEING	mentioned			
SDG 4: QUALITY EDUCATION		mentioned	mentioned	
SDG 5: GENDER EQUALITY	mentioned	mentioned		
SDG 8: DECENT WORK AND ECONOMIC GROWTH	mentioned		mentioned	mentioned
SDG 10: REDUCED INEQUALITIES				mentioned
SDG 12: RESPONSIBLE CONSUMPTION	mentioned			
SDG 14: LIFE BELOW WATER		mentioned	mentioned	mentioned
SDG 15: LIFE ON LAND	mentioned		mentioned	mentioned
SDG 17: PARTNERSHIPS FOR THE GOALDS		mentioned	mentioned	mentioned

SDG mentions by country

SDG	The agriculture and food value chain
SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	• Support smallholders to improve productivity, reduce exposure to climate and resource scarcity risks, collaborate to improve supply chain resilience, develop new crop varieties, create digital platforms to share specific best practices advice with farmers and promote sustainable farming practices. • Supporting, encouraging and demonstrating the continued viability of small scale farming, sustaining grower communities by developing partnerships with cooperatives and producer organizations supporting many small farmers. For larger businesses, establishing long-term business relationships that support small scale producers. • Investing in sustainable agricultural technology, intensifying collaboration with academic as well as scientific institutions. • Demonstrating support to genetic diversity of seeds, plants and animals and report on company's contribution to biodiversity. • Fostering knowledge, experience and data sharing among businesses and other actors, contributing to global data platforms collecting and sharing agricultural information and statistics with all actors along the agricultural value chain including farmers. • Upholding highest standards of sustainably in sourcing practices, enhancing traceability of commodities and demonstrating transparency in agricultural supply chain. • Preserving farm animal and crop diversity. • Supporting and creating more agriculture based on solidarity; cooperation with small farms (-> support for farmers). • Focus more on growing food instead of maize for biogas plants. • Plant more wildflowers (counteracting bee deaths).
SDG 3: Ensure healthy lives and promote well-being for all at all ages	• Encourage healthy life-styles in your business and your supply chain – company disease prevention and treatment programmes can make a difference to productivity • Align human resources policies with principles of human rights, including policies for HIV/AIDS. Use already existing resources for guidance (e.g. from the ILO, WHO, etc.). • Partner with health care NGOs and public clinics to raise awareness and increase access to targeted health services for women and men workers and their families. • Make investments in health a priority in business operations. • Facilitate and invest in affordable medicine and health care for low-income populations. • Leverage corporate resources (e.g. R&D, distribution, cold chains) to support health care delivery by public and international organizations. • Reduce use of antibiotics and nitrate reduction.
SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	• Review your pipeline (what skills will you need, where will you find them) - invest in education to make sure you have the right skills in place. Anticipate how changes in technology will impact your workplace's training needs. • Establish relationships with government entities and higher education institutions to improve education curricula to better align with business needs including responsible management. • Create programs (e.g., internships, work-study programs, traineeships, etc.) that give students earlier access to the corporate environment. • Provide employees with continuous opportunities to improve their (job) skills for their current and future employment. • Develop cost-effective education products and services that eliminate barriers to access and improve the quality of learning (e.g., ICT solutions to improve the delivery of education, innovative measurement tools, etc.). • Ensure learning environments are clean and safe for children by mitigating business-related environmental hazards, like pollution and limited water access.

SDG	The agriculture and food value chain
SDG 5: Achieve gender equality and empower all women and girls	• Pay men and women the same rate for the work they do (fair wages for all). Promote on merit. Implement policies that encourage women to remain in the workplace e.g. flexible working and maternity policies. • Assure enough participation of women – 30% or greater – in decision-making and governance at all levels and across all business areas. • Pay equal remuneration, including benefits, for work of equal value and strive to pay a living wage to all women and men. • Support access to child and dependent care by providing services, resources and information to both women and men. • Establish a zero-tolerance policy towards all forms of violence at work, including verbal/ and/ or physical abuse and prevent sexual harassment. • Expand business relationships with women-owned enterprises, including small businesses and women entrepreneurs.
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	• Put a value on the economic impact generated by the jobs your company creates to evidence your licence to operate. Check you have a policy on human rights and that it is being adhered to throughout your supply chain. Check what programmes you have in place to reduce workplace injury and recruit and retain people with disability – are both improving? • Offer apprenticeship opportunities. • Foster entrepreneurial culture and invest in or mentor young entrepreneurs. • Initiate skills development programs moving down company supply chains. • Put in place mechanisms to identify child labor and forced labor throughout global supply chains, and implement remediation when abuses are discovered. • Install a firm policy against unfair hiring and recruitment practices, particularly of vulnerable groups such as migrant workers.
SDG 10: Reduce inequality within and among countries	• Agree and implement an acceptable ratio between your highest paid executive earnings and the earnings of your lowest paid workers. Pay a living wage (including your interns and apprentices) to help social mobility. Have equal opportunity policies for your foreign workers. • Develop products and services tailored for poor customers (e.g. mobile based money transfer services for unbanked consumers). • Improve access to basic goods and services for people living in poverty (e.g. through core business, policy dialogue, social investment). • Recruit, train and employ local community members, including those living in poverty, and integrate them in your value chain (as producers, suppliers, distributors, vendors). • Invest in business-driven poverty eradication activities (e.g. develop living wage policy). • Partner with civil society networks to provide education and entrepreneurial skills training.

SDG	The agriculture and food value chain
SDG 12: Ensure sustainable consumption and production patterns	• Check what you are doing to manage scarce resources. Set and meet targets to reduce energy and resource intensity in production and use. Assess the waste disposal of your company. Reduce the need for new resources and waste disposal by extending product life, repairing, reusing, re-manufacturing and recycling products. Adopt circular economy principles. • Implement product portfolio analysis tools to understand environmental and social footprint of products within lifestyles as well as production. Innovation must align products and applications to appropriately address sustainability megatrends. • Develop innovative business models such as moving from selling products to selling services, to retain ownership of the products and help close the materials loop. • Enable sustainable consumption by developing innovative solutions can reduce energy need in usage and educate consumers about these benefits. • Reduce manufacturing impacts by substituting virgin raw materials in products with post-consumer materials through recycling and upcycling. • Apply modular design, so products' constituent parts will be easily separated and either re-used without further processing, or easily recycled near the point of disposal. • Significantly reduce waste and ensure that any unavoidable waste is utilized to the fullest degree (e.g. organic waste as fuel or fertilizer). • Reduce food waste. • Create plans for environmental management (e.g. energy saving plan, water saving/recycling plan). • Reduce and rethink transport routes. • Less focus on meat production (manure). • Reduce use of strong pesticides or herbicides. • Create measures to save packaging waste. • Publish sustainability reports and create transparent supply chains. • Support and create awareness campaigns about the consequences of food waste and about food sharing (ESD / public relations).
SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	• Review how much plastic packaging your products need and look for opportunities to reduce, reuse or recycle. • Track the life cycle of products and materials in order to understand how they are disposed and which products could likely find their way into marine environments. • Record and disclose information on the chemical and material usage within products, packaging, and processing systems to facilitate closing the loop. • Improve resource efficiency by altering the design, manufacture, or use of products and packaging to reduce the amount of waste that could potentially enter the environment. • Improve resource efficiency by generating value from waste. • Replace, limit or prohibit the use of certain chemicals, additives, or materials that could prevent closing the loop or lead to nutrient pollution or chemical and physical hazards if they happen to reach marine ecosystems. • Prevent waste mismanagement or littering that could pollute the marine environment. • Raise consumer awareness on effective ways to properly dispose of their waste to discourage littering and promote responsible behavior. • Prohibit practices that put marine species and resources at further risk of harm, exploitation or depletion. • Contribute to the development of waste management technologies that minimize the use of clean water. • Utilize a value-chain approach to create connections between the design, packaging, marketing and recycling of materials with the goals of reducing their environmental impact at the end of their lifecycle.

SDG	The agriculture and food value chain
SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss	• Put a value on your environmental impact and work to reduce it. Consider whether environmental degradation and/or biodiversity loss could affect your continuity of supply e.g. decreasing soil fertility could lead to crop failure. Consider certification of sustainably sourced soy, palm oil and timber/paper, work to eliminate paper waste by reducing, reusing and recycling, and only buying from certified sustainable forest sources. • Measure, manage and mitigate impacts on ecosystems and natural resources. • Scale up best practices for land use planning and management. • Invest in natural infrastructure as a cost-competitive alternative to grey infrastructure. • Finance the restoration of degraded land for production and/or conservation purposes. • Support and apply landscape approaches, based on multi-stakeholder dialogue and collaborative action, to overcome social and environmental fracture lines in landscapes facing deforestation, land and ecosystem degradation. • Commit to and implement responsible sourcing practices beyond compliance - applying environmental and social safeguards - for all raw materials and commodities. • Expand markets for responsible forest products and thereby support sustainable forest management. • Foster product and technology innovation to optimize resource efficiency, reduce impacts on ecosystems and lower carbon emissions. • Scale up industrial reuse of water and support watershed protection programs. • Reduction of the use of pesticides, artificial fertilizers and manure. • Restrict soil sealing . • Plan actions to plant more trees / fruit orchards. • Plant more wildflowers (counteracting bee deaths). • Less focus on meat production -> Less manure.
SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development	• Play a role in shaping a system wide approach to addressing one/some of the SDG targets. Help suppliers build their capacity to participate (e.g. by facilitating trade credit, skills building or technology transfer) in your value chain or deliver a better product or service to you if they are already involved. • Create Multi-sector partnerships, which pool the resources and know-how of different stakeholders, are well placed to drive action, due to the complex challenges represented by the SDGs require integrated responses. • Contribute to SDG delivery through impact investment, i.e. investing corporate funds into projects that align with your company's strategic objectives, deliver benefits to the poor and generate a financial return or, as a minimum, a return of capital.

