EDUCATING THE NEXT GENERATION OF PROFESSIONALS IN THE AGRI-FOOD SYSTEM

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This policy brief summarises some of the outcomes from a EU-funded Horizon2020-project (NextFOOD) and gives recommendations to decision makers in education on the development of sustainability education in the agrifood and forestry sector.

Introduction

Education plays a key role to meet the threats of climate change and to support a transition to more sustainable production of food and other bio-based products. Through education for sustainable development students become better equipped to link societal and economic activities to environmental issues, which helps prepare the future workforce to reflect on and deal with societal challenges. Not only should education prepare students for work, they should also be able to link production, economic, and societal issues with environmental degradation and be ready to take responsible action that will contribute to a more sustainable world.

What are the needs of the agri-food and forestry sector?

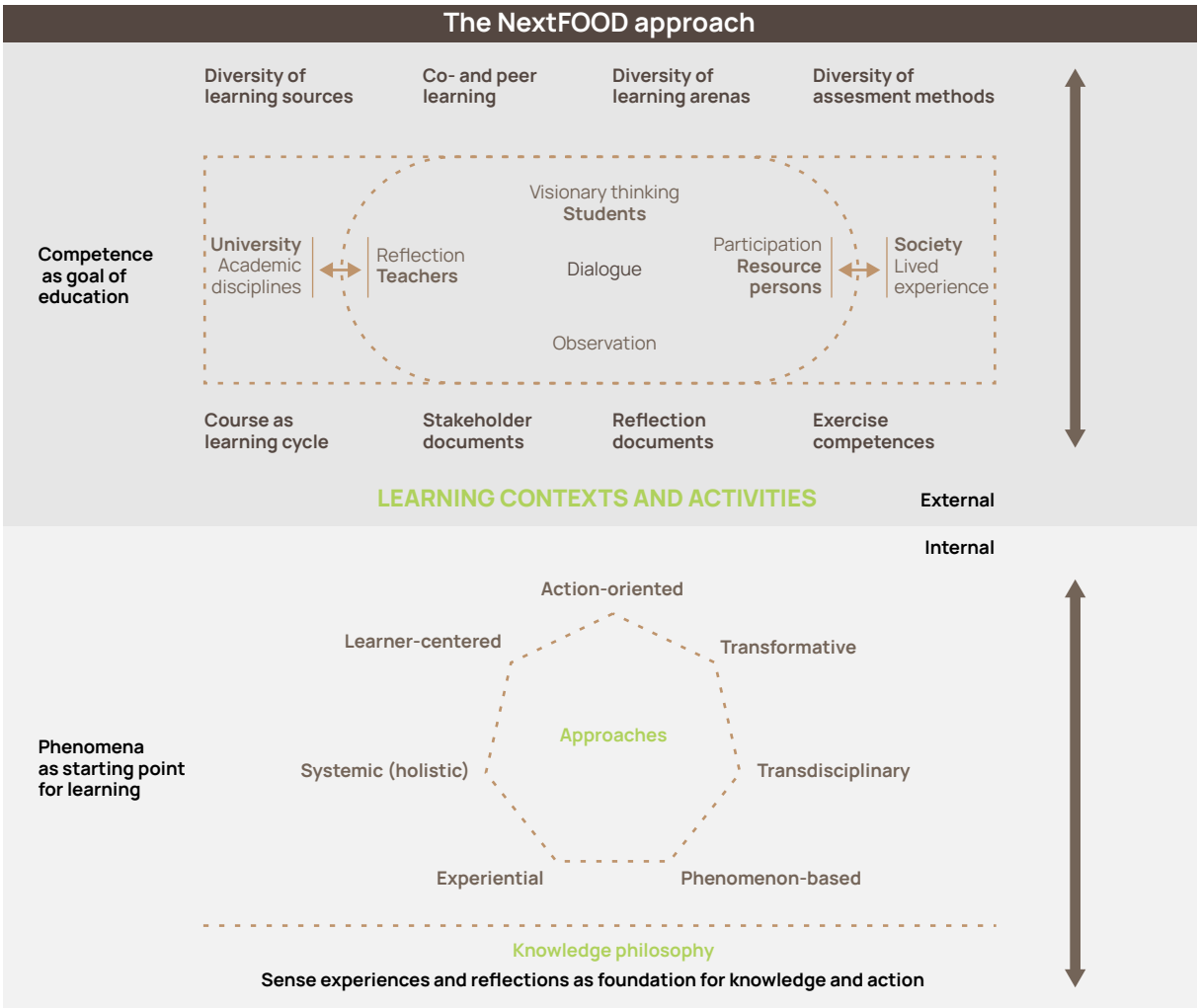
- Both industry and state increasingly expect that professionals have generic sustainability competences.
- In an inventory of skills, NextFOOD identified these cross-cutting competences as particularly important for the future workforce:
  - Collaboration
  - System thinking
  - Digital and technical skills
  - Building and maintaining networks
  - Strategic development
  - Interpretation and negotiation of sustainability
- These competences require a transformation of how education is pursued today. The existing education is dominated by lecturing, and the theory-only dogma, and there is insufficient use of experiential- and action-oriented education

What is action-oriented education?

