

Next FOOD

EDUCATING THE NEXT GENERATION
OF PROFESSIONALS IN THE AGRIFOOD SYSTEM

D3.2: A toolbox for teaching practitioners

WP3 – Future curriculum, education and training system



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1 Introduction

A new way of doing education is essential to cultivate the competences needed to deal with often vexing challenges of reaching sustainability in agri-food and forestry systems. Overall, the new approach we introduce is characterized by 1) a shift from theory to phenomenon as the starting point for the learning process ('experiential learning') and 2) a shift from knowledge to competence as the focus of the educational activities. One key strategy is involvement of students and other stakeholders to the point where they have co-ownership of the learning process, and thus are more motivated to learn than when placed in a passive receiver role.

Such a major shift in mindset and educational activities will represent a challenge for institutions, teachers and students or other stakeholders. It will be important to enable teachers to go through a necessary shift in mindset, and to enable them to master a new way of designing and doing education. We have therefore included the development of a toolbox for teaching practitioners in the Nextfood project: *"We will support the teaching practitioners in the cases with a toolbox with guides, learning models and teaching materials, which will be continually updated during the project. This education materials will be demonstrated for case leaders in a series of workshops."* (from the Nextfood Grant Agreement). The toolbox will support teachers at any level of the education system (high school, vocational training & university), as well as extension specialists devoted to experiential learning approaches. It is intended for courses and programs in the area of sustainable agri-food and forestry systems, but the methods and models are not content-specific and can be applied in a variety of educational settings.

The toolbox design supports the Nextfood educational approach, in which learners and other supply chain actors (farmers, foresters, advisors and industry representatives) are seen as important actors and co-creators of knowledge. Hence, the D3.2 provides process and tools for implementation of experiential learning in a multi-stakeholder setting. For a thorough explanation of the Nextfood educational approach, please refer to D3.1 (Educational approaches).

2 Toolbox architecture and use

2.1 Toolbox main interface

To ensure a systemic change, the outcomes of the Nextfood project will be made available to the stakeholders and to the public through different tools and reports. The materials of the toolbox will be continually updated through the project and made available for anyone to use at the Nextfood platform (www.nextfood-project.eu).

The Toolbox diagram (Fig. 1) is considered the initial interface of the toolbox. The idea is that the user can click on the competences presented as part of the Nextfood approach (boldface, underlined, green), or action learning (boldface, underlined, purple) and then find relevant material of different kinds for different situations.

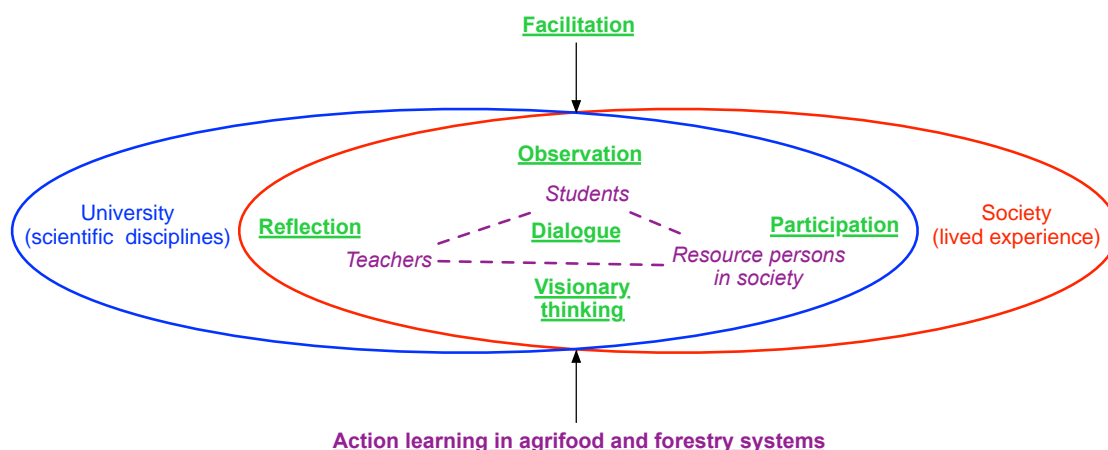


Figure 1: The toolbox main interface

Rationale for the different colours:

Blue: The cold quality of blue is used to illustrate the “analytical at a distance” – features of academia

Red: The warm quality of red is used to illustrate “involved in practice” – features of lived experience in society

Violet: The violet colour is what you get when you mix the blue and the red.

