

# Next FOOD

EDUCATING THE NEXT GENERATION  
OF PROFESSIONALS IN THE AGRIFOOD SYSTEM

## D2.1: Action Research Protocol

WP2 – Action Research Facilitation



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 771738

The present Deliverable reflects only the author's view and the Research Executive Agency is not responsible for any use that may be made of the information it contains

## Document Information

<b>Grant Agreement</b>	771738	<b>Acronym</b>	Nextfood
<b>Full Project Title</b>	Educating the next generation of professionals in the agrifood system		
<b>Start Date</b>	15/03/2018	<b>Duration</b>	48
<b>Project URL</b>	TBD		
<b>Deliverable</b>	D2.1: Action Research Protocol		
<b>Working Package</b>	WP2 – Action Research Facilitation		
<b>Date of Delivery</b>	<b>Contractual</b>	30/06/2018	<b>Actual</b> 30/06/2019
<b>Nature</b>	R – Report etc.	<b>Dissemination Level</b>	P - Public
<b>WP Leader</b>	NMBU		
<b>Authors</b>	Lutgart Lenaerts, Åsmund Læg Reid Steiro, Anna Marie Nicolaysen, Tor Arvid Breland, Geir Lieblein		
<b>Contributors</b>	Martin Melin		

## Document History

Version	Issue Date	Stage	Changes	Contributor
0.1	30/06/2019	Draft		
0.2		Draft		
1.0		Final	Review	

## Table of Contents

Executive summary.....	6
1 Introduction .....	7
2 Initial planning .....	9
2.1 Research questions .....	9
2.2 Data to collect.....	9
2.3 Data collection methods.....	10
2.4 Data analysis methods.....	10
3 Implementation .....	11
3.1 Research questions .....	11
3.2 Data to collect (during and after the educational activity) .....	12
First week (day) of the educational activity .....	12
Middle of educational activity (optional) .....	12
Last week (day) of the educational activity: .....	12
Students' final documents.....	13
Comments from the main stakeholder in farm, food, or forestry about: .....	13
Teachers final documents.....	13
Institutional factors affecting higher education .....	13
Demographics .....	13
3.3 Data analysis methods.....	13
4 Reflection .....	15
4.1 Research questions .....	15
4.2 Data to collect.....	15
4.3 Data analysis methods.....	16
5 Planning .....	17
5.1 Research questions .....	17
5.2 Data to collect.....	17
5.3 Data analysis methods.....	17
6 List of References .....	19
7 Appendix .....	20
Appendix 1 – The Nextfood approach.....	20
Appendix 2 .....	21
Appendix 3 .....	22
Appendix 4 .....	23
Appendix 5 .....	24

Appendix 6 .....	25
Appendix 7 .....	29
Appendix 8 .....	30
Appendix 9 .....	31
Appendix 10 .....	32
Appendix 11 .....	33



## Table of Figures

Figure 1: The shift from teaching to learning in agrifood and forestry education: The action research process..... 7

## Executive summary

In order to ensure a synchronised data collection, this research protocol provides instructions on how to gather and analyse data from the activities performed when following the manual for case development. This involves recording workshops, gathering the responses from students and teachers and synthesising these in a streamlined fashion. Rigorous planning of these data collection activities is paramount for successfully going through the phases of initial planning, implementation, reflection and planning again.

# 1 Introduction

A new educational approach will be needed to cultivate the competences required to improve sustainability in agrifood and forestry systems. This new approach (the 'Nextfood approach') is characterized by 1) a shift from theory to phenomenon as the starting point for the learning process (experiential learning) and 2) a shift in focus from knowledge to competences needed to take informed and responsible action as the ultimate goal of learning. Sustainability challenges are complex, and the gap between knowing and doing is often larger than between ignorance and knowledge. Therefore, such a transition in education requires emphasis on a systemic approach and on facilitation of change. Further, the core competences—i.e., the integration of knowledge, skills and attitudes— required for involving in such inherently participatory and transdisciplinary processes, must be fostered (e.g., observation, participation, dialogue, visioning and reflection).

The transition to a radically different approach in education implies a paradigm shift that is likely to pose new challenges to all actors involved (students, teachers and institutions). These may pertain to the mindset, habits and competences of both teachers and students, which are often rooted in specific disciplines and a tradition of theory as starting point for learning. Institutions with education usually organised according to disciplines sub-divided into topics and with a dominance of assessment methods that reward only theoretical knowledge, may be reluctant to support new education that needs to be transdisciplinary, involve various extra-university stakeholders, and include other assessment methods than written exams. Within this context, there is a need for more knowledge about how to effectively plan, implement and further improve the new approach.

In the Nextfood project, the strategy for generating such knowledge is action research (Levin and Ravn, 2007) in 12 selected educational activities. During the project, each of these will go through several action research cycles (Fig. 1).