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6. CONCLUSIONS

The overall intention of this work package was to analyse and develop methods and tools of training, teaching, learning and co-learning with regard to their applicability and usefulness in the planned labs and academy format, as outlined earlier in this report.

In T3.2 'Analysis and development of transformative methods and tools' a broad range of methods and tools, as well as learning approaches were identified and categorized in this report into four topics, namely: 'Transformative methods and tools' , 'Methods and tools of innovation and transformation', 'Linking virtual learning spaces with real social learning experiences' and 'Learning environments for the implementation of the translation framework into the workplace'. Overall, 47 methods, tools and learning approaches were extracted from this research.

Concerning task T3.2, it was found that the analysis was very beneficial at this stage of the project. By conducting a literature review, a systematic overview on a broad range of topics of methods and tools could be gained. Furthermore, it was very useful to also draw on the rich experiences of diverse participants involved in this project. Yet, it was found that the development of novel methods and tools was not yet possible at this stage of the project. Instead, the adaptation of existing methods and (if necessary) further development of methods will need to build on practical insights, and thus be realised continuously during the course of the Innovation and Co-Learning Labs (WP4). Another aspect that became apparent throughout the research was that, so far, the workplace is scarcely considered as a potential learning environment for the application and implementation of the SDGs. Moreover, linkages from learning to the applicability of the SDGs are primarily taking place on higher education level and not on adult learning level. New aspects and approaches to working (digitalisation, forms and structures of hierarchy, the concept of "new work" by Frithjof Bergmann (Bergmann and Friedmann, 2007; Väth, 2016)) can be a trigger and can create new perspectives on the implementation of the SDGs in the workplace, and therefore should be considered for the further development of this project.

The workshop T3.3/ D3.1 offered the opportunity to reflect on the outcomes of WP1 and possible implications for the upcoming tasks. Connections between WP1 and WP3 have been discussed. It also gave room to examine the results of the already conducted research for T3.2, while also quality criteria for the labs were developed, which at the same time formed the assessment criteria of T3.4. Moreover, the excursions carried out as part of the workshop provided a new learning field. They showed new perspectives and approaches to learning contexts. This guaranteed an exchange with a wider range of stakeholders and thus included various additional perspectives into the project's ideas on 'labs' and learning settings.

For task T3.1, the design of a translation framework, a beta-version was designed. It builds upon insights of WP1, including aspects of (1) country-specific SDGs priorities, (2) different stages

of the value chain, yet, (3) the interrelatedness of all SDGs needs to be remembered. By this, the translation framework seeks to address the needs of companies for translating the SDGs into business practices. This first version now needs to still incorporate insights from WP4 for taking into consideration the lessons learned during the various labs that will be conducted in the regions. Thus, a translation framework needs to be tested by practical application and adapted consequently in order to gain a framework that is user-friendly and oriented on real-world needs.

Concerning implications of the outcomes of this report for the upcoming work packages, and after having conducted the online assessment on methods and tools, the selection of methods drawn from this assessment (as described in section 4) needs to be applied, tested and developed further in WP4 and WP5, for resulting in an applicable and practically useful selection and manual of methods and tool.

For carrying out WP4, as the subsequent work package, important learnings and insights are that the translation framework needs further application and adaptation in order to be of use for enterprises of the agribusiness and food production sector in the various regions, as well as for enterprises of different sizes, specialisations and steps in the value chain. Moreover, as part of WP4, the methods manual needs to be applied and evaluated with regard to its practicability.

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7. LITERATURE

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8. ANNEX

8.1. ANNEX A: SHORT PROFILES OF METHODS

8.1.1. METHODS AND TOOLS OF INNOVATION AND TRANSFORMATION

8.1.1.1. 6 THINKING MODES: PUT ON A DIFFERENT "HAT" (MC 21)

"Six Thinking Hats" is a decision-making technique and method by Edward de Bono (physician, psychologist and consultant). The tool symbolized by six coloured hats can be applied to support group discussions and individual thinking and helps to think more effectively by applying an associated parallel thinking process. This process guides the thinking in a detailed and cohesive way.

A thinking hat is a metaphor for a certain way of thinking. By mentally wearing different thinking hats people are forced to look at a problem from different perspectives. Thus, a one-sided way of thinking is excluded, and new insights are created.

Hence, the ways of thinking can be planned for use in a structured way allowing one to develop tactics for thinking about particular issues.

De Bono distinguishes six different frames of mind in which the brain can become sensitive. Each of these frames of mind can be found in the brain and create conscious thoughts for certain aspects of the issues that are being discussed, (e.g. gut feeling, pessimistic views, neutral facts). The coloured hats are used as metaphors for the various states of mind. Yet, none of these states of mind or thinking directions describe a natural way of thinking, but instead make facets of thinking more explicit.

The 6 hats are associated with colours. They include:

- White hat – facts known or needed
- Red hat – feelings & emotions
- Black hat – critical judgement
- Yellow hat – brightness and optimism
- Green hat – creativity, possibilities, alternatives, new ideas
- Blue hat – managing the thinking process and ensuring that the "Six Thinking Hats" guidelines are considered in observation.

In workshops for different purposes, such e.g. "choosing between alternatives" or "strategic planning" different sequences are suggested. In a sequence a distinct "hats" "hats" are addressed in a structured, each for a short time (about 2 min.), followed by the next "hat". This provides a structured change of ways of thinking.

Source of the method/tool (web link or reference):

De Bono, Edward (1985). Six Thinking Hats. Penguin Life: London.

The de Bono Group (n.d.). Six Thinking Hats. (Available at: http://www.debonogroup.com/six_thinking_hats.php)

ToolsHero (n.d.). Six Thinking Hats. (Available at: https://www.toolshero.com/decision-making/six-thinking-hats-de-bono/)

8.1.1.2. A DAY IN THE LIFE (MC 19)

"We want to understand others better. As a combination of research and storytelling, the "Day in the Life" method is very valuable for gaining in-depth user insights. Designers are accustomed to observing individuals through a typical workday, recording their activities and taking notes about how they experience their environment. However, it's not always possible to conduct deep field research, and this is when the "Day in the Life" method can be used as an alternative in workshops:

"We let customers recount their typical workdays while others take notes. Paying close attention to how people spend their time allows us to gather a realistic picture of their work settings.

Next, we cluster all the information we gathered about the daily routine and sort it on a timeline similar to a customer journey. Mapping a day in the life illustrates how time is assigned to different activities and helps identify obvious or potential problems at every single step. Lastly, we brainstorm ways for improving this daily sequence."

"A Day in the Life" can be repeated over several days to get a balanced perspective. Customers might also present a typical week or any relevant time span." (Ruf, 2015)

Source of the method/tool (web link or reference):

Ruf, A.-S. (2015). 5 Methods For Innovation You Should Try with Your Team. Blog entry at Clear/Point UX staffing consultants. (Available at: http://www.clearpnt.com/5-methods-for-innovation-you-should-try-with-your-team/)

8.1.1.3. PERSONA METHOD (MC 22)

The Persona-Method was developed in the eighties and is today, among other things, an integral part of the "design thinking" school, a globally distributed "architecture manual" for innovative development processes with the aim of creating products, processes and systems that are as user-friendly and demand-oriented as possible. Personas are fictional characters who combine a variety of characteristics, such as age, gender, profession, consumer habits, income situation, values and life goals, educational style and level of education. These attributes, which are assigned to a persona, are usually based on field and milieu knowledge, previous research (observation, questioning) or simply on empathy. In other words, a persona is a stereotype, but it has many facets and is based on expertise and knowledge of human nature.

With the help of the persona, the potential users of an innovation or project are no longer understood along the lines of a single characteristic ("middle income earners", small farmers") but are perceived and described in the totality of their life situation. Therefore, when thinking of the potential end users of an innovation, they are considered as part of a complex system in which cultural, material, demographic, etc. factors are dynamically linked. This makes more differentiated solutions and tailor-made products and processes more likely.

(Example template for a persona: https://raw.githubusercontent.com/open-design-kit/opendesignkit/master/resource-materials/persona-worksheet.png)

Source of the method/tool (web link or reference):

InnovationTraining.org (n.d.). How to Create Personas for Design Thinking. Four steps to building products with your users in mind. (Available at: https://www.innovationtraining.org/create-personas-design-thinking/)

8.1.1.4. ANALOGY THINKING (MC 23)

'Analogy thinking' is one tool aiming at producing many ideas in a short time frame (it is therefore a divergence tool for innovation). The 'analogy thinking' produces 80% of ideas during the 'ideation session' (brainstorming session). Basically, this means copying concepts from other industries and adapting them to our own. So, a great way to generate new business ideas is to check and review other business models and industries, even those not closely related to our own company. Try to analyse their business model and figure

out how we can apply it to our industry. During this process, new business possibilities will naturally arise. The analogy thinking tool helps you to identify and apply the best features from other solutions.

Don't try to re-invent the wheel. Look at what's happening in your industry and other industries and copy what works. Remember that good artists borrow and great artists steal.

Source of the method/tool (web link or reference):

BMI Lab (2017). Six tools to improve your creativity during an innovation process. (Available at: https://bmilab.com/blog/2017/10/27/six-tools-to-improve-your-creativity-during-an-innovation-process)

Board of Innovation (2020). Opposite thinking. (Available at: https://www.boardofinnovation.com/tools/opposite-thinking/)

8.1.1.5. BELBIN CHARACTERS (MC 17)

"Dr Meredith Belbin (a management consultant and researcher on management teams) together with his team discovered that there are nine clusters of behaviour - these were called 'Team Roles'.

Each team needs access to each of the nine Team Role behaviours to become a high performing team. However, this doesn't mean that every team requires nine people. Most people will have two or three Team Roles that they are most comfortable with, and this can change over time. Each Team Role has its strengths and weaknesses, and each has equal importance.

However, not all are always required at the same time - it is important to first look at the team objectives, and work out which tasks need to be undertaken. Once this has been done, discussions can take place regarding which and when each Team Role behaviour should be utilised.