The figure below describes a necessary paradigm shift from a linear to a cyclical approach to learning. In agri-food and forestry, it represents a dramatic shift from a conventional, mono-culture mode of education, towards cyclical and participatory education and training systems. A set of five core competences have been identified as crucial to enable collaboration, learning and development in the dialogue space, where teachers, students, and agri-food stakeholders learn from each other:

- Observation
- Reflection
- Participation
- Visionary Thinking
- Dialogue

Action learning happens in the complex world outside the classroom in agri-food and forestry systems. When the learning arena is in the field, extra-university stakeholders also gain experience and training in the competences needed for sustainable development.



What is important when implementing action-oriented and student-centered education?

In twelve educational case studies we found that action-oriented and student-centered education do deliver the learning outcomes that is needed for transformation towards sustainability, and that the educational approach conveyed by NextFOOD may be applied in various contexts, where learners come from different backgrounds and have different types of previous training. To successfully apply this kind of education we found that:

- Competence development is intrinsically linked to experiences in the world out there, highlighting the importance of interaction with stakeholders in the field
- Structured reflection, individually and in groups, is crucial to enhance learning
- Competence development depends on students' feeling of being supported and a safe and stimulating learning environment
- On-line learning complicates training of some competences, although it fosters digital literacy and skills. The online format works best in short courses and as add-ons.

What are the prerequisites of action-oriented learning?

Needless to say, change does not always come easy. We identified many obstacles on the road towards action-oriented education, that needs to be addressed.

In particular, the necessity of students, teachers, and institutions to accept new roles in the learning landscape was challenging to many. Prerequisites to succeed are linked to:

- Individual (intrinsic) motivation, openness and willingness to change (participate)
- Institutional culture, structure and support
- Resources (time, effort, financial means)
- Relationship with external stakeholders
- The need to become familiar with the approach among all involved

How can NextFOOD support teachers who want to initiate action learning in their educational courses and programs?

To support initiatives at other universities, the NextFOOD team developed a number of tools and methods that is freely accessible online. For example, teachers will find a **master manual** and a **toolbox** on the project website, useful for anyone who want to test and develop action education in their classes. There is also an on-line **audit tool** that can help course leaders and educational managers to assess the sustainability content of courses and programs. Moreover, the twelve **case studies** that have been presented in various forms can serve as an inspiration and best practice for others who want to drive the change.

Research outcomes and the experience of cases studies formed the basis for a **roadmap** that may serve as a guide for transforming education in agriculture and forestry. The roadmap is supposed to support teaching practitioners as well as decision-makers in education to introduce action-oriented and student-centered learning approaches. We chose the roadmap as a metaphor, with the current state of education as a starting point for the journey and the NextFOOD approach to education as the future vision. The roadmap presents various checkpoints that can be helpful and sometimes are necessary to consider to avoid major obstacles on the road. The NextFOOD roadmap is a good place to start for anyone who wants to initiate change but don't know where to begin.

Recommendations:

- Develop the education in an action learning mode (plan-implement-reflect)
- Explore the necessary shift in mindset – The critique of the lecture-based approach
- Train the core competences
- Align regulatory agri-food policies to skills needs and action-oriented learning
- Support the development of educational programs for sustainable agri-food systems with an action-oriented approach
- Design educational programs that cater for the competences needed by state and industry

Questions for further research:

- How can external stakeholders contribute AND benefit from their involvement in action education?
- What are prerequisites for becoming a facilitator of learning – and how can these be met?
- How can the action learning approach be adapted to different types of learners?
- How can institutional barriers for applying sustainable agri-food systems skills be overcome?

Factbox:

NextFOOD (grant agreement No 771738) was initiated in 2018 as a collaborative project bringing together 19 partners in an international network with the aim of designing a research-based learning strategy to enhance learners' understanding of complex situations and develop the competences needed to drive the transition towards more sustainable agri-food and forestry systems. The results of NextFOOD were intended to help overcoming some of the barriers presented to learners, teachers, and institutions who would like to engage in action-oriented and learner-centered education.

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