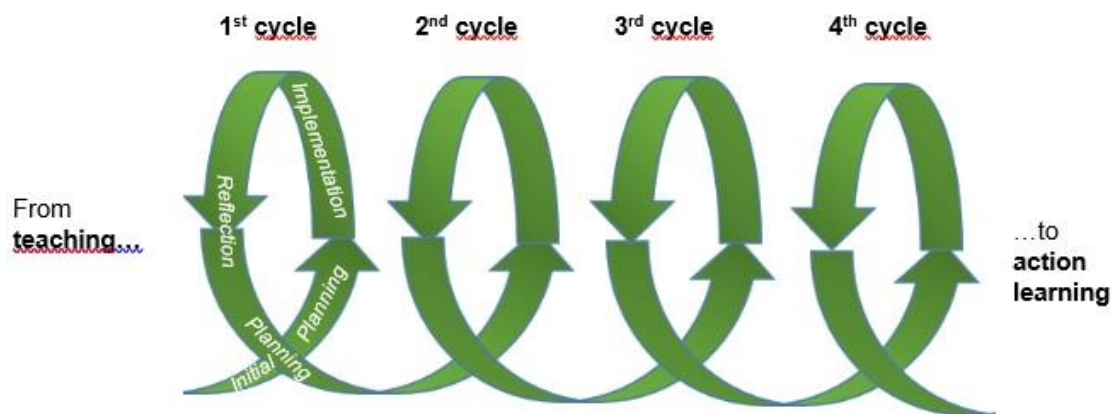


Figure 1: The shift from teaching to learning in agrifood and forestry education: The action research process.

Each cycle contains three major phases: **planning – implementation – reflection**. Simultaneous to taking such action for developing the case (as described in the D2.2 Master manual for Nextfood case development), research (research questions, data collection and data analysis) will be conducted. Thus, the aim of the action research is twofold: 1) to develop case-specific knowledge needed to enable integration of the

Nextfood approach, and 2) to develop knowledge that is relevant beyond the case. Both will be key indicators of success in the project.

The research questions overarching the Nextfood case studies are:

1. What does it take from students (learners), teachers (facilitators), external stakeholders and institutions to successfully develop an education based on the Nextfood approach?
2. What are the supporting and hindering forces for making the transition to the Nextfood approach?
3. What strategies should be used to benefit from the supporting forces and reduce impacts of the hindering ones?

Within each case, more specific research questions (see below) will be asked to generate data that directly or indirectly contribute to answering these three overarching questions.

The purpose of this document is to ensure a uniform data collection and analysis in and across all cases throughout the project. While the D2.2 Master manual will guide the actual development (planning), running (implementation) and subsequent improvement (reflection on and further planning) of the educational activities, this document will guide the research activities.

This document is structured according to phase in the action research cycle (planning, implementation and reflection), and for each phase the following items are listed:

- The research questions for that particular phase in the case
- What type of data to collect
- What data collection methods to use
- How to analyse those data

Please note that data collected in one particular phase might be used to answer research questions that are asked in other phases as well.

More detail on research methods—i.e., different types of data, data collection and analysis—can be found in appendices at the end of this document.



## 2 Initial planning

The first phase in developing the case is conducting a planning workshop with the goal of developing a draft description of the desired educational activities in line with the Nextfood approach and a plan for implementation, both to be further developed and completed after the workshop. It is crucial that key participants in the planning understand the Nextfood approach. The approach is briefly described in the Introduction section above and in the Nextfood Master manual for case development (D2.2), Section 2.1, step 2. See also Appendix 1. More detail will be provided in D3.1 Review of educational approaches (due on 31.10.2019), and further elaborated in D3.2 Toolbox (due on 30.04.2020).

The planning done for the first time after the case became part of the Nextfood project consists of the following five steps (of which the last two may have to be taken after the workshop by a smaller group of people directly responsible for the education):

1. Exploring the present situation, including reflection on relevant past experiences
2. Envisioning the desired future for the case
3. Identifying themes and key issues as well as supporting and hindering forces to the desired change
4. Developing the learning goals and practical pedagogy for the case
5. Planning of implementation

### 2.1 Research questions

1. Where is the educational activity currently placed on a continuum from traditional to experiential and action-oriented education?
2. See D2.2 Nextfood Master manual for case development, Section 2.1, step 2.
3. What does a educational activity according to the Nextfood approach look like/what major components are included?
4. What would it require from students, teachers involved stakeholders and institutions to succeed with an education that is based on the Nextfood approach?
5. How should the Nextfood approach be incorporated into the education?
6. What are the first action steps for planning and establishing education in the case according to the Nextfood approach?