By using Belbin, individuals have a greater self-understanding of their strengths, which leads to more effective communication between colleagues and managers. Great teams can be put together, existing teams can be understood and improved, and everyone can feel that they are making a difference in the workplace. The nine roles can be divided into three orientations: act-oriented, subject-oriented, and communication-oriented." (Belbin Associates, 2020)

One application of or exercise on this is described in the instructions of game "build a bridge":

"After splitting into groups of 4 to 6, we provide each group with a big stack of paper, a full half-liter bottle, and two tables or chairs as base for the bridge. The distance between the chairs or tables can vary from 50 centimeters to 1 meter. After 30 minutes of construction using paper, the bottle is placed on the bridge and supported for 20 seconds."

It is up to the facilitator to either distribute cards with the characteristics of each role at the beginning of the game so that the participants behave according to their role, or to introduce the characters after the exercise. In both cases the facilitor ends with a reflection on the participants' behaviors as they try to solve a problem together.

Source of the method/tool (web link or reference):

Belbin Associates (2020). The Nine Belbin Team Roles. (Available at: https://www.belbin.com/about/belbin-team-roles/)

Ruf, A.-S. (2015). 5 Methods For Innovation You Should Try with Your Team. Blog entry at Clear/Point UX staffing consultants. (Available at: http://www.clearpnt.com/5-methods-for-innovation-you-should-try-with-your-team/)

8.1.1.6. BRAINSTORMING: THE WALT DISNEY METHOD (MC 15)

"Walt Disney was a master at converting fantasies into reality. His most important starting point regarding the Walt Disney method was to look at something from different perspectives and include all these ideas in his final conclusion. Whenever he had an idea for a film, he did not only think about how the film would come across on the screen, he also examined ways to produce the film. Then he would put himself in the critical shoes of the audience and adapt the film. Finally, the film was ready for the public. The assessment

from multiple perspectives (Walt Disney Method) complemented each other well and resulted in a blockbuster.

To emphasize various perspectives, Disney used the three roles that were discussed simultaneously or consecutively. The following patterns of thought in this method are essential factors to achieve success:

Dreamers

A dreamer is not hindered by strait-jacketing but is creative and imaginative and sees limitless opportunities.

Realist

The realist looks at the practical possibilities to find out whether an idea is really feasible. The realist looks at aspects such as the available amount of means and time.

Critic

The critic does not the criticize the plans of the dreamer or the insight of the realist, but looks at a plan like an observer and filters out and removes all crucial mistakes." (Mulder, 2012)

Source of the method/tool (web link or reference):

Mulder, P. (2012). Walt Disney Method. (Available at: https://www.toolshero.com/creativity/walt-disney-method/)

Ruf, A.-S. (2015). 5 Methods For Innovation You Should Try with Your Team. Blog entry at Clear/Point UX staffing consultants. (Available at: http://www.clearpnt.com/5-methods-for-innovation-you-should-try-with-your-team/)

8.1.1.7. BRAINWRITING 6-3-5: ENCOURAGE EQUAL OPPORTUNITY IDEATION (MC 20)

"Brainwriting 6-3-5 is a modified form of classic brainstorming that encourages equal participation from all team members using written rather than verbal idea generation. For instance, if half of your team wants to launch a new product line and the other half is resistant, brainwriting 6-3-5 would give team members a chance to express their ideas without commentary or criticism.

This technique is particularly helpful when the group is in danger of domination by certain participants, or when team members may hold back because of the group makeup. (...) The name brainwriting 6-3-5 comes from the practice of six people writing down three ideas in five minutes. In reality, the tool works fine with a slightly larger or smaller number of people." (O'Reilly Media, 2020)

Source of the method/tool (web link or reference):

Lewis, C. (2016). How to: 6-3-5 Brainwriting. (Available at: https://podojo.com/how-to-6-3-5-brainwriting/)

O`Reilly Media (2020). Brainwriting 6-3-5. (Available at: https://www.oreilly.com/library/view/the-innovators-toolkit/9781118331873/9781118331873c20.xhtml)

8.1.1.8. CASI (MC 45)

The CASI Framework is a framework that helps to assess sustainable innovations. It distinguishes different innovation types, sectors, locations, etc. It was developed out on an analysis of 500 case studies, and 43 sustainable innovation pilots. CASI was developed in a Horizon 2020 project (which was gotten to known in the former Erasmus+ project CASE). The idea was to compile a Common Framework for the Assessment and Management of sustainable innovations in a multi-stakeholder process, involving practitioners, innovators, policy-makers and civil society actors.

The framework can assist in the assessment and management of "sustainable innovation" by supporting

1. sustainability relevance and scanning,
2. multi-criteria analysis and assessment,
3. critical issue analysis and assessment,
4. multi-level advice management,
5. action roadmaps management.

Additionally, there is CASIPEDIA, a database of 500 sustainable innovation initiatives from all over Europe. These can be searched by type of innovation, key areas of sustainability, priority areas of sustainability, geographical scope etc. You find 40 cases under agriculture and 21 under

food. This database can be used as well as an inspiration.

Source of the method/tool (web link or reference):

Futures Diamond (n.d.). CASI - Public Participation in Developing a Common Framework for the Assessment and Management of Sustainable Innovation. (Available at: http://www.futuresdiamond.com/casi2020/casi-f/ and http://www.futuresdiamond.com/casi2020/casipedia/cases/)

8.1.1.9. DESIGN-THINKING (MC 24)

"Design Thinking is a systematic, human-centered approach to solving complex problems within all aspects of life. Unlike traditional scientific and engineering approaches, which address a task from the view of technical solvability, user needs and requirements as well as user-oriented invention are central to the process. By this, design thinking also goes far beyond traditional concerns of 'design' such as shape and layout.

This approach calls for continuous feedback between the developer of a solution and the target users. Design Thinkers step into the end users' shoes – not only interviewing them, but also carefully observing their behaviors. Solutions and ideas are concretized and communicated in the form of prototypes as early as possible, so that potential users can test them and provide feedback – long before the completion or launch. In this way, Design Thinking generates practical results. Innovation and effective problem-solving combine three essential components:

- technical feasibility
- economic viability
- human desirability

Design Thinking approaches problems from a human perspective, with the objective of designing innovative and desirable products, services or experiences that reflect all three aspects." (Hasso-Plattner-Institut, 2020)

Source of the method/tool (web link or reference):

Hasso-Plattner-Institut (2020). What is Design Thinking? (Available at: https://hpi-academy.de/en/design-thinking/what-is-design-thinking.html)

8.1.1.10. EMPATHY MAPPING (MC 16)

"If you can empathize with other people they'll likely respond in kind, making it easier to cooperate, collaborate and work as a team.

Potential customers, peripheral stakeholders, remote workers – sometimes it's difficult to put yourself in the shoes of people you rarely come into contact with.

Empathy Mapping is a way to get closer to what these people really think and feel about your product, service or situation. In this article, we outline a seven-step process for creating your own Empathy Map.

What Is an Empathy Map?

Empathy Mapping was developed by Dave Gray, co-founder of strategy consultants XPlane. It's a powerful visualization tool designed to help teams use Emotional Intelligence to gain insight into a target group.

The tool provides a series of prompts to identify a target group's thoughts, feelings, motivations, desires, and needs . This forces the investigating team to focus on the target group's requirements, rather than its own.

A product development team, for instance, could use an Empathy Map to consider how people might respond to a new device or a pain point. A team manager might use one to assess his or her team's reaction to a new workflow.

Empathy Maps present results visually, meaning that they can be easily shared, and clearly highlight any gaps in knowledge or contradictions in research. Armed with this information, teams can deliver effective solutions or develop products that people will buy." (Mind Tools 2020)

Source of the method/tool (web link or reference):

Mind Tools (2020). Empathy Mapping. Understanding Targeted Groups. (Available at: https://www.mindtools.com/pages/article/empathy-mapping.htm)

8.1.1.11. OPPOSITE THINKING - REVERSE BRAINSTORMING (MC 25)

"In order to reach creative output, the process itself needs to be creative and innovative. However, an ordinary brainstorming process lacks the creativity that can help to obtain the desired results out of the meeting session. 'Reverse brainstorming' tries to solve the problem in a reversed way to the flow we already know. The method can influence the human mind to create better ideas and solutions. Instead of asking how to solve the problem, reverse brainstorming focuses on the idea of what causes the problem or how to achieve an opposite result of what is expected. This method helps the team to understand the problem and highlight the ideas that can be used to solve it among other ideas discussed during the meeting. For example, the team thinks how to increase the cost instead of how to reduce it... etc.

Reverse brainstorming provides unusual thinking methods to reach solutions that ordinary thinking methods do not achieve. As creative thinking requires a special flow of ideas, reverse brainstorming can help teams to create using unique thinking methods. Reverse brainstorming can be applied directly during the discussion meeting or it can be used if ordinary brainstorming fails to reach the desired solution for the problem or the targeted creative approach." (Elmansy, 2015)

Source of the method/tool (web link or reference):

Elmansy, R. (2015). Design Thinking Tools: Reverse Brainstorming. (Available at: https://www.designorate.com/design-thinking-tools-reverse-brainstorming/)

Straker, D. (2012). Reverse Brainstorming. (Available at: http://creatingminds.org/tools/reverse_brainstorming.htm)

Wilson, C. (2011). Method 4 of 100: Reverse Brainstorming, in 100 User Experience (UX) Design and Evaluation Methods for Your Toolkit. (Available at: https://dux.typepad.com/dux/2011/01/this-is-the-fourth-in-a-series-of-100-short-articles-about-ux-design-and-evaluation-methods-todays-method-is-called-rever.html)

8.1.1.12. PEST(L) ANALYSIS (MC 46)

"PEST analysis is an analysis of the

- political,
- economic,
- social
- and technological factors in the external environment of an organization, which can affect its activities and performance.

