



EDUCATING THE NEXT GENERATION OF PROFESSIONALS
IN THE AGRIFOOD AND FORESTRY SYSTEM

A ROADMAP TOWARDS ACTION EDUCATION THE NEXTFOOD APPROACH



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Introduction

In an age of accelerating change, where society seeks to develop pathways towards a more sustainable future, there is increasing recognition of the need for an educational response. Future change agents must be equipped with the competences needed to deal with the complex challenges of sustainability. Education plays a key role in addressing the threats from climate change and in supporting a transition to more sustainable production and consumption of food and other bio-based products.

The Decade of Education for Sustainable Development, launched by the United Nations in 2005, aimed “to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all” (UNESCO 2005). Through education for sustainable development, students must become better equipped to link societal and economic activities to environmental issues and be better prepared for dealing with societal challenges.

In a recent declaration, the European Education Arena 2025, EU-leaders prioritised the need to build on inclusive and high-quality education as a part of the Green Deal Strategy (European Union 2020). An education characterised by transdisciplinary, learner-centered and action-oriented approaches is mentioned as an important means to foster transversal skills. These skills are not confined to a specific task within a discipline or dependent on a narrow field of knowledge. Critical thinking, creativity, entrepreneurship and civic engagement are among the capabilities most needed in our rapidly evolving society and work life.

The NextFOOD consortium was established in 2018. Its members consist of university students, academics, field professionals, farmers and other stakeholders in society. The primary consortium activities are case studies of action-oriented education, sharing of experiences and research. In 2022, the NextFOOD roadmap (Fig. 1) towards a vision of action education was developed from reviewing the outcomes of 12 educational case studies and of several workshops organised by the consortium. The workshop participants identified factors that have been critical for them to transform traditional educational approaches to more action-oriented learning. They discussed the challenges they have faced and the strategies they have applied to overcome them. Based on these discussions, we were able to identify which steps seemed critical for success. The purpose of the resulting roadmap is to support the transformation of

educational systems in the agrifood, forestry and similar sectors towards the action-orientation that is needed to build sustainability competences among the students (learners). It is to be used by course leaders, educational managers and teaching practitioners at the high school, vocational and university levels who want to drive such a change in education

The roadmap depicts various signposts, each representing a step towards creating the foundation for educating the next generation of professionals in agri-food and similar systems. The roadmap was presented at the final consortium meeting of NextFOOD in April 2022 and the participants gave their feedback to the final version. As a user of the roadmap, you may likely experience detours and unexpected obstacles as you proceed with the change process. The roadmap is intended as a visual metaphor. It will help you to create ownership and spur creativity, if you adjust the sequence of the steps to your own situation.

The usefulness of the roadmap can be enhanced through accessing the NextFOOD Research Protocol (Lenaerts, L., et al. 2019), the NextFOOD Master Manual (Lenaerts, L., et al. 2022) and the NextFOOD Toolbox (Nicolaysen, A.M. et al. 2020). The manual and the toolbox provide different tools (“how-to instructions”) as well as theoretical inputs. The NextFOOD document on “Educational Approaches (Lieblein, G. et al. 2019) provide a further conceptual base for the NextFOOD approach to action education.

THE VISION - The NextFOOD approach (Fig.2)