### 2.2 Data to collect

- Name, affiliation and demographics of the participants
- The workshop participants' individual-, group- or plenary-generated answers to the questions posed.
- Rich pictures or photos thereof ([https://en.wikipedia.org/wiki/Rich\\_picture](https://en.wikipedia.org/wiki/Rich_picture); <http://systems.open.ac.uk/materials/T552/pages/rich/rich.html>; Armson, 2011).
- Teachers' reflections on the experience.

## 2.3 Data collection methods

- Participants write their answers to the questions posed on pre-formatted sheets of paper
- Relevant meta-data such as the level and distribution of commitment among the participants, who contributed what, etc.
- Sound or video recording of the entire workshop (should be considered).
- Writing down quotes of key statements, including relevant meta-data such as who made them, in response to what, etc.
- Taking pictures (of rich pictures and other visual data material that is being generated)
- Writing down or sound/video recording of the teachers' reflections at an adequate level of aggregation

## 2.4 Data analysis methods

- For text: Coding (whereby the data are broken down into categories - unit of analysis) through inductive or 'open' coding, grounded in the data and allow understanding to emerge from close study of the text (grounded-theory research), as well as deductive coding, testing our hypothesis, and then analyze the coded material through thematic or content analysis.
- For numerical data: Analysis of numbers and units of analysis through descriptive statistics, to summarize, describe and understand the relationship between two or more variables.
- For recorded sound data: First transcribe, then analyze the text through coding as outlined above.
- For visual data, including rich pictures, photographs and video: Coding and analysis as qualitative text or statistically through thematic or content analysis. Images are coded according to the same principles as text, attending to the nature of the unit of analysis, sampling, reliability and validity.

## 3 Implementation

In the second phase, the educational activities are to be implemented according to a detailed plan (process and content – a script) from the previous phase, which includes the final educational activity schedule.

The educational activities implemented are, of educational activity, to some extent specific in each case. Nevertheless, the following five activities should be included to allow for cross-case comparison and to answer the generic Nextfood research questions:

1. Writing reflection documents (by teachers and students)
2. Evaluating the educational activity contents and activities (by students, preferably weekly or bi-weekly and then at the end of the educational activity).
3. Self-assessing competences and skills (by students, at the beginning and the end of the educational activity).
4. Interviewing students to map their learning goals and competence development (at the beginning and the end of the educational activity).
5. Reflecting.

### 3.1 Research questions

How do students experience such a learning process in terms of

- how they adapt?
- what it requires from them?
- what it gives them?
- what is missing?

How and to what extent do various educational activities enhance the students' abilities to deal with 'the challenge of the whole', including to take or facilitate informed action, and the competences considered necessary for doing so (observation, reflection, dialogue, participation and visioning)?

- How do the teachers perceive their facilitation of such a learning process in terms of
- how they change?
- what it requires from them?
- what it gives them?
- what is missing?

How do institutions relate to such a shift in education and what contextual factors (internal and external) affect their ability to change? More specifically:

- factors related to the organization

- political and financial interests
- educational leadership
- social equality issues
- societies' prevailing norms and values

## 3.2 Data to collect (during and after the educational activity)

### First week (day) of the educational activity

- A. Students' initial understanding, contributions and expectations:
  1. What are the knowledge, skills and attitudes (competences) we need to support sustainable development in agrifood and forestry systems? (see Appendix 2)
  2. What experiences and competences do I bring to the educational activity to make it a success? (see Appendix 3)
  3. What are the questions I would like this educational activity to help me find an answer to? (see Appendix 4)
  4. What are the competences I'd like to train/improve in this educational activity? (see Appendix 5)
- B. Self assessment of competences (see Appendix 6)

### Middle of educational activity (optional)

- A. Students' current understanding, contributions and expectations:
  1. What are the knowledge, skills and attitudes (competences) we need to support sustainable development in agrifood and forestry systems?
  2. Which of the experiences and competences I brought to the educational activity contributes the most to the learning community?
  3. What do I learn in this educational activity? (Alt: Which questions does this educational activity help me find an answer to?)
  4. Which competences do I train/improve significantly in this educational activity?
  5. Individual reflection on competences and learning goals in the educational activity (see Appendix 7)
- B. Self assessment of competences
- C. Mid-term educational activity evaluation (see Appendix 8)

### Last week (day) of the educational activity:

- A. Students' understanding, contributions and expectations at the end of the educational activity:
  1. What are the knowledge, skills and attitudes (competences) we need to support sustainable development in agrifood and forestry systems?
  2. Which of the experiences and competences I brought to the educational activity contributed the most to the learning community?
  3. What questions did this educational activity help me find an answer to?
  4. Which competences did I train/improve significantly in this educational activity?
  5. What are the questions I am now asking myself? (see Appendix 9)
- B. Self assessment of competences (see Appendix 11)

- C. Final educational activity evaluation (Some of the questions above also have some aspect of educational activity evaluation.)