There are different variations of the analysis. E.g. the "PESTEL" analysis also includes

- ethical
- and legal factors.

The analysis involves the collection and portrayal of information about external factors which have, or may have, an impact on business.

PEST or PESTEL analysis is a simple and effective tool used in situation analysis to identify the key external forces (on a macro environment level) that might affect an organization. These forces can create both opportunities and threats for an organization. Therefore, the aim of doing PEST is to:

- find out the current external factors affecting an organization;
- identify the external factors that may change in the future;
- to exploit the changes (opportunities) or defend against them (threats) better than competitors would do." (Jurevicius, 2013)

Source of the method/tool (web link or reference):

Jurevicius, O. (2013). PEST & PESTEL Analysis. (Available at: https://strategicmanagementinsight. com/tools/pest-pestel-analysis.html)

8.1.1.13. REMEMBER THE FUTURE (MC 18)

This game description is addressing the manager and employee perspective:

""Remember the Future" is an easy game that helps us to better understand our customers' definition of success and deepen their understanding of how to reach their goals. It centers on the question "What should your product do?" which

is often trivially answered: “Our product should be better.” There are actually unlimited possible and plausible futures to think of and to answer the question together with your customers, give everyone a few pieces of paper and let them imagine they have been using their product continuously until some day in the future. Now ask them to write down as much as possible about what your product will have done to make them happy up to that point. The results will change drastically depending on the wording of the question, so phrase it carefully. It’s quite unlikely that each customer will come up with the same imagined scenario. The true magic of the game is in the discussion about how your customers actually perceive their future. The next step is to compare current product development with the newfound perceptions of the future, looking for areas of possible improvement.” (Ruf 2015)

Source of the method/tool (web link or reference):

Ruf, A.-S. (2015). 5 Methods For Innovation You Should Try with Your Team. Blog entry at Clear/Point UX staffing consultants. (Available at: http://www.clearpnt.com/5-methods-for-innovation-you-should-try-with-your-team/)

Hohmann, Luke (2007): Chapter: Remember the Future. Understand Your Customers’ Definition of Success. In: Innovation Games. Creating Breakthrough Product Through Collaborative Play. Addison-Wesley Professional: Upper Saddle River, NJ, USA.

8.1.1.14. TOOLS FOR SUSTAINABLE INNOVATION - IMPACT CANVAS (MC 26)

The ‘Sustainability Impact Canvas’ forces users to look at the positive as well as the negative impact of their product or business idea, therefore generating the first input for a realistic impact assessment. It is structured along three levels, which consider all potential impact categories of a product or business.

These include:

1.) Impacts by the technology or product (direct 1st order effects),

2.) impacts by the application of the technology or product (indirect 2nd order effects),

and 3.) impacts on societal or structural change (systemic 3rd order effects).

For a positive sustainability impact, the idea is, that at all three levels, negative impacts are ought to be minimised, while maximising the positive sustainability impacts.

It is a thorough method but remains an easy to use tool which helps social entrepreneurs to underpin their discussions e.g. with (impact) investors.

Source of the method/tool (web link or reference):

Threebility – Tools for Sustainable Innovation (2020a). Impact Canvas. (Available at: https://www.threebility.com/sustainability-impact-canvas)

8.1.1.15. TOOLS FOR SUSTAINABLE INNOVATION - THE SUSTAINABILITY SWOT ANALYSIS (MC 29)

Short description of the method/tool:

The Sustainability Strengths, Weaknesses, Opportunities, Threats analysis (sSWOT) helps companies assess environmental risks and to drive action on environmental challenges.

While the common SWOT analysis helps to elaborate an overview of a company’s (or organisations) current strengths and weaknesses. Departing from this future opportunities and threats are derived. This can then inform the company’s strategy and need to be incorporated into future activities.

The Sustainabilty SWOT starts one step earlier and broadens the view for the environmental and social context. It asks for the challenges and big

trends related to environmental and social issues, as a first step.

Then keeping this in mind the SWOT analysis of strengths, weaknesses, opportunities and threats is carried out.

To conclude, the user is asked to 'prioritize and act'. That means to prioritize insights from the environmental and social sphere into the strategy, and finally to plan which aspects can be enacted on a short, mid and long-term basis, as well as to think about where and when they can act accordingly.

The sSWOT can be filled out jointly, by this it helps to engage and motivate colleagues. Also it is useful to work across internal departments as well as with suppliers, customers and other stakeholders on strategies to create long-term sustainable business value.

(Example see here: https://60cf6ee0-8fa7-475a-b0ee-fe4799cefb69.filesusr.com/ugd/b67836_650361d5a75548f19b8b9d2eca7acdb9.pdf)

Source of the method/tool (web link or reference):

Threebility – Tools for Sustainable Innovation (2020b). The Sustainability SWOT Analysis. (Available at: https://www.threebility.com/sustainability-swot-analysis)

8.1.1.16. TOOLS FOR SUSTAINABLE INNOVATION - THE SUSTAINABLE BUSINESS INNOVATION GAME (MC 28)

To help you develop more innovative and sustainable products and business models, a game based on 38 sustainable business model examples has been developed. It combines aspects of the before described Sustainability Impact Canvas and the Sustainable Business Model Canvas.

The game is based around 38 business model cards, including examples of innovative sustainable business models, as well as case studies of companies employing these business models. Each card shows a summary of a sustainable business model that has already been successfully applied in practice. Users can easily identify typical positive and negative impacts of the respective business model and learn about the model through a real-world example.

The aim of the game is to enable participants (companies) to optimise the sustainability potential of new product developments as well as of existing business field.

The game is fun to play and helps teams to make the most of their business idea, benefiting from real-life examples of the most successful sustainable businesses in the world.

Source of the method/tool (web link or reference):

Threebility – Tools for Sustainable Innovation (2020c). The Sustainable Business Innovation Game. (Available at: https://www.threebility.com/sustainable-business-model-game)

8.1.1.17. TOOLS FOR SUSTAINABLE INNOVATION - THE SUSTAINABLE BUSINESS MODEL CANVAS (MC 27)

"The Sustainable Business Model Canvas is a great tool to enable users to think about the most relevant areas of their business within a triple-bottom-line context, i.e. ecological, social and economic areas.

The SBMC is a chart that helps to give a good overview on diverse aspect of a sustainable business model. These include:

- sustainable partners,
- sustainable value creation
- sustainable tech & resources
- sustainable value proposition
- sustainable customer relations
- responsible customers
- sustainable channels of distribution
- end of life

The canvas can both, help for internal analysis as well as for the communication of the sustainable business model to external persons. Ultimately, by implementing the plans and strategies noted in the canvas, it allows users to maximise the sustainability impact of their venture whilst

minimising negative externalities. The canvas is fast and easy to complete." (Threebility 2020d)

(Example see here: https://60cf6ee0-8fa7-475a-b0ee-fe4799cefb69.filesusr.com/ugd/b67836_7bd275b345cf4f20bc560590113a8f47.pdf)

Source of the method/tool (web link or reference):

Threebility – Tools for Sustainable Innovation (2020d). The Sustainable Business Model Canvas. (Available at: https://www.threebility.com/sustainable-business-model-canvas)

8.1.1.18. SCENARIO WORKSHOP (MC 47)

A scenario workshop focusses on the future. It can be set up with a specific focus on consequences of non-sustainable behaviour and can come up with ideas of non-sustainable behaviour of individuals or activities in companies as causes. Departing from this, participants can develop ideas for necessary and possible changes in society. Suiting SDGs can be taken as a reference and orientation for the direction of future development. Ultimately, this can lead to a vision.

Source of the method/tool (web link or reference):

HUNTing for sustainability (n.d.). The "scenario workshop" method. (Available at: https://fp7hunt.net/Insights,policyandpractice/Institutionsandgovernanceofhunting/Thescenarioworkshopmethod.aspx)

8.1.2. TRANSFORMATIVE METHODS AND TOOLS OF LEARNING

8.1.2.1. CRITICAL (SELF-) REFLECTION (MC02)

"Critical reflection should be thought of not as an event or even as a skill, but as a process – of looking back on what you did, pondering about it and learning lessons from what did or did not work. The principle is that good practitioners do not simply do things; rather, they continually learn, develop and grow their abilities.

There are various models or frameworks for reflection. None represent 'the right' way to critically reflect. Whilst having a model can be important to ensure a structured approach, the aim should be to find the model or models that feel most useful.

Whatever approach one takes, being critically reflective involves a number of key things, including:

- An analysis of our assumptions.
- A degree of scepticism about existing knowledge, beliefs and values.
- An awareness of the social context, for us and for people who use services.
- Some imaginative speculation – 'How else might this have happened'?" (Blackwell, 2019)

Source of the method/tool (web link or reference):

Blackwell, A. (2019). Critical reflection: how to develop it in your practice. Inform Children. (Available at: https://www.communitycare.co.uk/2019/11/19/critical-reflection-develop-practice/)

Wood Daudelin, M. (1996). Learning from experience through reflection. In: Organizational Dynamics 24 (3), 36–48.

8.1.2.2. CUSTOMER CO-CREATION (MC05)

"Customer co-creation, in short, is open innovation with customers. It is a product (or service) development approach where users and customers are actively involved and take part in the design of a new offering. More specifically, customer co-creation is defined as an active, creative, and social process, based on collaboration between producers (retailers) and customers (users). The idea of co-creation is to actively involve customers in the design or development of future offerings, often with the help of tools that are provided by the firm.

Co-creation activities are performed in an act of company-to-customer interaction which is facilitated by the company. The manufacturer is either

empowering its customers to design a solution by themselves or is implementing methodologies to efficiently transfer an innovative solution from the customer into the company domain. Examples for methods include ideation contests, lead user workshops, consumer opinion platforms, toolkits for user innovation, or communities for social product development." (Piller, 2014)

Source of the method/tool (web link or reference):

Piller, F. (2014). Customer Co-Creation. RWTH Aachen. (http://frankpiller.com/customer-co-creation/)

8.1.2.3. DIALOGUE-ORIENTED METHODS (MC09)

The aim of all dialogue-oriented methods is to bring together the potential of a group and entire systems such as departments and organisations. These methods also aim at activating the collective intelligence of the participants with regard to the upcoming challenges.