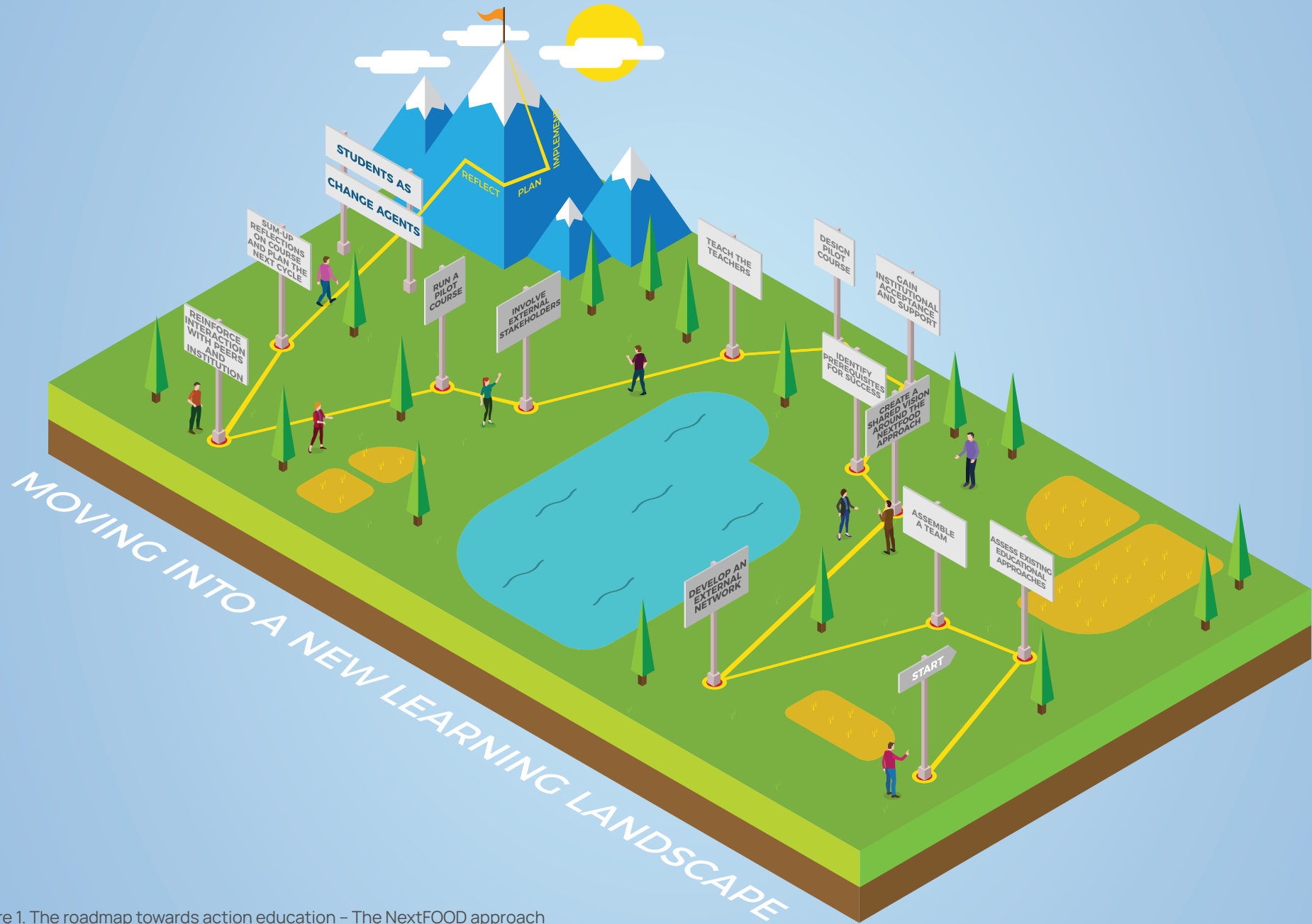


Figure 1. The roadmap towards action education – The NextFOOD approach

Figure 2 shows the key characteristics of what we refer to as the vision of the NextFOOD approach, organised in line with the concept of Signature Pedagogy (Shulman 2005, Valley et al. 2017). The illustration shows the external and internal dimensions of the vision. The external dimension consists of the different educational activities and the contexts in which they take place. The internal dimension consists of two layers, where the upper layer is the overall educational approach that drives the external activities. The underlying knowledge philosophy layer describes the assumptions that inform the pedagogical approach and the external activities.