Green: The peaceful and hopeful quality of green is used to illustrate the competences need to support “The green shift”.

2.2 Toolbox architecture

Figure 2 provides an overview of what the architecture of the toolbox is meant to be (not visible to the user).

2.3 Use of the toolbox

Before planning a course, or a learning activity, the teaching practitioners should familiarize themselves with the toolbox, and the guides and exercises to train the competences.

Whether the course is week-long or spans several months, participating educators will find examples of teaching materials suited to train all the competences within the context of action learning.

Relevant content will be added to the toolbox throughout the project period. Content will initially be uploaded in a more or less completed form. The aim is that for each learning activity or exercise, the purpose and learning goals are indicated, as well as a detailed description of the activity, teachers’ preparation needed, and the educational context such as pedagogical approach, pre-requisite skills, time and setting required,

and finally an assessment strategy. During application of the exercises our collaborating educators in the programme are urged to adapt these to fit their needs in terms of content, length and size of their courses, or other educational activities.

When in the toolbox and clicking on a competence the user first reaches a description of *what* and *why*, at each competence. Then there is the option of moving to *how*, where they will find the detailed descriptions of exercises to train the competence, in text-format, some with examples of how this can be introduced in class—for example in a presentation—and in addition examples in the form of illustrations, photos, video-clips, and other visuals.

Below is a short description of the *what*, *why*, and *how*, for each core competence, and in addition facilitation and action learning, as indicated in the model above. In the appendix there is an example of a detailed exercise description in text format. Additional material and visuals can be found in the toolbox itself.