#### Students' final documents

- A. One or several stakeholder documents (group work)  
B. One reflection document (individual) linking experience, theory and personal reflections regarding:
1. Educational activity contents and processes
  2. Learning
  3. Implications for further individual development

#### Comments from the main stakeholder in farm, food, or forestry about:

- A. The direct usefulness of the student work (process and report)  
B. The quality of the student work (process and report)

#### Teachers' final documents

- A. A reflection document addressing
1. A description of involvement
  2. The perceived development of students' competences
  3. Main themes and issues
  4. Plan for improvement

#### Institutional factors affecting higher education


- A. A written report of the focus group interview on institutional factors (see Appendix 10)

#### Demographics

- A. Number of students starting the educational activity (male and female)  
B. Number of students passing the educational activity  
C. Educational background of students (high school, bachelor, master, PhD)  
D. Number of students with more than three years of experience in the field/business,

### 3.3 Data analysis methods

- For text: Coding (whereby the data are broken down into categories - unit of analysis) through inductive or 'open' coding, grounded in the data and allow understanding to emerge from close study of the text (grounded-theory research), as well as deductive coding, testing our hypothesis, and then analyze the coded material through thematic or content analysis.
- For numerical data: Analysis of numbers and units of analysis through descriptive statistics, to summarize, describe and understand the relationship between two or more variables.
- For recorded sound data: First transcribe, then analyze the text through coding as outlined above.
- For visual data, including rich pictures, photographs and video: Coding and analysis as qualitative text or statistically through thematic or content analysis.



Images are coded according to the same principles as text, attending to the nature of the unit of analysis, sampling, reliability and validity.

## 4 Reflection

Systematic reflection on experiences and data gathered during the educational activity is a prerequisite for successful case improvement. At the end of each educational activity, each Nextfood case will arrange a workshop starting with a retrospective reflection on what has happened since the initial planning workshop. In this local context, reflection will be an analysis of experiences and data gathered in the preceding period. The reflection workshop is outlined in a separate template script [Appendix B to the D2.2 Master manual] and consists of two days: day one focuses on reflection on the past cycle of activities and day two on planning the next educational activity.

### 4.1 Research questions

Overarching the previous cycle in the case:

What can be learned to further improve in the next cycle of case development?

More specific sub-questions:

1. What happened during the educational activity?
  - Create a comprehensive overview of the educational activity contents, processes and their effects based on data collected during and after the educational activity and own experiences
2. Where is the educational activity currently placed on a continuum from traditional to experiential and action-oriented education?
  - See D2.2 Nextfood Master manual for case development, Section 2.1, step 2.
3. What occurred as themes/key issues associated with educational activity contents and processes?
4. What were the forces—by theme/key issue—supporting or hindering the implementation of the Nextfood approach?

In addition to the workshop participants' experiences, documentation to be analysed before and reflected on during the workshop is listed in the "Implementation" section above.

### 4.2 Data to collect

- The workshop participants' individually-, group- or plenary-generated answers to the questions posed.
- Rich pictures or photos thereof ([https://en.wikipedia.org/wiki/Rich\\_picture](https://en.wikipedia.org/wiki/Rich_picture); <http://systems.open.ac.uk/materials/T552/pages/rich/rich.html>; Armson, 2011).
- Teachers' reflections on the experience.

### 4.3 Data analysis methods

- For text: Coding (whereby the data are broken down into categories - unit of analysis) through inductive or 'open' coding, grounded in the data and allow understanding to emerge from close study of the text (grounded-theory research), as well as deductive coding, testing our hypothesis, and then analyze the coded material through thematic or content analysis.
- For numerical data: Analysis of numbers and units of analysis through descriptive statistics, to summarize, describe and understand the relationship between two or more variables.
- For recorded sound data: First transcribe, then analyze the text through coding as outlined above.
- For visual data, including rich pictures, photographs and video: Coding and analysis as qualitative text or statistically through thematic or content analysis. Images are coded according to the same principles as text, attending to the nature of the unit of analysis, sampling, reliability and validity.



# 5 Planning

Next, preferably on a separate day, the focus of the workshop shifts to what is now the current situation and then to the future desired state and the actions to get there.

## 5.1 Research questions

What are the best ways of creating an improved integration of the Nextfood approach in our educational activities?

## 5.2 Data to collect

- A. Teacher and, preferably, student planning session
  1. How can we build on the supporting forces and deal with the challenges? (Idea generation).
  2. Prioritise ideas
  3. Make an action plan for the next cycle, based on the list of prioritised ideas.