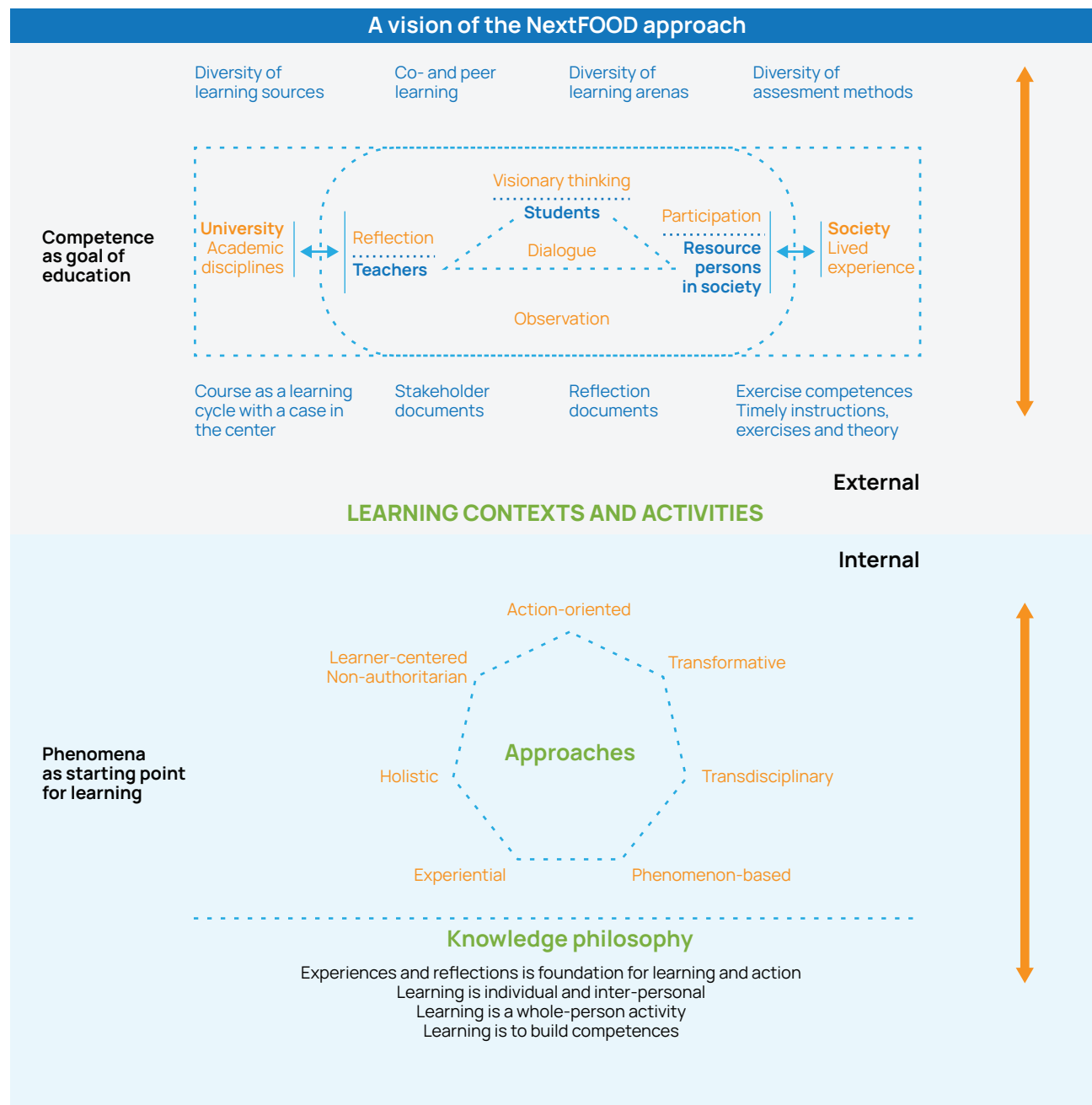


Figure 2. A vision of the NextFOOD approach



ROAD SIGN 1

Assess existing educational approaches

Educational approaches encompass different ways of teaching. Each approach implicitly or explicitly builds upon a knowledge philosophy and result in specific ways of teaching. The educational approach also refers to the different roles in education, the roles of teachers, students, theory, situations or cases in the field, and external stakeholders. Today there is a dominance of lectures, with the teachers and the subject matter theory are placed in the centre. The complex, most often complicated nature of sustainability challenges require an alternative educational approach with student learning and their training of cross-cutting competences in the centre. It is action-oriented, transformative and supports self-directed learning, participation and collaboration.

As a first step in the transformation towards such action-oriented education, we suggest that you individually and in a team review your current teaching practices and explore their underlying assumptions. Compare them with the teaching practices and assumptions behind the NextFOOD approach (Figure 2). The insights gained from these activities will help to build the basis and motivation for change.

For a more elaborate discussion of the educational transformation towards action learning, please refer to the Nextfood deliverable 3.1 "Review on educational approaches" (Lieblein, G. et al. 2019).





ROAD SIGN 2

Assemble a team

Courses in higher education today are often taught by a single person, or if there are more involved, their contributions are often not integrated. The shift towards action education implies a stepping out from the comfort zone of lecturing and embrace the role as a learning facilitator. This gives teachers less control of the situation and creates a need for adaptability. Confronted with such a new learning landscape, teachers will often become reluctant to change.

To support a successful transformation, we therefore suggest that a teacher team be assembled at an early stage. The team should primarily consist of teachers that are motivated for change. It is helpful to create a team of both new and experienced teachers. A team of members with complementary skills who believe in or would like to try action education is a prerequisite for fostering the confidence and motivation needed for exploring new educational approaches.

After the teacher team has been established, the members should create a network that also consists of students and external stakeholders, i.e., persons with whom the students will potentially interact during their action in the field. Education leaders, policy makers etc. might also be included. Such a multi-stakeholder network will bring in complementary ideas and knowledge, create ownership of the process and, thus, secure support for further activities.

A teacher team with links to a multi-stakeholder network is important for a successful transition towards action education. The complexity of the issues to be dealt with in action education requires complementary competences, experiences and ideas in the teacher team as well as among students and external stakeholders.