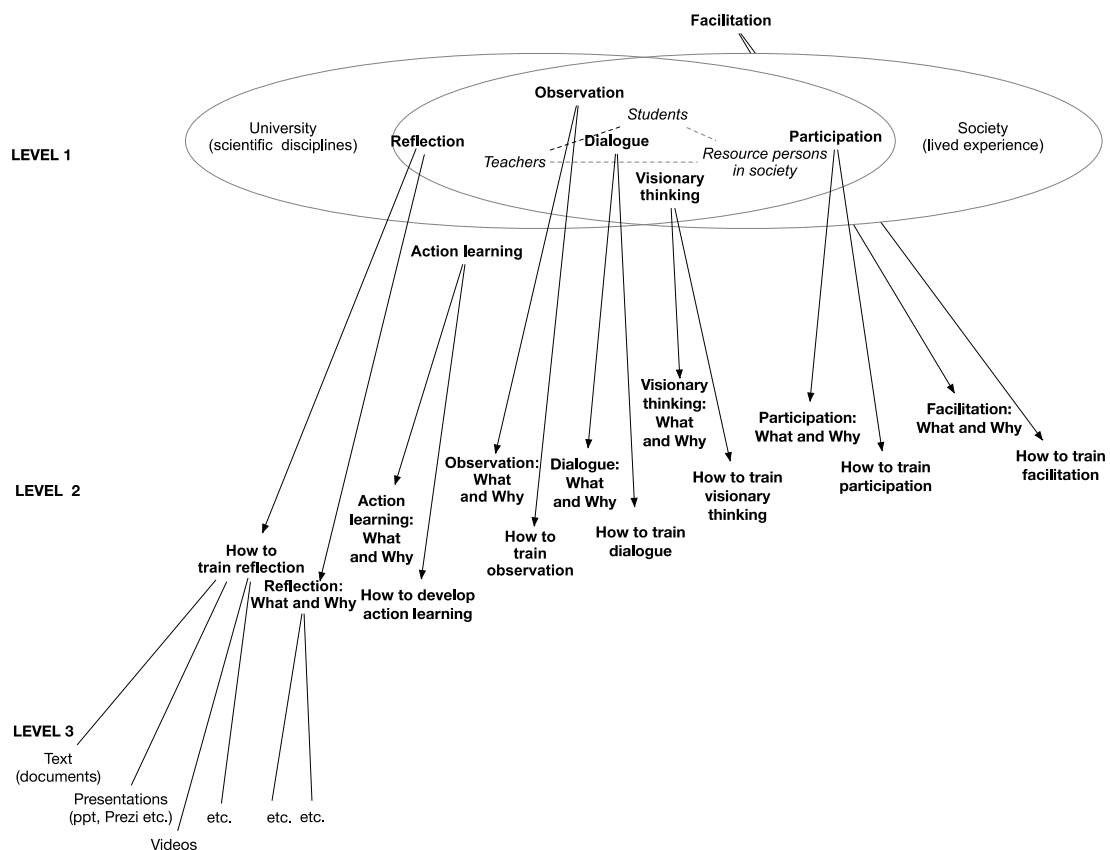


Figure 2. The architecture of the toolbox

3 The core Nextfood competences

3.1 Observation

3.1.1 What?

Observation is the competence of carefully examining situations in the “world out there” with which you are confronted, before you make any judgements about the situation. This has the intention of an unbiased examination (Nextfood D3.1). It represents further a non-judgemental approach enabling us to better grasp the whole, not just the parts.

3.1.2 Why?

The aim of observation exercises is to sharpen the senses, as well as build student awareness regarding the difference between observation and judgement. Such an awareness is crucial to be able to suspend judgement in a situation until an overview has been established. Such a suspension is necessary in complex and ambiguous situations to avoid jumping toward quick fixes that often lead to unwanted negative consequences. Learning to value observation as the starting point for learning about complex situations in the field is important, but often represents a challenge for many students. A main basis for this challenge can be seen in the light of the ontological reversal described by Harvey (1989) in education, where cognitive issues such as theories and mathematical models have taken the position considered to be the ‘true reality’. Since what we observe is viewed as subjective and not representative of what is the real situation, there has been far too little emphasis on observation in education.

This pre-disciplinary, preconceptual, non-judgmental approach is important to allow for a rich, aesthetic experience. Suspension of judgement is further an important prerequisite for being able to deal with the whole of a situation, and not just some predefined parts. Valuing the role of observation as an important source for learning and action, and not just one that provides an illustration of what is already known, is another prerequisite for developing this competence.

3.1.3 How?

In agri-food and forestry education the competence of observation can be introduced through exercises both in the classroom and in the field. One example is ‘Eating observation’, an exercise aimed at learning to observe and take notes of what is there, without including assumptions about the situation that has no empirical basis. Another is the ‘Observation walk’ across the farm or the landscape, or through the community.

3.2 Reflection

3.2.1 What?

Reflection is a process of exploring and examining ourselves, our perspectives, attributes, experiences, actions and interactions. It helps us gain insight and see how to move forward. It increases our ability to link our own experiences to theory and to personal development. Reflecting on our learning, exploring ideas and linking prior

experience with new knowledge helps us focus on what we need to work on in the future.

In agroecology, reflection is characterized by a “Janus-quality” (after the Greek and Roman god, Janus), with one face looking outward into the world of food, agriculture, and the environment, and the other face looking in the opposite direction, into the inner world of the student. The challenge for the student is to value the importance of both perspectives and to cultivate the links between the two.

3.2.2 Why?

When we reflect, we relate to our experiences as well as relevant theory, in the mode of empirical reasoning, and then proceed towards the future, through moral reasoning: What are the implications of what I have learned for what I should do in the future? In such a shift towards the future in reflection lies the moral, and the emancipatory dimension of reflective activities.

3.2.3 How?

Our task as educators is to provide a safe and encouraging learning environment, where students can explore ideas and learn to link their prior experience with new knowledge and skills, and to combine these into a capacity for visioning a desirable future. According to Kolb (1984), experience is transformed into knowledge through reflection. Dewey (1938) proposed that “we do not learn from experience... we learn from reflecting on experience”. In an earlier elaboration on reflection, he defined the reflective activity as an “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (Dewey, 1933, p.9). Because of the crucial role of reflection as a structured activity to enhance learning (The Nextfood approach), it should be introduced as a core competence during the initial days of the educational process and be followed up with weekly reflection sessions to practice this competence.