Processes and outcomes of the reflection and following planning workshop must be thoroughly documented. This phase consists of the following five steps:

1. Recapitulating the educational activity activities including themes/key issues
2. Assessing the shifts
3. Determining the supporting and hindering forces for each key issue
4. Planning of how to build on the supporting forces and how to overcome the hindering forces
5. Planning the next steps

## 5.3 Data analysis methods

Please note that several types of data that serve to answer the research questions for this phase have already been collected in the previous phase(s).

- For text: Coding (whereby the data are broken down into categories - unit of analysis) through inductive or 'open' coding, grounded in the data and allow understanding to emerge from close study of the text (grounded-theory research), as well as deductive coding, testing our hypothesis, and then analyze the coded material through thematic or content analysis.
- For numerical data: Analysis of numbers and units of analysis through descriptive statistics, to summarize, describe and understand the relationship between two or more variables.
- For recorded sound data: First transcribe, then analyze the text through coding as outlined above.

- For visual data, including rich pictures, photographs and video: Coding and analysis as qualitative text or statistically through thematic or content analysis. Images are coded according to the same principles as text, attending to the nature of the unit of analysis, sampling, reliability and validity.

## 6 List of References

Armson R. (Ed.) (2011) *Growing wings on the way: Systems thinking for messy situations*. Triarchy Press, Devon: UK. ISBN: 978-1-908009-36-4

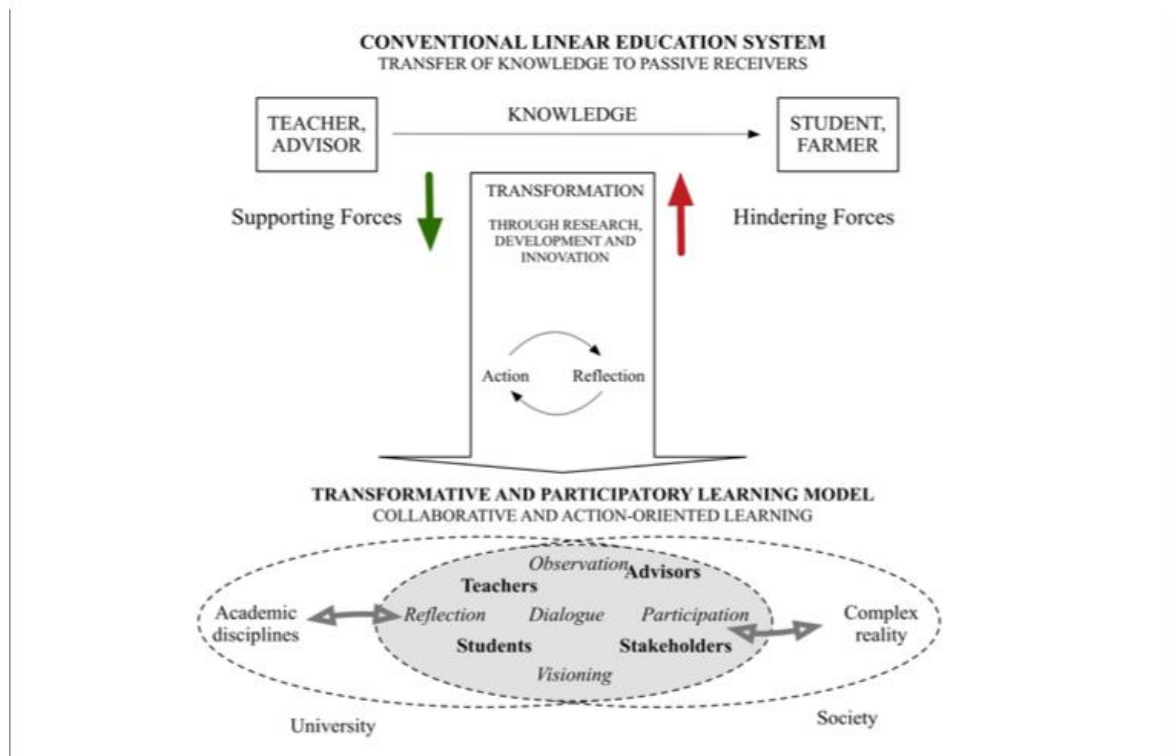
Bernard, H.R. (Ed.) (2017) *Research methods in anthropology*. Fifth ed. AltaMira Press, Plymouth: UK. ISBN: 978-0-7591-1241-4

Bryman, A. (Ed.) (2016) *Social research methods*. Fifth ed. . Oxford University Press, London: UK. ISBN: 978-0-19-968945-3

Levin M., Ravn J.E. (2007) Involved in praxis and analytical at a distance. *Systemic Practice and Action Research* 20:1-13 doi: 10.1007/S11213-006-9045-1

# 7 Appendices

## Appendix 1 – The Nextfood approach



## Appendix 2

*First week: Activity 1 (use one A4-sheet for each activity)*

*Instructions:*

*Remember to write your responses in a way that is completely understandable! Name the file “Activity 1\_lastname” and Upload to the Assignment folder in Canvas*