The methods should involve as many people as possible who are affected by an upcoming development. Because it is at the same time the people who can contribute information to the cause and enable a better solution.

By involving a number of employees and managers, also later the commitment in the implementation of possible solutions is supported.

Source of the method/tool (web link or reference):

Burchell, J., Cook, J. (2008). Stakeholder dialogue and organisational learning: changing relationships between companies and NGOs. In: Business Ethics: A European Review 17 (1), 35–46.

Collective Leadership Institute gGmbH (2013). The Dialogic Change Model. (Available at: http://www.stakeholderdialogues.net/learning/textbook/getting-active/dcm/)

8.1.2.4. DISCOVERY LEARNING METHODS (MC01)

"Discovery learning is an inquiry-based, constructivist learning theory that takes place in problem-solving situations where the learner draws on his or her own past experience and existing knowledge to discover facts and relationships and new truths to be learned. Learners interact with the world by exploring and manipulating objects, wrestling with questions and controversies, or performing experiments.

As a result, learners may be more likely to remember concepts and knowledge discovered on their own (in contrast to a transmissionist model). Models that are based upon discovery learning model include: guided discovery, problem-based learning, simulation-based learning, case-based learning, incidental learning, among others. It

- encourages active engagement
- promotes motivation
- promotes autonomy, responsibility, independence
- develops creativity and problem solving skills
- tailors learning experiences" (David, 2017)

Source of the method/tool (web link or reference):

David L. (2017). Discovery Learning (Bruner). In: Learning Theories. (Available at: https://www.learning-theories.com/discovery-learning-bruner.html)

Inventionland Institute (2018). Discovery Learning Method. (Available at: https://inventionlandinstitute.com/discovery-learning-method/)

8.1.2.5. GUIDED MINDFUL WALK (MC13)

"This activity could be done in a "natural setting" or if that's not practical, anywhere on campus or even inside a building. It encourages being mindfully present while walking.

A guide to this walk proceeds as follows:

Appreciate. Take a moment to feel grateful for your body. It is a gift to be able to walk or otherwise move around in your environment. Recall that it took at least a year to learn to walk. Your legs and feet are "often the unsung heroes that take you to and from, day in and day out. Thank

your legs [and the rest of your body parts] for their efforts."

Reflect on the various "ways we're inherently interwoven with the living things around us – even when we're glued to our computer screens. 'Every time we breathe in, we're breathing in other organisms... Our bodies are communities of bacteria'.

Ground. "Bring your attention to the sensations of your feet and legs as your heel touches the ground, then the base of the foot, then the toes, and then they lift. You can repeat to yourself, 'heel, foot, toes, lift' to connect to the action of walking in the moment."

Come to your senses. "Walk slightly slower and begin to open your awareness to all of your senses, one by one. See what is around you, listen to the sounds, taste the air or whatever is in your mouth, feel the warmth, coolness, or breeze on your cheeks, smell the air. Then pause for a moment and try to take in the information from all of your senses at once." Try noticing how attuned other animals are to their environment – how the squirrel freezes when she hears you approach, twitching her ears and nose; how the small bird hops or flies away when the hawk draws near. Appreciate the evolutionary based "alarm systems" present in all animals, including us.

Say a calming phrase. Recite a phrase that accompanies the rhythm of your gait. For instance, "Breathe in, breathe out..." or "Loving kindness..." or "Be here, now..." or another phrase that is meaningful to you." (Teaching Psychology for Sustainability: Guided Mindful Walk)

Source of the method/tool (web link or reference):

Teaching Psychology for Sustainability: Guided Mindful Walk (Available at: https://www.teachgreenpsych.com/ecopsychology/#guidedwalk)

8.1.2.6. HOLISTIC SYSTEM UNDERSTANDING/FORESIGHTED THINKING (MC03)

Holistic systems understanding (HSU) refers to the acknowledgement of an increasingly connected and interrelated world, and of the manifold complexities and challenges arising within such interconnected systems. In doing so, it takes long-term consequences of human-environment-interactions as well as contextual and situational circumstances and interactions into account. Holistic or whole systems understanding further constitutes a transdisciplinary approach, as pledged for by both, scientists from educational as well as sustainability-related fields. It incorporates the ability to holistically grasp and connect system interactions across different spheres (society, economy, environment, institutions, disciplines, ...), across different scales (micro, meso, macro), and different sequences (present, short-term and long-term). By this one should ultimately be able translate those different insights and perspectives into a comprehensive picture which can then serve as starting point for action. Holistic systems thinking addresses the human inability to identify interlinkages and effects across boundaries in space and time.

Source of the method/tool (web link or reference):

Acaroglu, L. (2017). Tools for Systems Thinkers: The 6 Fundamental Concepts of Systems Thinking. (Available at: https://medium.com/disruptive-design/tools-for-systems-thinkers-the-6-fundamental-concepts-of-systems-thinking-379cdac3dc6a)

Conway, M. (n.d.) An Overview of Foresight Methodologies. (Available at: http://www.forschungsnetzwerk.at/downloadpub/An-Overview-of-Foresight-Methodologies1.pdf)

Frisk, E. and Larson, K.L. (2011). Educating for Sustainability: Competencies and Practices for Transformative Action. Journal of Sustainability Education, 2, 1-20.

Wiek, A., Withycombe, L. and Redman, C.L. (2011). Key competencies in sustainability: a reference framework for academic program development. Sustain Sci, 6, 203-218.

8.1.2.7. LEARNING FROM EXPERIENCE THROUGH REFLECTION

"We learn by experiences that allow us to:

- Absorb (see, hear, feel, taste, smell)
- Do (perform an activity)
- Interact (socialize)
- Bridge Walkway

In addition, we also learn by reflecting on such experiences. Reflection is thinking for an extended period by linking recent experiences to earlier ones in order to promote a more complex and interrelated mental schema or patterns. The thinking involves looking for commonalities, differences, and interrelations beyond their superficial elements. The goal is to develop higher order thinking skills." (Clark, 2004)

Source of the method/tool (web link or reference):

Clark, D.R. (2004). Learning through Reflection. (Available at: http://www.nwlink.com/~donclark/hrd/development/reflection.html)

8.1.2.8. LEARNING FROM FAILURE (MC14)

"The Importance of Failing:

Failure means you're developing. Every time you try something new or you face a challenge, you run the risk of failing – the most important thing is that you must learn from the experience and make a change. See failure for what it truly is... learning, feedback and a chance to adapt your plan of attack.

Despite failing, many people don't take time to review and keep trying the same approach or method only to end up with the same results. Failure doesn't necessarily mean we are bad at something, it just means we have to try something new.

The only truly way to fail is to never really try. For every problem there is a solution and for every adversity there is an opportunity to grow and achieve success. The quicker we fail, the quicker we learn and move forwards.

How to Handle Failure:

Failure presents an opportunity to review and adapt your plan. When reviewing, ask yourself:

- What happened?
- What did I learn from this?
- Why did I fail?
- What could I have done differently?
- Where do I need to improve to succeed next time?

Asking these questions and answering as thoroughly as possible will provide you with invaluable insights, which can help move you past your current situation and towards the achievement of your goal or outcome." (Priestley, 2015)

Source of the method/tool (web link or reference):

Priestley, D. (2015). The F Word – Learning from Failure. Venture Team Building. (Available at: https://www.ventureteambuilding.co.uk/the-f-word-learning-from-failure/)

8.1.2.9. MINDFULNESS PRACTICES (MC12)

"The practice of mindfulness is receiving considerable attention by Western psychotherapists for treating a wide spectrum of psychological distress and disorders. "Mindfulness" is a term used to describe an awareness of where one's mind is in the moment. Meditative mindfulness, which is common in Buddhist tradition, contrasts sharply with the fast-paced, preoccupied state of mind that is rampant among people in Western industrial cultures. Nonmeditative mindfulness is also an atypical, but beneficial cognitive orientation in modern culture. Ecopsychologists have identified mindfulness as an important part of feeling ecologically connected and behaving in more sustainable ways.

- Being "here and now" enables greater intentional deliberation and evaluation of the consequences of one's actions, including envi-

ronmental impact (vs. unconscious, habitual and unsustainable behaviours);
- Mindfulness can help avoid the "hedonic treadmill" of prioritizing materialistic consumption and financial wealth;
- Mindfully clarifying and acting in accordance with core values is intrinsically reinforcing, and can promote sustainable behaviour;
- Mindfulness can stimulate empathy and compassion, including for non-human nature." (Teaching Psychology for Sustainability: Mindfulness)

Source of the method/tool (web link or reference):

Teaching Psychology for Sustainability: Mindfulness (Available at: https://www.teachgreenpsych.com/ecopsychology/#-mindful)

8.1.2.10. PARTICIPATORY, TRANSDISCIPLINARY, INTERACTIVE AND COLLABORATIVE GROUP TASKS (MC04)

Fostering sustainability calls for collaborative action. Referring to this, interpersonal collaboration describes the ability to initiate, facilitate and engage in participatory and collaborative sustainability-centred problem-solving. It requires advanced skills in communication, as well as cross-cultural and pluralistic thinking. Moreover, interpersonal collaboration can be referred to as a community-based bottom-up approach.

In combination with the other identified competencies (holistic thinking, critical reflection, ...) interpersonal collaboration can promote the creation of more resilient systems, that are well equipped to adapt to rapidly changing circumstances and bare the ability to collectively encounter the challenges of today and tomorrow. In this context, empathy states another, so far underestimated, trigger for sustainability transformations, as it increases the chances for mutual support, value-creation for others and the common good, as well as cooperation-based solutions. Especially with regard to sustainability-driven entrepreneurship, empathy can be of supportive manner to overcome (interpersonal) competition, to enable collaborative learnings, to foster the co-creation of sustainability impact and to create collaborative networks or community settings.