As a part of these weekly sessions, the students should also get the experience of facilitating reflection sessions. Students should be encouraged to write a daily learning log as well as a final reflection document where they sum up what they have learnt during the course, e.g. how they have met the educational objectives with course activities. According to Mezirow (2000), “Reflection enables us to correct distortions in our beliefs and errors in problem solving. Critical reflection involves a critique of the presuppositions on which our beliefs have been built”. As such, the reflective activity shapes the path towards what Mezirow and Associates (1990) call transformative learning: “...learning experiences that leave a significant impact on the learner, a paradigm shift that shapes the learner and affects subsequent experiences”. Whereas the competence of observation explicitly deals with the world in which we live, the outer world, reflection can be called ‘observation in the inner world’.

3.3 Participation

3.3.1 What?

Participation is the competence of participating in work in the field, not as a distant observer, but rather with personal commitment and dedication in interaction with different stakeholders. Participation can be interpreted as a transformative process focused on making a difference, as opposed to simply observing and accepting status quo.

3.3.2 Why?

The process of guided participation provides a link between previous experience and competences needed to solve new problems (Rogoff, 1993; Reid et al., 2008).

Too often in academia an active participation on farms, in food systems, and as a member of society has been considered an 'extra-curricular' activity. Students have pursued active involvement in environmental, political, and social causes that are highly relevant to them personally, invested time outside of class hours, but these have not been considered integral to their formal education. We have often encouraged students in the university to embrace broader interests, knowing that the skills and experience gained outside the confines of the classroom can lead to preparation for professional socializing and contributions to the work environment in the future.

We often tend to regard participation and action as being outside of the academic realm. From Merleau-Ponty's phenomenology with its focus on bodily lifeworld presence and acting as foundation for conceptions, we derive the skills of 'participation' and involvement. The recognition of the value of participation and involvement for the learning process is a vital part for developing this skill (Francis et al., 2016).

3.3.3 How?

For example, by including the competence of participation as a key part of learning from the start of a course and include time for case work where students can practice skills in the field, work on farms and interact with farmers and food system professionals (Francis et al., 2016). Through working in groups, all the students can participate and contribute with their role and together they ensure the progress of the teamwork.

3.4 Dialogue

3.4.1 What?

Dialogue is a process which helps us notice the nature of our thinking. Dialogue increases our capacity to move into and toward difficult issues in a welcoming fashion. It expands our capacity to listen and to become aware of the piece of the mosaic that might be missing from our own and the collective understanding. Dialogue is a powerful tool to access the collective intelligence of a group. Dialogue enable us to ask difficult questions and examine the assumptions behind our thinking.

3.4.2 Why?

For students to effectively explore questions for which there is no obvious answer and develop a deeper and shared understanding of the complex issues and challenges they face in agri-food and forestry systems, being able to introduce and facilitate dialogue is essential. Dialogue provides a safe space for exploring and challenging the assumptions behind our thinking. As opposed to debate and discussion, dialogue takes the energy of our differences and channels it toward something that has not been thought of before. It is a powerful approach to transforming the quality of conversation and stimulating breakthrough thinking (Nextfood D3.1).

We are most often trained to communicate in a polarized manner, in a debate or discussion format, where the main goal is to win, to show that your thinking and arguments are better than those of your opponent. Dialogue-based communication is found in the other end of the communication continuum. Here the aim is to explore a topic together and to create a space for collective learning. The described shift in mindset represents an important prerequisite for developing the skill of dialogue. And, as for all skills, it needs to be practiced, not just talked about. To communicate in a dialogic manner implies an ability to actively listen both to fellow students, to teachers and to people students meet in the case studies, as well as the ability to express one's own experience and pre- understanding without forcing them on others.

3.4.3 How?

Introducing guidelines for dialogue and giving a group the opportunity to develop and practice this competence over time in connection with relevant issues and challenges, increases the probability of experiencing the potentials of dialogue. Teachers can guide the students' exploration, try to be sensitive to their ways of expressing their experience and ask them questions that can lead them on to new insights. It implies an open attitude towards seeing and promoting the students' activity in exploring phenomena.

Dialogue is a vital and core competence for action learning. Dialogue should therefore be exercised in the classroom prior to the onset of student teamwork, and then continuously practiced throughout the student course. Observation and reflection are also reinforced in dialogue: – we learn by observing our thinking and the assumptions behind our thinking and we practice reflection by slowing down the pace of the conversation and listen for understanding and new insights.