ROAD SIGN 3

Develop an external network

An external network is different from the multi-stakeholder team. It consists of educational peers that can be located anywhere. Today, academics are part of networks related to their specific disciplines, but not necessarily to their teaching activities. However, a transformation of education requires collaboration with experienced peers that can support the initiative in different ways. The need for networking is even more important when the aim is educational change at the institutional level. We suggest that the teacher team develops or connects to an international network responsible for annual conferences, publications and on-line communities. When teachers across fields and sectors thus come together to share experiences and inspire each other, opportunities for peer-to-peer learning emerges.






ROAD SIGN 4

Create a shared vision around the NextFOOD approach

Imagine that your first course or program is based on an action learning approach! The course or program incorporates all the various concepts included in the NextFOOD vision (Fig. 2). In order to get to this stage in the transformation process, we advise the teacher team to first have a shared understanding of what each element means and what each concept actually entails. Engaging the team in dialogue around each concept before designing a course is critical. The team needs to be aligned around what needs to be changed and why and dialogue is an effective and meaningful way to achieve this. The process also helps internalise the vision and recognise how the various elements are interrelated.

A useful place to start could be the two overall shifts of focus in the transition from lecture-based to action education:

 A shift from direct knowledge transfer to the wider realm of competences as the focus of education.

 A shift from theory to real-life experiences as the point of departure for learning.

The next step might be to explore through dialogue the five core competences: observation, participation, reflection, dialogue and visionary thinking. These have been identified as crucial for collaboration with external actors and for learning and personal growth. Once the teacher team has a shared understanding of the concepts in the NextFOOD approach, it has a foundation for creating a site-specific vision of their new course or programme. A site-specific vision will be valuable as the point of departure for designing a pilot course (Road sign 7).

For more information about dialogue and how to create a shared vision. See Pool and Parker (2017) and the NextFOOD toolbox

(<https://platform.nextfood-project.eu/#/categories/-M3PtoEIFOporsIH9aiW>).





ROAD SIGN 5

Identify prerequisites for success

When starting on a path towards action learning, careful consideration of prerequisites for succeeding will be helpful. This can boost the process and highlight issues that might jeopardise the entire initiative. We therefore suggest that sessions in the teacher team in the multi-stakeholder network be held to explore prerequisites for success.

The list of prerequisites will partly be site-specific, but the following are valuable to have in mind everywhere:

Understanding of underlying assumptions in education – awareness of knowledge philosophy:

🌱 A shift is needed from a focus on theoretical knowledge alone to the competences that are needed to support sustainable development and from lecturing to facilitation of learning. Competence development requires that the students' own experiences and reflections are viewed as the starting point for the learning process. The "theory-first dogma" must be abandoned for an approach where the lifeworld phenomena that the students experience are given back their ontological primacy.

Understanding of new roles in education:

🌱 Teachers who are willing to take the role as learning facilitators, to contribute to the design of action-oriented teaching methods and to put it into practice, is a prerequisite for educational development.

🌱 The external stakeholders must take on a new role as co-creators of knowledge. This implies a shift from a relatively passive role in conventional education to that of being an active teacher in this new approach.

🌱 The role of the students must be redefined from receivers of neatly organised packages of knowledge to active and self-directed learners who are able to learn by linking concrete experiences in the field to relevant theory. Their engagement and participation in the learning process will be crucial for success.





ROAD SIGN 6

Gain institutional acceptance and support

The dominant educational approach in higher education is still lecturing within disciplinary boundaries, despite its known shortcomings when it comes to equipping the students with the required sustainability competences. Accordingly, higher education institutions are organised to support such a conventional approach to education. Many institutional factors hinder the introduction of action learning. For example, the rigid structure of scientific disciplines stands in the way of the integration of knowledge from several different fields, there may be institutional pressure to stick to conventional teaching methods, and there may be reluctance to provide the extra time needed for planning and running such a course. Good communication and teamwork among educators, administrators and educational management helps overcome barriers and favours the process of introducing innovative educational approaches.

We therefore suggest that initiatives are taken to create institutional structures that favour the inclusion of action learning. Some measures can be:

- 🌱 Leave space in the curriculum for action learning activities.
- 🌱 Recognize teachers who teach outside their own department and their own discipline.
- 🌱 Enable a high degree of self-management and let the teams take the decisions required for implementing action learning in courses and programs.
- 🌱 Provide support from upper management because sustainability education may challenge established institutional hierarchies.
- 🌱 Create award systems for action learning initiatives.
- 🌱 Establish structures to allow for risk-taking among teachers.