### **Activity 1: Knowledge and skills for sustainable development**

**Question: What are the knowledge and skills we need to support sustainable development in agrifood and forestry systems?**

## Appendix 3

*First week: Activity 2 (use one A4-sheet for each activity)*

*Instructions:*

*Remember to write your responses in a way that is completely understandable! Name the file "Activity 2\_lastname" and Upload to the Assignment folder in Canvas*

### **Activity 2: Experiences and competences**

**Question: What experiences and competences do I bring to the educational activity to make it a success?**

## Appendix 4

*First week: Activity 3 (use one A4-sheet for each activity)*

*Instructions:*

*Remember to write your responses in a way that is completely understandable! Name the file "Exercise 3\_lastname" and Upload to the Assignment folder in Canvas*

### **Activity 3: Educational activity expectations**

**Question: What are the questions I would like this educational activity to help me find an answer to?**

## Appendix 5

*First week: Activity 3 (use one A4-sheet for each activity)*

*Instructions:*

*Remember to write your responses in a way that is completely understandable! Name the file "Activity 4\_lastname" and Upload to the Assignment folder in Canvas*

### **Activity 4: The desired competences**

**Question: What are the competences I'd like to train and improve significantly in this educational activity?**



## Appendix 6

# Self assessment of core competences

## First week of educational activity

Dear students!

You have just started your participation in the educational activity ‘.....’, and we now ask you to make an assessment of your present knowledge and abilities (we see the integration of these as *competences*) in relation to the learning goals of the educational activity. We will later ask you to do a similar assessment – at the end of the educational activity.

We think that such competence self-assessments can serve several purposes. On one hand, it helps us as teachers to see how our educational activity functioned: how much competence development happened during the educational activity? On the other hand, your self-assessment can serve as an aid to help you become clearer about your own learning goals and style of learning. In addition, we think that the ability of assessing oneself is an important skill to develop. Doing this self-evaluation will help you to structure your own reflection about the educational activity. This will be helpful for you when you write your reflection document.

During the introductory days of the educational activity ‘.....’, we emphasize the importance of developing competences, so that you become better at dealing with complex situations related to the development issues surrounding food-agriculture-environment-society. ‘Learning to learn’ is crucial in this process and also to enable learning as a relevant life-long habit for you. We argued that by adopting experiential learning as the pedagogical basis of the educational activity, we could “produce” learners who could bridge the large gap between *knowing* and *doing*.

The competence profile of graduates in ..... will include the following key areas:

### ***OBSERVATION***

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.

### ***PARTICIPATION***

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.

### ***VISIONING***

Visioning 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.

### ***REFLECTION***

Reflection is a process of exploring and examining ourselves, our perspectives, attributes, experiences and 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 in agroecology and to personal development.

### ***DIALOGUE***

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.

*How the evaluation is set up:*

There are many ways in which a self-assessment of competences can be set up. We have decided to use one of the most influential, the Dreyfus model, based on many years of research conducted by Hubert and Stuart Dreyfus. They describe an individual's progression through a series of five levels: *novice, advanced beginner, competent, proficient, and expert*.

- 1. Novice** – As a novice, the individual experiences a given problem and a given situation in a given task area for the first time. At this stage the person follows rules and feels no responsibility for anything other than following the rules.
- 2. Advanced beginner** – The beginner advances from the novice level by achieving real-life experience, in contrast to the often protected learning situations of the first level. The basis for action becomes more context-dependent.
- 3. Competent performer** – The competent performer has considerable experience in the field. The individual at this level is still overwhelmed by the complexity of a concrete “real-life” situation, but starts to be able to find key factors for how to deal with such situations. Competent performers are personally involved in their actions.
- 4. Proficient performer** – At this level, the individual becomes emotionally involved, the proficient performer is not only thinking about the situations he/she is involved in, he/she is also emotionally connected to the situation. The proficient performer works with both head and heart, and starts to intuitively understand situations, thereby transcending rules and guidelines.
- 5. Expert** – The expert will by intuition “do the right things at the right time”. Expertise is the level of virtuosity. Expertise is largely an intuitive mode of operation that relies heavily on deep, implicit knowledge but accepts that sometimes at expert level analytical approaches are still likely to be used when an intuitive approach fails initially.

## Competence self-assessment rubric

You will fill out this form two times; at the beginning and at the end of the educational activity.  
Place an X in the box where you feel that you fit at this moment.