3.5 Visionary thinking

3.5.1 What?

Visionary thinking is the process whereby we activate our insight and imagination, connect with our values and sense of purpose and create mental images of a desired future state. Being able to engage a group in creating a shared vision can heighten the possibility for breakthrough solutions and unite and provide the link between diverse people, interests and activities. Visionary thinking stimulates a creative mindset and breakthrough solutions. When working in a vision-oriented framework, we are exploring the question: What do we want to create?

3.5.2 Why?

The aim is giving the students hands-on experience with visionary thinking as preparation for facilitating the creation of shared visions followed by planning for implementation with farmers and other food system stakeholders.

Despite the fact that change efforts require a high level of engagement from those affected by the change, learning how to engage a diversity of stakeholders in creating a shared vision around a critical societal challenge is not generally a part of university curriculum.

A shared vision unites and provides the link between diverse people, interests and activities. Shared visions are expressions of what people have in common, and especially of what they are committed to. When a shared vision has been authentically created, refined and communicated, the normal barriers and roadblocks to implementation fall away. Silos and “us v. them” mentalities lessen, replaced by commitment, communication and action. People with a shared vision are more likely to take responsibility; they are also more likely to challenge the bounds of convention.

Thinking in a vision-oriented manner supports a divergent approach to thinking and allows a team to fully explore and discover more possible futures. Visionary thinking stimulates the full functioning of the brain, allowing access to mental images and intuitive knowing. A team with a shared vision can more easily grasp the whole picture and how all the pieces are interconnected. Using divergent and convergent thinking in appropriate ways, and at the right points in the process, stimulates creativity and allows for the possibility of breakthrough solutions.

3.5.3 How?

In order to create a shared change vision, students need to learn how they can activate their insight and imagination, connect with their values and sense of purpose and create mental images of a desired future state relevant to the challenge that is in focus.

Visionary thinking is a highly versatile approach, one that can be used in many different situations and with different time horizons, all depending on the interests of those engaging in the visioning process. Once the focus of the visioning activity has been set, laying the groundwork includes creating the right environment, familiarizing participants with the process, and posing questions that free the imagination and stimulate the flow of imagery. In the shared visioning approach, the implementation-planning phase in the change process becomes a learning process in which perspectives must continually shift between the shared vision and the immediate actions that are needed to reach it.

3.6 Facilitation in education

3.6.1 What?

Facilitation is a term to describe one important role of the teacher in this new educational environment. Facilitating learning is providing the necessary resources,

information and support as well as guidance in order to help students complete a task, rather than teaching through solely delivering information.

3.6.2 Why?

As educators, how we communicate with our students and other members of the learning community is at least as important as the content we want to share. Often our attention is focused almost totally on the material and not nearly enough on how we can engage and stimulate the students to embrace and practice new competences and make changes in behaviour and learning styles (Wise and Ezell, 2003).

Traditional approaches are not successful in developing the 21st-century skills that learners need (e.g., critical thinking and the ability to communicate effectively, innovate, and solve problems through negotiation and collaboration). Research consistently suggests that collaborative learning and personalized learning strategies are more effective in supporting the deeper learning needed (Wise, 2017).

Facilitation skills may be useful when the objective for the session is to generate ideas, to have a dialogue around a common issue, to create a shared vision, to come to a mutual conclusion or to solve a problem (Pool and Parker, 2017). Facilitation may be used for settling conflict, or to deal with conflict-laden matters including developing students' capacities to resolve their own group conflicts. Facilitation is also a tool that can be important in individual learning, in addition to the above-mentioned group activities and cases of tension or discord.

When we practice facilitation in the classroom or off-campus with students, it gives them the message that we recognize their contribution to the learning, their expertise, and that the exchange of knowledge takes place among all in the room or other setting. There is a breakdown or relaxation of the conventional hierarchy, and this essentially lifts up the significance of the student in relation to the teacher and enables a fruitful collaboration in the educational process (Wise, 2017).

3.6.3 How?

While teaching methods will vary to some extent depending on the subject, level of learning or intended outcomes, the focus is generally on helping learners gain new competences and understand course content through questioning and suggestions while providing rich cases, complex problems, and opportunities to apply new knowledge in different contexts.