ROAD SIGN 7

Design pilot course

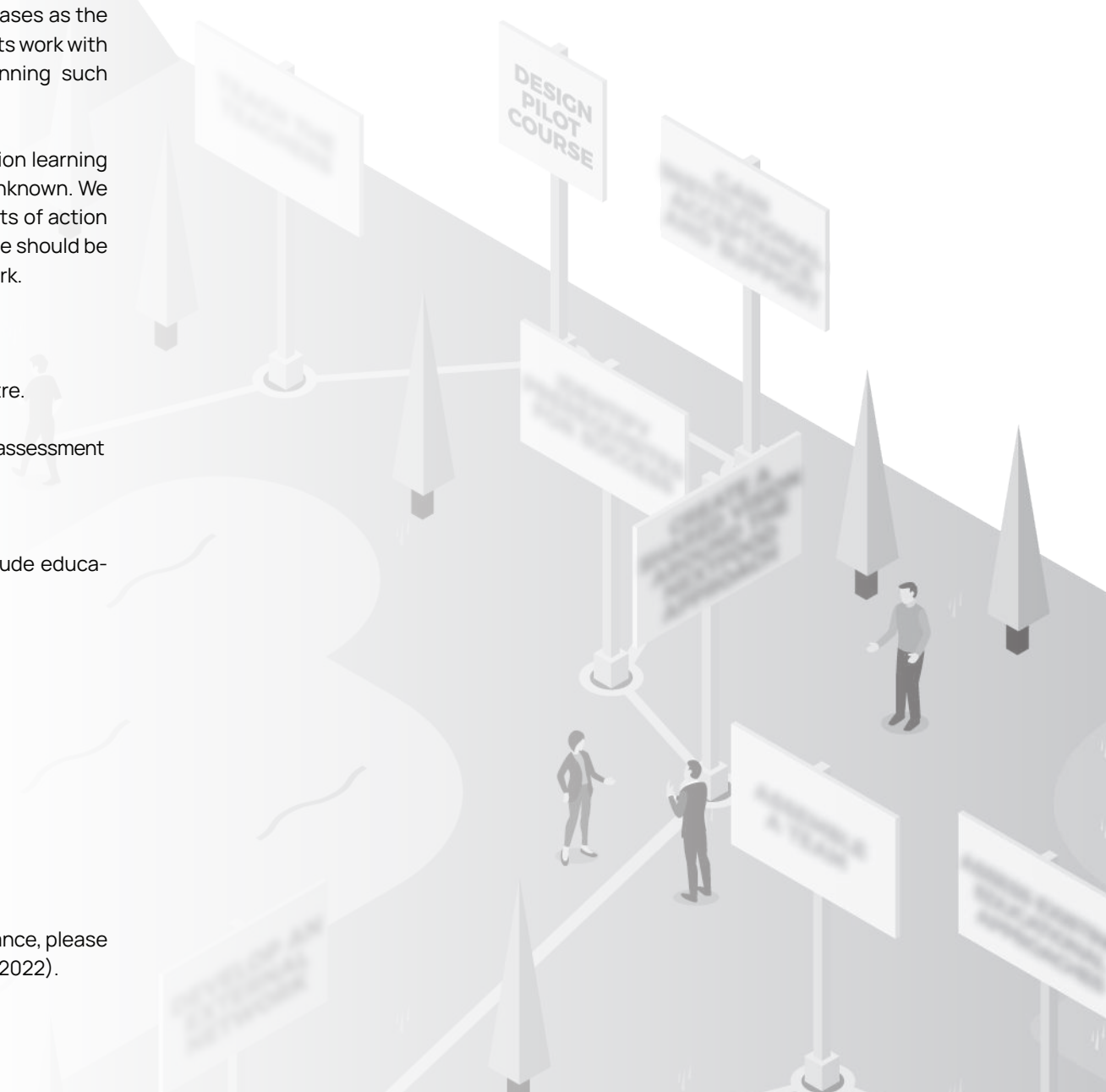
In action learning, courses are organised as a learning cycle with real-life cases as the starting point. Together with stakeholders and guided by a teacher, students work with real-life, complex sustainability challenges. Taking responsibility for running such courses will represent a new experience for most teachers.

In today's situation, where the lecture mode is dominant, the shift to action learning represents a large step in terms of trying out something new and largely unknown. We therefore suggest starting with a pilot course that contains all the elements of action learning, but with less students than what the overall aim is. The pilot course should be designed in close communication with core members of the external network.

Essential elements of such a course are:

-  Organise the course activities as a learning cycle with a case in the centre.
-  Establish a diversity of learning arenas, sources of information and types of assessment
-  Exercise core competences
-  Arrange frequent reflection sessions, that sometimes also should include educational administration and external stakeholders.
-  Include literature seminars
-  Implement:
 -  a stakeholder document
 -  a reflection document
-  Include frequent individual conversations with students
-  Run weekly teacher reflection sessions

For a more elaborate explanation of the above elements and hands-on guidance, please refer to the NextFOOD deliverable D2.4 "Master manual" (Lenaerts, L., et al. 2022).