Dialogue and the willingness to share experiences, expertise and skills form the very basis of any co-learning settings. Along similar lines, co-learning refrains from competitive behaviour and acknowledges the great potential of shared hands-on expertise and joint impact. However, successful community building represents the prerequisite to enable suitable settings and atmospheres for collaborative and reflective dialogue and co-learnings.

Examples:

Co-learning & Peer-to-peer sessions

Collective solution-finding

Collective problem addressing (from diverse disciplinary angles)

Hackathons (not only limited to computer events)

Source of the method/tool (web link or reference):

Cranton, P. (2002). Teaching for Transformation. New Directions for Adult and Continuing Education, 93, 63–71.

Jones, P. (2015). Transformative Learning Theory: Addressing New Challenges in Social Work Education. In: Li, M. and Zhao, Y. (eds.): Exploring Learning & Teaching in Higher Education. New Frontiers of Educational Research. Heidelberg: Springer-Verlag Berlin.

Mezirow, J. (1997). Transformative Learning: Theory to Practice. New Directions for Adult and Continuing Education, 74, 5-12.

8.1.2.11. (ONLINE) PROBLEM-BASED LEARNING METHODOLOGIES (MC10)

Problem-based learning assumes that learning is a product of cognitive and social interactions in problem-centred environments. This approach, rather than focusing on a problem that has a definite answer, emphasises the understanding of a problem as opposed to the solution to a problem. The use of information and communication technologies within teaching methodology enables the students or more generally learners to acquire the learning outcomes outside the classroom. The problem-based learning outcomes, within a

collaborative-learning environment have proven more effective in promoting retention, transfer and reasoning strategies than traditional methods of instruction. Indeed, these environments provide scaffolding (a framework) for students/learners to work collaboratively towards building new knowledge and skills.

Source of the method/tool (web link or reference):

Global Ed Project (Available at: www.globaled.uconn.edu)

Ioannou, A., Brown, S.B. Hannafin, R.H. and Boyer, M.A. (2009). Can Multimedia Make Kids Care about Social Studies? The GlobalEd Problem-based Learning Simulation. Computers in the Schools, Vol 26, No 1, pp 63–81.

Johnson, P.R., Boyer, M.A. and Brown, S.W. (2011). Vital Interests: Cultivating Global Competence in the International Studies Classroom. Globalisation, Societies and Education, Vol 9, No 3–4, pp 503–519.

8.1.2.12. PROJECT-BASED (PROBLEM-BASED) LEARNING (MC06)

"**Project-based learning** is an instructional strategy in which students work cooperatively over time to create a product, presentation, or performance. The two essential components of project-based learning are an engaging and motivating question and a product that meaningfully addresses that question.

Important characteristics of project-based learning, according to the International Society for Technology in Education (ISTE), include the following:

- Students can shape the project to fit their own interests and abilities.
- Students collect and analyze information, make discoveries, and report their results.
- Students conduct research using multiple sources of information.
- The project cuts across a number of disciplines.
- Students must draw on a broad range of knowledge and skills.
- The project extends over a significant period of time.
- The project involves the design and development of a product, presentation, or performance that can be used or viewed by others.
- The context for the subject matter is larger than the immediate lesson.
- The instruction and facilitation is guided by a broad range of teaching goals.

Problem-based learning is an instructional strategy in which students work cooperatively to investigate and resolve an ill-structured prob-

lem based on real-world issues or situations. The steps involved in problem-based learning include:

- determining what the problem is;
- creating a specific statement of the problem;
- identifying the information needed;
- identifying the resources to be used to find that information;
- developing a possible solution;
- analyzing and refining the solution;
- presenting the final solution, orally and/or in writing.
- Project-based learning and problem-based learning have a great deal in common. Both
- involve realistic problems and situations.
- are based on authentic educational goals.
- include formative and summative evaluation,
- are learner centered and teacher facilitated.
- are intrinsically engaging and motivating.
- are frequently multidisciplinary.
- Improve students' research and problem-solving skills, as well as their ability to work cooperatively with their peers.

The difference between the two lies largely in their application: Problem-based learning focuses on the problem and the process, while project-based learning focuses on the product." (Education World, 2011)

Source of the method/tool (web link or reference):

Education World (2011). Project-Based and Problem-Based Learning. (Available at: https://www.educationworld.com/a_curr/virtualwkshp/virtualwkshp002.shtml)

Heick, T. (2013). 3 Types of Project-Based Learning Symbolize Its Evolution. (Available at: https://www.teachthought.com/project-based-learning/5-types-of-project-based-learning-symbolize-its-evolution/)

8.1.2.13. TRANSFORMATIVE LEARNING ACTIVITIES (MC11)

Although there are many theories of adult education and life-long learning (named andragogy by Malcolm Knowles), one of the most influential is transformative learning, developed by Jack Mezirow. Mezirow emphasizes the importance of metacognitive abilities as a means of enfranchising mature learners. He holds that adults engage in two types of learning: instrumental and communicative. Instrumental learning involves making meaning through problem-solving and deductive reasoning. Communicative learning engages social and emotional intelligence.

According to Mezirow, effective teaching engages both modalities and is accomplished through activities that involve distinct cognitive phases:

- A disorienting dilemma
- A self-examination with feelings of guilt or shame
- A critical assessment of epistemic, sociocultural, or psychic assumptions
- Recognition that one's discontent and the process of transformation are shared and that others have negotiated a similar exchange
- Exploration of options for new roles, relationships, and actions
- Planning a course of action
- Acquisition of knowledge and skills for implementing one's plan
- Provision of trying new roles
- A building of competence and self-confidence in new roles and relationships
- A reintegration into one's life on the basis of conditions dictated by one's perspective

Source of the method/tool (web link or reference):

Further info: https://education.cu-portland.edu/blog/classroom-resources/transformative-teaching-adult-learners/

Apte, J. (2009). Facilitating Transformative Learning: A Framework for Practice. Australian Journal of Adult Learning, 49/1, 169-189.

Blake, J., Sterling, S. and Goodson, I. (2013). Transformative Learning for a Sustainable Future: An explanation of Pedagogies of Change at an Alternative College. Sustainability, 5, 5347-5372.

Mezirow, J. (2000). Learning to think like an adult: Core concepts of transformation theory. In: Mezirow, J. (ed.): Learning as Transformation: Critical perspectives on a theory in progress. San Francisco: Jossey-Bass, 3-33.

Mezirow, J. (1997). Transformative Learning: Theory to Practice. New Directions for Adult and Continuing Education, 74, 5-12.

8.1.2.14. VISIONING - DRAWING FORTH PERSONAL VISION (MC08)

"This method is carried out as follows:

The exercise begins informally. You sit down and "make up" a few ideas about your

aims, writing them on paper, in a notebook, or with a word processor. No one else needs to

ever see them. There is no "proper" way to answer and no measurable way to win or

lose. Playfulness, inventiveness, and spiritedness are all helpful--as if you could again

take on the attitudes of the child you once were, who asked similar questions long ago.

Step 1: Creating a Result

Step 2: Reflecting on the First Vision Component

Step 3: Describing Your Personal Vision

Step 4: Expanding and Clarifying Your Vision" (Capek 2008)

Source of the method/tool (web link or reference):

Capek, M. (2008). Drawing Forth Personal Vision: detailed methods description (Available at: http://pages.stern.nyu.edu/~mcapek/handouts_p/Drawing%20Forth%20Personal%20Vision.pdf)

8.1.3. INNOVATIONS CONCERNING LINKING VIRTUAL LEARNING SPACES WITH REAL SOCIAL LEARNING EXPERIENCE

8.1.3.1. BIGBLUEBUTTON (MC31)

"BigBlueButton is an HTML5-based web application. Unlike many commercial web conferencing systems that require you to install software, BigBlueButton runs within your web browser. No download or installation is required.

BigBlueButton extends many of its core features of a web conferencing system to focus on enabling the instructor to engage students. There are four main use cases for engagement:

1. Tutoring/virtual office hours
2. Flipped classroom
3. Group collaboration
4. Full online classes

BigBlueButton helps you engage students in each of these use cases with features that include:

- Multi-user whiteboard
- Break out rooms
- Chat (public and private)Polling
- Shared notes
- Emojis

Of course, all these features are still useful in a business meeting, but they are really useful when teaching students online." (BigBlueButton, 2019)

Source of the innovation (web link or reference):

BigBlueButton (2019): BigBlueButton overview. (Available at: http://docs.bigbluebutton.org/)

8.1.3.2. COLLABORATIVE LEARNING (BLENDED LEARNING) (MC35)

In this case of collaborative and blended learning, the participants of the 6-week-program derive from different companies or derive from the same company but from different departments. Each program has an overarching theme in which the participants are moving and in which they have to find their deepest concern/ their pain. There is no instructor but only a learning companion (coach) who picks up the participants where they stand and only gives impulses and method suggestions, i.e. the participants control the process themselves. There are two real-life meetings – one at the beginning and one in the end and the participants have to realize a project at work alone or with another participant, about whom they have to write a project diary and share a short project report with the others. A virtual learning platform is installed as an accompanying instrument (a Learning Management System, teams, ...), in

which the participants will find technical input on the topic before the start of the programme and can submit their project tasks and communicate with each other or with the learning guide during and a little while after the programme.

Source of the innovation (web link or reference):

Terra Institute (www.terra-institute.eu)

8.1.3.3. CONNECTED LEARNING: MOOCS, LEARNING LABS, LEARNING SPACES - MERGING THE REAL AND THE VIRTUAL IN CONNECTED LEARNING (MC30)

"Many traditional universities face the question whether to embrace MOOCs (massive open online courses) as an additional business model. Although many have an established income, from often subsidized higher education, with regular students on-campus, uncertainties on future public financing and both the interesting features of MOOCs as well as the possible competition from them are urging a rethink.