	Level of competence								
	NOVIC E		ADVANC ED BEGINNE R		COMPETE NT PERFORM ER		PROFICIE NT PERFORM ER		EXPE RT
	1	2	3	4	5	6	7	8	9
<b>OBSERVATION</b>									
Carefully observe a situation in the field									
Create a comprehensive overview of a complex situation									
Allow for examination of the whole situation before drawing conclusions									
<b>PARTICIPATION</b>									
Recognize values and goal conflicts of different stakeholders in society									
Participate in work “out in the field” with commitment and dedication									
Empathize with the goals and feelings of stakeholders in the field									
<b>VISIONING</b>									
Have basic knowledge of factors that stimulate and block creativity in individuals and groups									
Understand the processes that enhance a group’s ability to identify today’s critical challenges and envision a desired future state									
Able to inspire change by helping a group develop and align around a shared vision									
<b>REFLECTION</b>									
Awareness of the role of reflection in personal learning and development									

Connect situations in the field to theory related to farming and food systems as well as to personal growth									
Connect experiences and theory to own personal development									
Ability to embrace self-guided learning									
<b>DIALOGUE</b>									
Understand the differences between debate, discussion and dialogue									
Can introduce a group to the purpose and guidelines for dialogue									
Can identify and formulate questions which stimulate a dialogic approach									
Can appreciate and explore a variety of perspectives and be able to identify and challenge the assumptions behind your own and a group's thinking									

## Appendix 7

### Individual reflection on competences and learning goals in the NMBU agroecology educational activity (Mid-term)

We have presented five core competences for you in this educational activity as well as five learning goals:

**Reflecting** on our experiences, exploring ideas and linking experiences with existing and new knowledge and skills helps us focus on what we need to work on in the future.

**Observation** is a non-judgemental approach enabling us to better grasp the whole, not just the parts

**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?

**Dialogue** is a powerful tool to access the collective intelligence of a group. Dialogue enables us to ask difficult questions and examine the assumptions behind our thinking.

**Participation** is the skill of participating in the fieldwork, not as a distant observer, but rather with personal commitment and dedication.

We consider the development of these competences as vital for agroecologists and for reaching the learning goals we have set in the agroecology educational activity. The described competences represent the basis for you to reach the following learning goals:

1. *Have knowledge of farming and food systems.*
2. *Can handle complexity and change*
3. *Can link theory to real-life situations*
4. *Are good communicators and facilitators*
5. *Are autonomous learners*

These five core competences and five learning goals guide our teaching activities during the semester. We think it is important for you to continuously reflect on these, but we also recognize the diversity in the class, and that you have your own individual goals. *This activity is designed for you to clarify your individual goals, and to examine your individual opinions about the generic goals that we have set.*

**The task** for you is to

a. State your overall and main goal for your educational activity: "My main goal in this educational activity is ...", and

b. To respond to the following questions:

"Looking at the above presented core competences and learning goals for you in this educational activity",

1. Which ones are you particularly interested in, and why?
2. What additional goals do you have for yourself in this educational activity?

## Appendix 8

### **Mid-term evaluation in the NMBU agroecology educational activity**

Looking back at the first weeks of the educational activity, what have you found useful, inspiring, interesting!

Imagine that you were the one to be completely in charge of the next educational activity! What three things would you do differently in the pursuit of the key learning goals of the educational activity?

Our learning goals for you in this educational activity

#### **At the completion of the NMBU agroecology educational activity the students should**

1. Have knowledge of farming and food systems – structure and function
2. Be able to handle complexity and change
3. Be able to link theory to real-life situations
4. Be good communicators and facilitators
5. Be autonomous and life-long learners

## Appendix 9

*Last week of educational activity*

*Instructions:*

*Remember to write your responses in a way that is completely understandable! Name the file "Activity 5\_lastname" and Upload to the Assignment folder in Canvas*

### **Activity 5 last week: My questions**

**Question: What are the questions I am now asking myself?**

## Appendix 10

### Interview guide for focus groups

#### Interview of academic leaders and faculty members

##### Setting:

- Group of teachers and academic leaders (5-10 participants).
- Time for interview 1-1.5 hours
- A facilitator leads an open discussion around five themes
- The interview is documented by taking notes or audiorecorded if possible
- A written consent is needed for the NF research process
- The notes are transcribed and translated into english

##### **Start with a short info about the aim of the interview:**

One of the aims of Nextfood is to identify institutional factors that can hinder or contribute to generating effective faculty collaboration for transdisciplinary and action-oriented education. Institutional factors are connected to central values and attitude of how higher education should function, and how these values are maintained. As part of the research process we are conducting focus group interviews with academic leaders and faculty members at partner institutions. The interview have five themes, and example on factors can be used by the facilitator to stimulate the discussion.

**Theme 1. Structure and organization of the higher education?** (example on factors: the dominance of narrow disciplines, assessment of students, faculty member career risks)

##### **Theme 2. Political and financial interests**

(example on factors: funding of interdisciplinary research & education, private or public funding, collaboration with society, quality assessment of higher education).