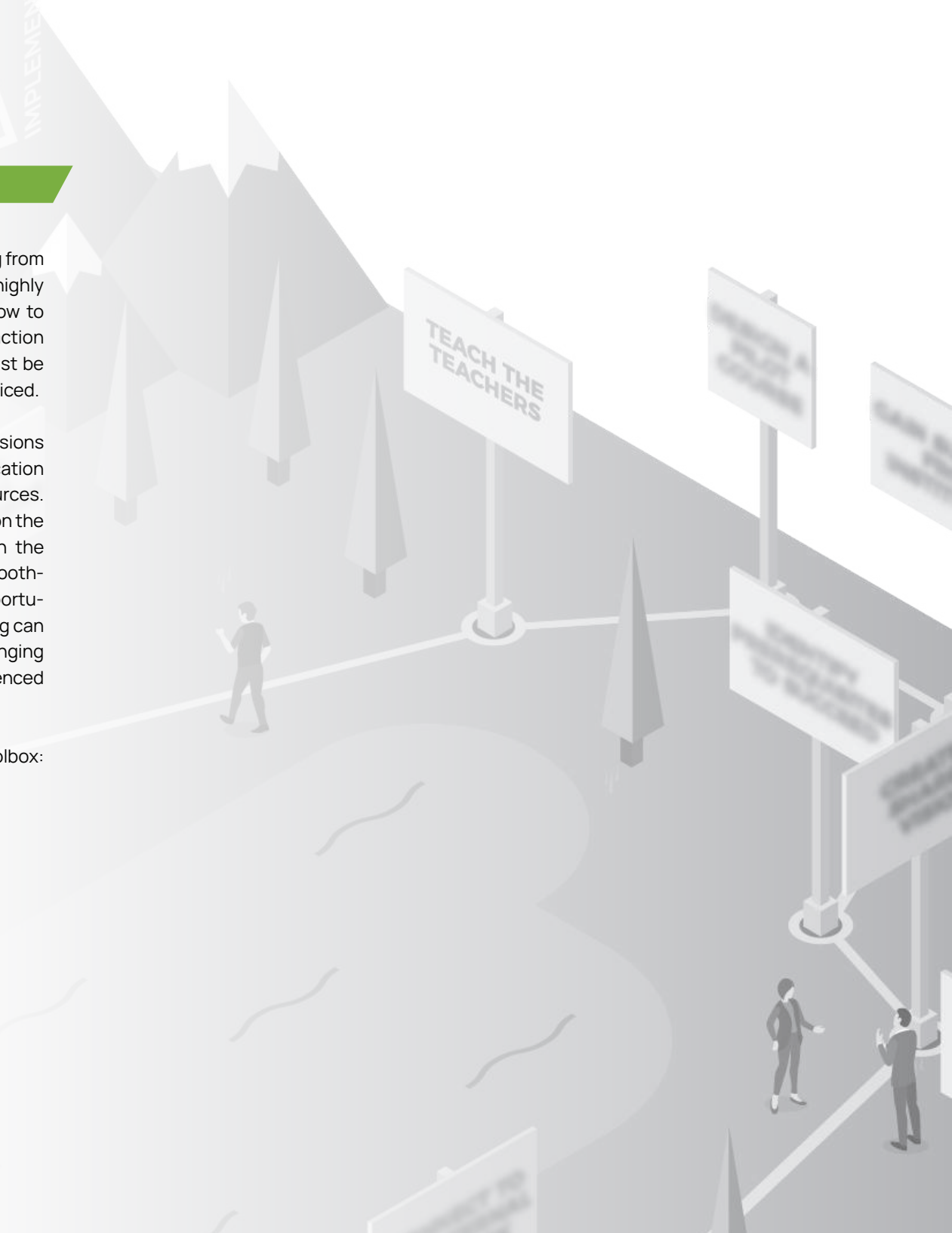
ROAD SIGN 8

Teach the teachers

Not only students but also teachers must develop new competences when moving from lecture-based to action-oriented education. Teachers in higher education are highly qualified within their respective disciplines, but often less when it comes to how to teach their discipline, and even less in terms of action education. Competence in action education among teachers is a key prerequisite for good action learning and must be built gradually, based on practice and reflection on the outcomes of what is practiced.

We therefore suggest that the teacher team organises competence-building sessions for all teachers that are motivated for action education, preferably in communication with an international action-learning network. Training requires time and resources. From teachers, the change to action education requires first and foremost taking on the role as facilitator. An understanding of the current educational system within the department and the prerequisites for implementing action learning goes more smoothly if administrative and managerial staff participate in the training. By providing opportunities to organise seminars and workshops where teachers who use action learning can share their successes and challenges, other teachers can find inspiration for changing their teaching. We also suggest that a structure is established whereby experienced teachers act as mentors for those who are beginners in the field.