Very attractive are the learning analytics made possible in online course interaction, which yields data lacking in face-to-face courses. On the other hand, the massive student response to MOOCs shows a potential in terms of visibility and the possibility to recruit talented students.

At the same time, however, universities are reaping the benefits of an evolution that is almost as recent, where those universities that possess large real estate assets, have been investing in improving the physical learning environment for students. These so-called "Learning Spaces", or "Student Centres" offer high-tech equipment in flexible and multifunctional environments, which are highly "wired" and merge seamlessly with the virtual learning environments of the universities. In some cases these facilities are complemented by complete research labs where new learning interactivity is tested.

There is the possibility that universities can use this infrastructure as a complementary strength in the development of MOOCs that have a high degree of physical persistence, and maximize the interaction between presential and distance students, to the benefit of both students groups. It is one of the possible routes towards MOOCs that go beyond recorded lectures and lectures that go beyond unidirectional teaching. Some researchers of the field propose to combine this as a Learning Lab Network." (Truyen, Touzé and Berthet, 2013: 1)

Source of the innovation (web link or reference):

Truyen, F., Touzé, S. and Berthet, J.-P. (2013). Learning spaces, learning labs, and MOOCs: merging the real and the virtual in connected learning. (Available at: https://www.researchgate.net/publication/265694558_Learning_spaces_learning_labs_and_MOOCs_merging_the_real_and_the_virtual_in_connected_learning)

8.1.3.4. ONLINE COURSE: DRIVING BUSINESS TOWARDS THE SUSTAINABLE DEVELOPMENT GOALS (MC34)

This example of a MOOC focuses on businesses and the SDGs:

"What can businesses do to counter climate change and create a sustainable business culture? Why is this relevant for business anyway?

Explore how business can contribute to a better future for people AND the planet without giving up profits. Extreme weather events, wars, famine and environmental destruction are just a few of the wicked problems faced by humanity.

That's why in 2015 the United Nations adopted the 2030 Agenda for Sustainable Development. This agenda includes 17 Sustainable Development Goals (SDGs) that target the big challenges such as how to eliminate poverty, how to protect the environment and how to bring about peace. Every member state committed to achieving these goals by 2030." (Coursera, 2020)

Source of the innovation (web link or reference):

Coursera (2020). Driving business towards the Sustainable Development Goals. (Available at: https://www.coursera.org/learn/sdgbusiness/#about)

8.1.3.5. ONLINE COURSE: HOW TO ACHIEVE THE SDGS (MC32)

"The online course "How to achieve the SDGs" is a 7-module massive open online course (MOOC) which provides an in-depth look at planning for SDG implementation. The range of topics cover financing, policy development, roles of stakeholders, and more. A comprehensive understanding of the societal transformations needed to achieve the SDGs is conveyed.

Possible participants are:

- Policy professionals who want to understand frameworks for SDG planning.
- Sustainable development practitioners seeking knowledge on goals-based development.
- Advanced undergraduates and graduate students interested in key concepts related to the SDGs

The content of the course includes:

- scale, scope, and establishment of the Sustainable Development Goals
- societal transformations required to meet the SDGs
- governance, planning, and financing essential for progress
- the role of civil society and the business sector in advancing global development
- types of transboundary cooperation needed to achieve global goals" (SDG Academy, 2018a)

Source of the innovation (web link or reference):

SDG Academy (2018a). How to Achieve the SDGs. (Available at: https://sdgacademy.org/course/how-to-achieve-the-sustainable-development-goals/)

8.1.3.6. ONLINE COURSE: TRANSFORMING OUR WORLD: ACHIEVING THE SDGS (MC33)

This is another example of a MOOC. In this massive open online course, learn all about the 17 Sustainable Development Goals.

In September 2015, the world's leaders signed on to this new agenda, answering the call for a global vision of important social, economic and environmental needs to support the planet and its people in long-term prosperity and survival. The goals include a set of key areas of focus, as well as detailed targets to put our planet on track for this continuing sustainability through 2030 and beyond.

Sustainable development is not just a problem for future generations. It is a shared global responsibility now and forevermore to be thoughtful stewards of our entire world – from developed countries to developing countries, from high-level policymakers to individuals.

Possible participants of this course are:

- Anyone new to the concept of the Sustainable Development Goals who wants to understand what they are, why they're important and how to achieve them
- Graduate students and advanced undergraduate students interested in the key concepts and practices of sustainability
- Policymakers and sustainable development practitioners looking for a concise overview of the goals and their targets
- Private-sector actors, such as those who work in corporate sustainability and responsibility or at universities – who want their

work to be more sustainable and align with global progress

The content of this course includes:

- What are the Sustainable Development Goals?
- How modern advancements and connectivity can help us achieve the goals
- The importance of sustainable development
- Why you should care about the Sustainable Development Goals – as a corporation, as a university, as an individual." (SDG Academy, 2018b)

Source of the innovation (web link or reference):

SDG Academy (2018b). Transforming Our World: Achieving the SDGs. (Available at: https://sdgacademy.org/course/transforming-our-world/)

8.1.3.7. VIRTUALLY THERE: MAKING VIRTUAL AND BLENDED LEARNING WORK FOR ADULT LEARNERS (MC36)

"Blended and virtual learning make it easy for the learner to make decisions about when to engage or disengage. It's the job of the training professional to ensure that the adult learner is motivated to participate. Learning technologies have become so ubiquitous in the modern workplace that training professionals finally are able to move the focus from a discussion about what technologies to use to a discussion about how to best teach content and how to address learner needs. Virtual and blended learning curricula, when designed to maximize engagement and knowledge transfer, provide vast opportunities to incorporate the tenants of adult learning theory. Let's take a look at the individual concepts related to adult learning theory and explore a few ways to accomplish this in your virtual and blended learning designs. There are 6 key principles to follow:

- Adults are internally motivated and self-directed.
- Adults bring life experiences and knowledge to learning experiences.
- Adults are goal oriented, so every lesson and activity needs an outcome.
- Adults are relevancy oriented.
- Adults are practical.
- Adult learners like to be respected." (Hoffmann, 2015)

Source of the innovation (web link or reference):

Hoffmann, J. (2015). Virtually there: Making virtual and blended learning work for adult learners. (Available at: https://trainingmag.com/virtually-there-making-virtual-and-blended-learning-work-adult-learners)

8.1.4. LEARNING ENVIRONMENTS IN ORDER TO IMPLEMENT THE TRANSLATION OF THE SDGS INTO THE WORKPLACE

8.1.4.1. COLLABORATIVE INQUIRY LEARNING (MC41)

Inquiry learning often incorporates an element of collaboration meaning the engagement of participants in a common endeavour. The greatest correspondence to inquiry learning is probably project-based learning, which is a comprehensive perspective focused on teaching by engaging students in investigation. Within this framework, collaborators pursue solutions to nontrivial problems by asking and refining questions, debating ideas, making predictions, designing plans and/or experiments, collecting and analysing data, drawing conclusions, communicating their ideas and findings to others, asking new questions, and creating artefacts. This approach forced the collaborators to reflect in their work.

Source of the learning environment (web link or reference):

Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palinscar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. Educational Psychologist, 26(3–4), 369–398.

Dillenbourg, P. (1999). What do you mean by collaborative learning? In P. Dillenbourg (Ed.), Collaborative learning: Cognitive and computational approaches (pp. 1–19). Oxford: Elsevier.

Quintana, C., Reiser, B. J., Davis, E. A., Krajcik, J. S., Fretz, E., Duncan, R. G., et al. (2004). A scaffolding design framework for software to support science inquiry. Journal of the Learning Sciences, 13(3), 337–386.

8.1.4.2. CONFERENCES AS COLLABORATIVE LEARNING SPACES (MC40)

In this example, the Regia Douro Parque is intended to be a space for practical and collaborative knowledge, holding student-led conferences and events focused on SDGs with the involvement from other companies whose testimonials can foster the sharing of experiences and the discovery of common problems and solutions. Companies can participate in person or through digital platforms (video conferencing). The goal is to foster collaborative actions among young students and companies and collaborators from Portuguese companies and other world companies. The good practices from other collaborators and other countries can drive innovative learning environments.

Source of the learning environment (web link or reference):

Collaborative Meeting Spaces (n.d.). Trends, Types, and Technologies. (Available at: https://www.viewsonic.com/library/business/collaborative-meeting-spaces-trends/)

Williams, J. (2015). Collaborative Learning Spaces: Classrooms That Connect to the World. (Available at: https://www.edutopia.org/blog/collaborative-learning-spaces-connect-to-world-jennifer-williams-fran-siracusa)

8.1.4.3. ERASMUS+ EXCHANGE COLLABORATOR PROGRAMME (MC42)

To learn and have an experience in a real environment and to bring good practices to the companies, the idea of this learning environment is to use the labs (Co-learning or Innovation) to create an Erasmus program for employees to feel integrated and committed to applying SDGs in their companies.

Source of the learning environment (web link or reference):

The European exchange programme for Entrepreneurs (Available at: https://www.erasmus-entrepreneurs.eu/index.php?lan=en)

Mobility project for higher education students and staff (Available at: https://ec.europa.eu/programmes/erasmus-plus/programme-guide/part-b/three-key-actions/key-action-1/mobility-higher-education-students-staff_en)

8.1.4.4. HOLOCRACY AND TOOLS TO USE THAT (MC37)

“Holacracy is a method of decentralized management and organizational governance, in which authority and decision-making are distributed throughout a holarchy of self-organizing teams rather than being vested in a management hierarchy. Holacracy has been adopted by for-profit and non-profit organizations in several countries.

Roles instead of job descriptions

The building blocks of Holacracy’s organizational structure are roles. Holacracy distinguishes between roles and the people who fill them, as one individual can hold multiple roles at any given time. A role is not a job description; its definition follows a clear format including a name, a purpose, optional “domains” to control, and accountabilities, which are ongoing activities to perform. Roles are defined by each circle —or team— via a collective governance process, and are updated

regularly in order to adapt to the ever-evolving needs of the organization.