For the educator, facilitation is part of the selection of methodologies that researchers and students can adapt to the uniqueness of their learning setting. Facilitation is a competence that is best developed through practice. In the classroom, the teacher as facilitator is fundamental, for example when developing learner-centred work, communicative activities and social approaches. As facilitators we need to establish an environment of trust, so that students feel safe and comfortable to participate with their perspectives and knowledge. A way to do this is to set off time when a new group comes together for ice-breaking activities and to train dialogue as a competence when communicating, encouraging all to actively listen as well as join in. In order to facilitate in a classroom setting it is preferable to have a room with a flat floor and moveable

tables and chairs. If you are in a steep lecture hall or the only space for the teacher is up front, it is hard to move about the room and interact with the students, and they cannot easily interact with each other.

3.7 Action learning

3.7.1 What?

In action learning we focus on the learning process and encourage students to become lifelong learners.

Kolb (1984) was inspired by Dewey, but also by other scholars like Kurt Lewin and Paulo Freire when he developed an Experiential Learning Theory (ELT) that states “Learning is the process whereby knowledge is created through the transformation of experience” (p. 38) (Baker et al., 2012). All these scholars placed purposeful action based on experience at the centre of learning (Kolb and Kolb, 2009). As such, experience in itself does not lead to learning. For that to happen, the learner must reflect, and use the newly created knowledge towards purposeful action. Kolb (1984) viewed learning as a cyclical process that starts with an initial experience and ends with actions to improve the situation where the initial experience took place. He further emphasized the flux between observation and conceptualization and between reflection and action in the cyclical process of learning.

3.7.2 Why?

Boud and colleagues (1993) built on Dewey when they emphasized that 1) experience is the foundation for learning, 2) learners actively construct their experiences, 3) the process is inherently holistic, 4) learning is socially and culturally constructed, and 5) the entire educational process is strongly influenced by the socio-emotional context in which it occurs.

3.7.3 How?


John Dewey developed many of the basic ideas for experiential learning. He further emphasized that the ethos of learning is that it happens through and for action (Dewey, 1916). His emphasis on doing *and* reflection as the source of learning focuses on our experiences and actions in the world as the point of departure for the learning process. It is however important to be aware of Dewey’s warning that we do not learn by *doing* alone, the doing must be followed up by reflection on our experiences, what can be called *reflective practice*. The task of the teacher will then be to create the environment where the students’ doing and experiencing can take place and then facilitate the reflective activity as a follow-up (van Manen, 1990). Such an approach also necessitates a specific focus on cultivating the students’ reflective competences, and to link the students’ reflective activity to their own experiences. A core guiding principle of Dewey’s pedagogical thinking is that education should not be done by an authoritarian approach, but rather start with the experience of each student (Dewey, 1916).

In designing specific action learning activities, the educators in each project should consider their overall learning goals, the resources and nearby venues available, and

the time to be allocated to this part of the overall educational plan. Prior experiences will guide some choices of what can be most meaningful for students, as viewed through the Nextfood learning lens, while new experiences gained from other projects can provide a synergy that makes 'the resulting activities likely more valuable than the sum of the component ideas. Although experiences and guidelines can be provided here in the Toolbox, these must be adapted to the goals, facilities, and outcomes of each project.

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Appendix

Multi-perspective Analysis

Description by Geir Lieblein and Tor Arvid Breland, Norwegian University of Life Sciences (NMBU)

SHORT DESCRIPTION

Agroecosystems are multi-functional, complex and contain several, often conflicting interests and goals. Improving the sustainability of agriculture and food systems requires an understanding of this complexity. It is a goal, but often difficult, to see the whole situation at once, as expressed in the poem “The Blindmen and the Elephant” (http://en.wikisource.org/wiki/The_Blindmen_and_the_Elephant).

Systematic viewing of a situation in different perspectives (e.g., environmental, production, economic and social) and subsequent linking of these is a tool to better understand the whole and to ensure that important issues do not escape from attention. It is also needed for a balanced assessment of, e.g., the sustainability of a situation and of alternative development scenarios. Consequently, it is essential that agroecology students become skilled in this method.

Implementation of the exercise includes:

1. Concrete experience with real-life cases (e.g., at the farming or the food system levels) through excursions or information acquired from a pre-made description

The students come in touch with real-life cases exhibiting complexity and thus creating needs for applying different perspectives and for reflecting on what is being dealt with and on the processes of dealing with it. The cases may appear through concrete experiences from excursions or from reading a description of a real-life, multi-faceted case.