For further information on action education, check out the NextFOOD toolbox: (<https://platform.nextfood-project.eu/#/categories/-M3PtoEIFOporsIH9aiW>).





ROAD SIGN 9

Involve external stakeholders

External stakeholders are all those that are active in the agrifood or similar systems, such as farmers, processors, traders, policy makers etc., and also representatives from civil society. Although farmers and other stakeholders are present in conventional education, they may not have been given a specific and legitimised role. They mostly are brought in, e.g., as farm owners or managers during farm visits, whereas the assumption often is that 'real learning' takes place in the classroom. The core implication of action-oriented education is that contributions from external stakeholders are much more important, not as examples of theory manifestation but as starting point for the learning process.

We suggest that attempts are made to develop a good relationship with external stakeholders. Their role in education, what teachers expect from them, and what they can expect from teachers and students should be made clear. To pay them a visit before the beginning of the course can be an effective way of introducing them to action education and prepare them for the learning activities in the field.





ROAD SIGN 10

Run a pilot course

According to Pfeffer and Sutton (2000), a common mistake made in organisations and institutions is to think that the job is done when the plan is made. As teachers in action education, we know that a high-quality, well thought-through course plan is necessary, but it is in the implementation that the fun starts! This is even more so in action education, because the teachers obviously have less control over some of the events in the course. They must be willing to adapt to what happens during the implementation of the course plan.

Based on the experiences from the 12 NextFOOD cases, the following activities require special attention during the implementation phase:

- 🌱 Establish an understanding of and motivation for action learning
- 🌱 Ask students to map their learning and competence development goals
- 🌱 Introduce and exercise key competences
- 🌱 Introduce self-assessment of competences
- 🌱 Pay particular attention to the start of the case inquiry
- 🌱 Set aside sufficient time for student reflection sessions
- 🌱 Implement literature seminars
- 🌱 Have regular meetings with student case work teams and with individual students
- 🌱 Have students write a learning log and a reflection document
- 🌱 Have students write a case-based document to their stakeholder(s)
- 🌱 Set aside time in the calendar for teacher reflection sessions
- 🌱 Emphasise formative assessment
- 🌱 Diversify the summative assessment