Circle structure

Holacracy structures the various roles in an organization in a system of self-organizing (but not self-directed) circles. Circles are organized hierarchically, and each circle is assigned a clear purpose and accountabilities by its broader circle. However, each circle has the authority to self-organize internally to best achieve its goals. Circles conduct their own governance meetings, assign members to fill roles, and take responsibility for carrying out work within their domain of authority. Circles are connected by two roles known as "lead link" and "rep link", which sit in the meetings of both their circle and the broader circle to ensure alignment with the broader organization's mission and strategy.

Governance process

Each circle uses a defined governance process to create and regularly update its own roles and policies. Holacracy specifies a structured process known as "integrative decision making" for proposing changes in governance and amending or objecting to proposals. This is not a consensus-based system, not even a consent-based system, but one that integrates relevant input from all parties and ensures that the proposed changes and objections to those changes are anchored in the roles' needs (and through them, the organization's needs), rather than people's preferences or ego.

Operational process

Holacracy specifies processes for aligning teams around operational needs, and requires that each member of a circle fulfil certain duties in order to work efficiently and effectively together. In contrast to the governance process, which is collective and integrative, each member filling a role has a lot of autonomy and authority to make decisions on how to best achieve his or her goals. Some have described the authority paradigm in Holacracy as completely opposite to the one of the traditional management hierarchy; instead of needing permission to act or innovate, Holacracy gives blanket authority to take any action needed to perform the work of the roles, unless it is restricted via policies in governance or it involves spending some assets of the organization (money, intellectual property, etc.) Holacracy is thus highly biased toward action and innovation: it defaults to autonomy and freedom, then uses internal processes to limit that autonomy when its use in a specific way turns out to be detrimental.

Holacracy specifies a tactical meeting process that every circle goes through usually on a weekly basis. This process includes different phases to report on relevant data, share updates on projects, and open discussions where any circle member can add to the agenda. A particular feature of this last phase, known as "triage", is to focus discussions on the concrete next steps needed by the individual who added the agenda item to address his or her issue. The intention is to avoid large, unproductive discussions dominated by the louder voices." (Everything Explained Today)

Source of the learning environment (web link or reference):

Everything Explained Today (n.d.). Holacracy Explained. (Available at: https://everything.explained.today/Holacracy/)

Holacracy platform (https://www.holacracy.org/)

Robertson, B.J. (2015). Holacracy : the new management system for a rapidly changing world. New York : Henry Holt and Company.

8.1.4.5. MEETING OF ENVIRONMENTAL CORPORATE OFFICE OF SONAE SIERRA (MC43)[1]

This is an experience of an international staff meeting of the different Sustainability Departments of "SONAE Sierra". (The company is an internationally active real estate company, based in Portugal and the biggest private employer in

1 Exemplary meeting with stakeholders in various learning environments (inside, outdoors, on-site)

Portugal). The meeting took place in a hotel for 3 days.

The learning activities took place in different physical learning environments:

- at a room (where all participants were engaged in discussions about themes related with the environmental management performance of the difference shopping centres);
- outside activities (walk for developing team strategies);
- training on site in technical areas of one Shopping Centre

Psychological environment: although the participants were obliged to attend this meeting, people were very engaged and curious about the experiences of the colleagues from other countries.

Social relationships: the group was heterogeneous, they had different roles in the enterprise (from the director, secretaries and other staff, everybody participated), but during the training each participant could behaviour without taking care about hierarchic positions.

The idea is that such a setup of a working meeting of people from different companies could be created in SDGs Labs too.

Source of the learning environment (web link or reference):

Statement based on the personal experience made by Rita in a large shopping center of SONAE; this enterprise has several shopping centers in different countries, worldwide. Rita worked in Lisbon in the environmental corporate department and was responsible for the training of tenants of the different shops installed in the center, as well as service suppliers. The experience refers to the international meetings organized by the enterprise to promote exchange and communication between staffs of different shopping centers from different countries.

8.1.4.6. SOCIOCRACY AND TOOLS TO USE THAT (MC39)

"Sociocracy, also known as dynamic governance, is a system of governance which seeks to achieve solutions that create harmonious social environments as well as productive organizations and businesses. It is distinguished by the use of consent rather than majority voting in decision-making, and decision-making after discussion by people who know each other.

The Sociocratic Circle-Organization Method (SCM) was developed in the Netherlands by electrical engineer and entrepreneur Gerard Endenburg and is based on the work of peace activists and educators Betty Cadbury and Kees Boeke and is a recent instantiation of the approach. There are four basic rules that allow everyone who is part of an organisation to contribute to policy on an equivalent basis, with their place in the hierarchical structure as a point of departure. People gather in circle meetings to make policy decisions but revert to their normal role once the decisions are made.

The Four Basic Rules are:

Decision Making by Consent.

Consent is different from consensus. Where Consent governs decision-making a decision is reached where there is "no reasoned and paramount objection". It is a different principle to Consensus, which asks for agreement, a "Yes". The meeting process in Sociocracy, which is highly disciplined and focussed, is considered to be an efficient and effective method of making decisions.

Circles

A hierarchical structure may be good for implementing decisions, but is not ideal for making decisions. In contrast, the Sociocratic circle organisation consists of semi-autonomous groups, each of which has its own goals, and the responsibility to direct, operate and measure its own processes. However, circles interconnect, and the needs of

lower level and higher level circles must be considered.

Double Linking

At least two people in one circle participate in the decision- making in the next higher circle - the functional leader and one or more elected representatives.

Elections

Individuals are elected to positions by consent after open discussion, which helps to eliminate secrecy, and to cultivate a culture based on open communication. These rules ensure a sense of inclusion, accountability and responsibility and help to foster creativity and innovation in an atmosphere of mutual respect.

In summary, the Sociocratic Circle-organization Method, is a method of decision-making hat produces dynamic organization and governance based on equivalence by means of the consent principle. By ensuring the equivalence of all individuals, Sociocracy brings effective leadership while keeping personal relationships intact." (The Center for Dynamic Community Governance)

Source of the learning environment (web link or reference):

Buck, J.A., Endenberg, G. (2010). The Creative Forces of Self-Organization. governancealive.com. Rotterdam, Netherlands: Sociocratic Center. (Available at: https://web.archive.org/web/20110817103605/ http://governance.server306.com/wp-content/uploads/2010/02/Creative-Forces-of-Self-Organization1.pdf)

Endenburg, G., Lindenhovius, J., Bowden, C. (1998). Sociocracy : the organization of decision-making: 'no objection' as the principle of sociocracy. Delft: Eburon.

The Center for Dynamic Community Governance (n.d.). Sociocratic Principles & Methods. (Available at: http://www.dynamic-governance.org/library/resource-library/sociocratic-principles-methods/)

8.1.4.7. THEORY U AS AN ORGANIZATIONAL DEVELOPMENT PROCESS (MC38)

Theory U is a change management method and the title of a book by Otto Scharmer. The initial method involved a few or many co-workers, managers and/or policymakers. (The process incorporated sociotechnical, Goethean and anthroposophical aspects). It proceeded from a diagnosis of the present state of the organisation to plans for the future. The process can be described as a U shape.

It consists of three levels:

- technical and instrumental subsystem,
- social subsystem
- and cultural subsystem.

Also it includes 7 stages beginning with the observation of organisational phenomena, workflows, resources etc., and concluding with specific decisions about desired future processes and phenomena.

The method draws on techniques (described by Rudolf Steiner as Goethean techniques): Observations shall be transformed into intuitions and judgements about the present state of the organisation and decisions about the future. The stages are explicitly designed as recursive, i.e. repetitive reappraisals, at progressively advanced levels of reflective, creative and intuitive insight and (epis-

temologies). They are thereby enabling more radically systemic intervention and redesign.

The stages are:

- phenomena
- picture (a qualitative metaphoric visual representation)
- idea (the organising idea or formative principle)
- and judgement (does this fit?).

The first three then are reflexively replaced by better alternatives (new idea --> new image --> new phenomena) to form the design.

This is achieved through 7 questions:

1. How do processes and workflows function? Instruments, resources.
2. Understanding the social subsystem and how functions, roles and management are distributed.
3. Understanding the implicit/actual values, rules and policies that shape the organisation. How and why things happen.
4. Is this what we want?
5. What values and guidelines do we want for the future?
6. What does that mean for new functions and roles? How should the organisation of the future be visioned?
7. How can processes be developed in future? What phenomena and facts will characterise the organisation of the future?

Source of the learning environment (web link or reference):

Scharmer, O. (2009). Theory U: Leading from the Future as It Emerge. Berrett-Koehler Publishers.

Presencing Institute (https://www.presencing.org/)

8.1.4.8. UNIVERSITIES USING ECO-CAMPUSES (MC44)

ESD is not only about teaching sustainable development and adding new content to courses and training. For ESD to be more effective, the educational institution as a whole has to be transformed. It involves rethinking the curriculum, campus operations, organizational culture, student participation, leadership and management, community relationships and research. Whole-institution approaches should be promoted at all levels and in all settings. Schools and other educational institutions, and public and private sector organizations, are encouraged to implement sustainability plans or strategies, enabling all stakeholders – leadership, teachers, learners, administration – to jointly develop a vision and plan to implement ESD in the whole institution. Sustainable learning environments, such as ECO-SCHOOLS OR GREEN CAMPUSES, allow educators and learners to integrate sustainability principles into their daily practices and facilitate capacity-building, competency development and value education in a comprehensive manner.

Source of the learning environment (web link or reference):

Blok, V., Wesselink, R., Studynk, O. and Kemp, R. (2015). Encouraging sustainability in the workplace: a survey on the pro-environmental behaviour of university employees. Journal of Cleaner Production, vol 106, 55-67.