##### **Theme 3. Leadership of higher education**

(example on factors: the need for high-level administrative support, type of leadership shared/hierarchical, vision and goals of the university)

##### **Theme 4. Democratic processes**

(accessibility to education, gender equality, transparency of higher education)

**Theme 5. Societies norms and values** (and how these affects a transition of education, e.g. acceptance of change and new approaches, acceptance of diverging from the general standard of how higher education “should be”, general opinion of “education for sustainability”).



## Appendix 11

### Self assessment of core competences

#### Last week of educational activity

Dear students!

You are now about to complete your participation in the educational activity ....., and we ask you again to make an assessment of your knowledge and abilities (we see the integration of these as *competences*) in relation to the learning goals of the educational activity.

We think that such competency self-assessments can serve several purposes. On one hand, it helps us as teachers to see how our educational activity functioned: how much competence development happened during the educational activity? On the other hand, your self-assessment can serve as an aid to help you become more aware about your own learning goals and style of learning. In addition, we think that the ability of assessing oneself is an important skill to attain. Doing this self-evaluation will help you to structure your own reflection about the educational activity. This will be helpful for you when you write your “learner document”.

During the introductory days of the educational activity in Agroecology, we have emphasized the importance of developing competences, so that you become better at dealing with complex situations related to the development issues surrounding food-agriculture-environment-society. ‘Learning to learn’ is crucial in this process and also to enable learning as a relevant life-long habit for you. We argued that by adopting experiential learning as the pedagogical basis of the programme, we could “produce” learners who could bridge the large gap between *knowing* and *doing*. The competence profile of graduates in ..... will include the following key areas:

#### OBSERVATION

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.

#### PARTICIPATION

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.

#### VISIONING

Visioning 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.

#### REFLECTION

Reflection is a process of exploring and examining ourselves, our perspectives, attributes, experiences and 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 in agroecology and to personal development.

## DIALOGUE

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.

How the evaluation is set up:

There are many ways in which a self-assessment of competences can be set up. We have decided to use one of the most influential, the Dreyfus model, based on many years of research conducted by Hubert and Stuart Dreyfus. They describe an individual's progression through a series of five levels: novice, advanced beginner, competent, proficient, and expert.

**Novice** – As a novice, the individual experiences a given problem and a given situation in a given task area for the first time. At this stage the person follows rules and feels no responsibility for anything other than following the rules.

**Advanced beginner** – The beginner advances from the novice level by achieving real-life experience, in contrast to the often protected learning situations of the first level. The basis for action becomes more context-dependent.

**Competent performer** – The competent performer has considerable experience in the field. The individual at this level is still overwhelmed by the complexity of a concrete “real-life” situation, but starts to be able to find key factors for how to deal with such situations. Competent performers are personally involved in their actions.

**Proficient performer** – At this level, the individual becomes emotionally involved, the proficient performer is not only thinking about the situations he/she is involved in, he/she is also emotionally connected to the situation. The proficient performer works with both head and heart, and starts to intuitively understand situations, thereby transcending rules and guidelines.

**Expert** – The expert will by intuition “do the right things at the right time”. Expertise is the level of virtuosity. Expertise is largely an intuitive mode of operation that relies heavily on deep, implicit knowledge but accepts that sometimes at expert level analytical approaches are still likely to be used when an intuitive approach fails initially.

## Competence self-assessment rubric

Place an X in the box where you feel that you fit at this moment.

	Level of competence								
	NOVIC E		ADVANC ED BEGINNE R		COMPETE NT PERFORM ER		PROFICIE NT PERFORM ER		EXPE RT
	1	2	3	4	5	6	7	8	9
<b>OBSERVATION</b>									
Carefully observe a situation in the field									
Create a comprehensive overview of a complex situation									
Allow for examination of the whole situation before drawing conclusions									
<b>PARTICIPATION</b>									
Recognize values and goal conflicts of different stakeholders in society									
Participate in work “out in the field” with commitment and dedication									
Empathize with the goals and feelings of stakeholders in the field									
<b>VISIONING</b>									
Have basic knowledge of factors that stimulate and block creativity in individuals and groups									
Understand the processes that enhance a group’s ability to identify today’s critical challenges and envision a desired future state									
Able to inspire change by helping a group develop and align around a shared vision									
<b>REFLECTION</b>									
Awareness of the role of reflection in personal learning and development									

Connect situations in the field to theory related to farming and food systems as well as to personal growth									
Connect experiences and theory to own personal development									
Ability to embrace self-guided learning									
<b>DIALOGUE</b>									
Understand the differences between debate, discussion and dialogue									
Can introduce a group to the purpose and guidelines for dialogue									
Can identify and formulate questions which stimulate a dialogic approach									
Can appreciate and explore a variety of perspectives and be able to identify and challenge the assumptions behind your own and a group's thinking									