2. Lectures readings and exercises relevant to understanding the cases

The students are provided with information about the structure and functioning of the phenomena studied through selected lectures and readings within fields such as systems theory, ecology, agronomy, environmental science, economics and social sciences. Smaller exercises are used as pedagogic tools.

3. Lectures, readings and exercises about the processes of Multi-Perspective Analysis

The students are provided with information about the processes of multi-perspective analysis as a tool for being holistic and reflection as a means of understanding links between experience and theory and of understanding

one's own relationship to the phenomena dealt with and the process of dealing with them. Smaller exercises are used as pedagogic tools.

4. Doing the exercises as a combination of individual work, group work and plenary class sessions

The exercise of multi-perspective analysis encompasses individual work (e.g., taking the role of a stakeholder having a specific perspective or reflecting on a specific question), pair-wise or group exchange of ideas and discussion, and reporting and discussion of the outcomes in plenary class meetings.

5. Evaluation of and reflection on the exercise process

TOPIC

Farm Analysis, Agroecology and Systems Thinking

PURPOSE AND LEARNING GOALS

Conceptual background: Agroecosystems are multi-functional, complex and contain several, often conflicting interests and goals. Improving the sustainability of agriculture and food systems requires an understanding of this complexity.

Learning goals: After completion of the exercise, the students should be able to:

1. Recognize the necessity and value of viewing a farm from different perspectives.
2. View the farm from different perspectives.
3. Evaluate and compile these perspectives to more fully understand the entire situation and complexity of a farm.

DESCRIPTION OF ACTIVITIES

- 1) Give readings about multi-perspective analysis to students. Learning resources provided in this exercise may be used. The readings can be stored in a local repository, handed out or found through web searches.
- 2) Prepare a farm excursion which includes talks with the farmer(s), visiting all productions of the farm, focusing on the overall agricultural landscape, the food landscape, and interaction with the local community. The farm visit should preferably last for at least 2-3 hours. If a farm visit is not possible, a search for web-based farm descriptions could be an alternative.
- 3) Let the students group-wise present the different aspects of a farm during the farm excursion or in the weeks after the excursion. Let them have different

roles in this work, e.g., sociologist, agronomist, ecologist and financial adviser.

- 4) The group work should be documented on, e.g., flip-over sheets. A good idea is to take digital pictures of the sheets for later use.
- 5) Let the students present the results and discuss the different perspectives in plenary. Each presentation should last at least 45 minutes, including comments and discussion.
- 6) Let the students present the results and discuss the different perspectives in plenary. Each presentation should last at least 45 minutes, including comments and discussion.



Farm excursion needs planning and funding for travel expenses

- 7) Let the students prepare a summary (individually or in groups) of the multi-perspective analysis work.
- 8) This work could be used in the assessment by utilising it in oral exam, essay, written project document, learning document or presentation in class.

TEACHER'S PREPARATION

By the teacher prior to the activity:

- Arrange a visit to a local, diversified farm, including transport to the farm and back again.
- Dividing the students into groups and give them different roles according to the description above.

- Need to schedule enough time to look at the case from different perspectives, which is essential to combine theory with practice.

EDUCATIONAL CONTEXT

Pedagogical approach:

- Group work, using multiple perspectives and backgrounds of students
- Case study, including in-depth interviews with several stakeholders
- Discussion about complexity of the case and multiple points of view
- Presentation using multiple media and including involvement of team members in planning and process

Pre-requisite skills/knowledge:

- No pre-requisite skills for students, but an appreciation of importance of a systemic approach. Some pre-knowledge of farming and food is an advantage to apply the different perspectives

Context/level of study:

BSc, MSc, PhD (all levels)

TECHNICAL INFORMATION

Can be done as a rapid one-week exercise or be part of a systemic process that runs over several weeks:

- 1-2 weeks introduction and farm excursion (minimum 2-3 hours farm visit)
- 5 weeks for multi-perspective analysis (not full time, a more intensive, shorter period could also work)
- 1-2 weeks for presentation, discussion, and evaluation (not full time)

Tools/resources:

Farm excursion

Assessment strategy:

Presentation in groups

Depending on the course, the presentation from the multi-perspective analysis can be a part of the total assessment in the course. It is essential for team participation in the overall learning activity and community to capture the richness of experience that the group brings to the tasks.