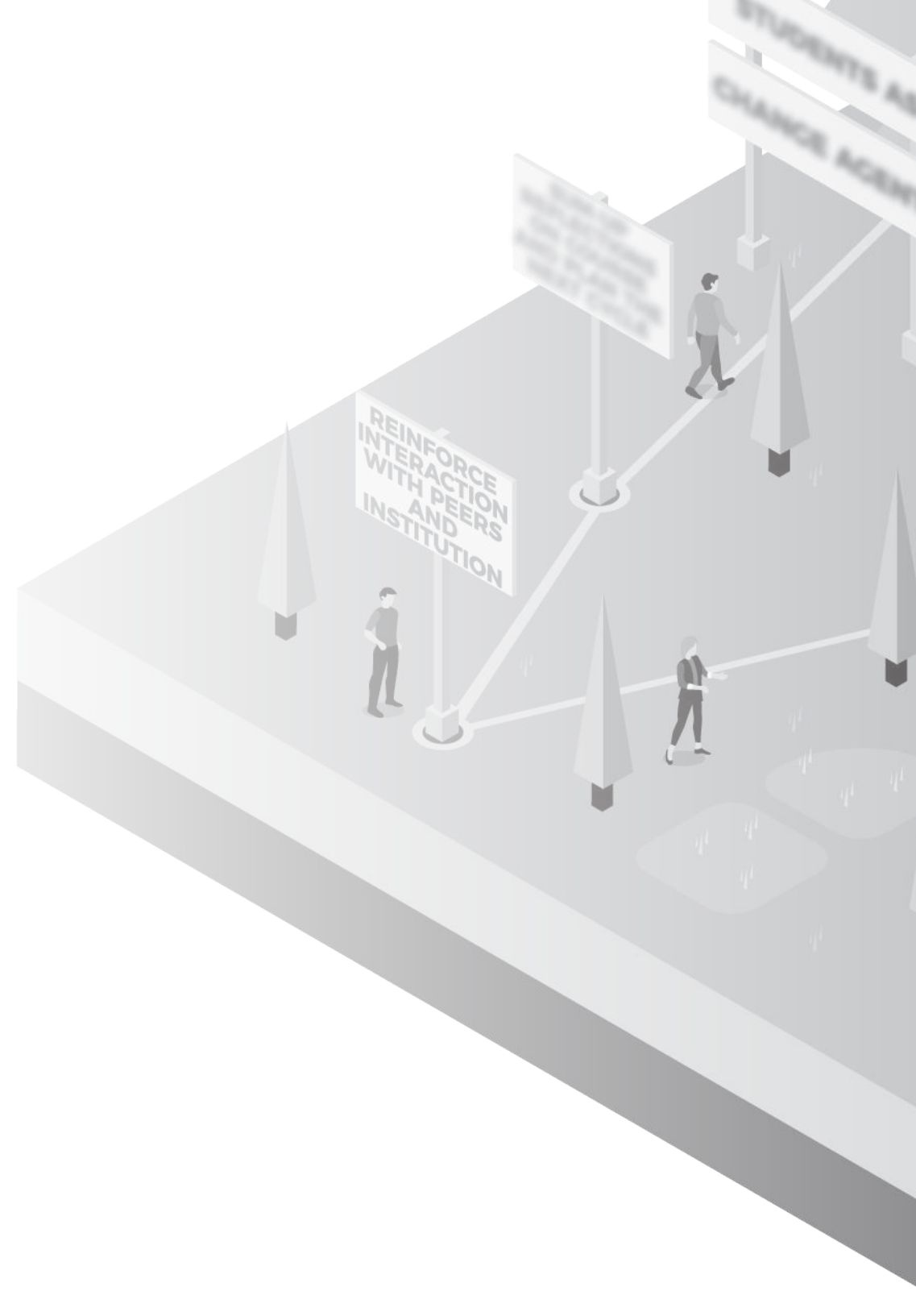




ROAD SIGN 11

Reinforce interaction with peers and institution

Academic leaders must support educational transformation by providing adequate resources and developing incentives for teachers to engage in educational development. Quality assessments that include criteria for student-centred and action-oriented learning may provide motivation and recognition to teachers who engage in action learning pedagogy. In addition to scientific merits, criteria for career advancement could include engagement in education development. Other incentives could be career improvement by nomination of excellent teachers, funding to support educational pilots and best teachers' awards. Among teachers and students, there is a persistent mindset that favours the traditional hierarchy of education. Changing this takes time and involves critique from peer teachers who are hesitant to the implementation of something that goes against the established way of thinking.





ROAD SIGN 12

Sum-up reflections on course and plan the next cycle

The roadmap has no clear end-destination, rather it ends in a cyclical process of planning, implementing, reflecting and planning again. Building on the experiences from the last learning cycle the actors are striving to improve the learning situation in various reflexive activities:

1. All teachers engaged in a course participate in reflection sessions after each cycle, in order to discuss possible improvements in course structure, course content as well as in their own performance in the course. Based on this discussion, an action plan for the next version of the course is generated.
2. Students communicate their insights and reflections from the course to stakeholders (e.g., by writing stakeholder documents in group or individually), and receive feedback on this from stakeholders. This task is based on their interaction with farmers or with other actors in the agri-food and forestry system.
3. Students make self-assessments on core skills (i.e.) before and after the course in order to follow their improvement.
4. Students get an opportunity to evaluate the course and give feedback to course organisers on planning, content, course structure and didactics. This feedback is taken into consideration for planning the next course cycle.



References

European Union. 2020. Achieving the European Education Area by 2025 – Communication. Brussels, European Commission

Lenaerts, L., et al. (2019) "D.2.1 – Action research protocol" NEXTFOOD: Educating the next generation of professionals in the agrifood system. EU Horizon 2020 research and innovation programme under grant agreement number 771738.

<https://www.nextfood-project.eu/deliverables/>

Lenaerts, L., et al. (2022) "D.2.4 – The master manual" NEXTFOOD: Educating the next generation of professionals in the agrifood system. EU Horizon 2020 research and innovation programme under grant agreement number 771738.

<https://www.nextfood-project.eu/deliverables/>

Lieblein, G. H. et al. (2019) "D3.1 – Educational approaches" NEXTFOOD: Educating the next generation of professionals in the agrifood system. EU Horizon 2020 research and innovation programme under grant agreement number 771738.

<https://www.nextfood-project.eu/deliverables/>

Nicolaysen, A.M. et al. (2020). "D3.2 – A toolbox for teaching practitioners". NEXTFOOD: Educating the next generation of professionals in the agrifood system. EU Horizon 2020 research and innovation programme under grant agreement number 771738.

<https://www.nextfood-project.eu/deliverables/>

Pfeffer, J., and Sutton, R. I. (2000). "The knowing–doing gap," Harvard Business School Press, Boston, Massachusetts, U.S.A.

Pool, A., and Parker, M. (2017). "Creating futures that matter today: facilitating change through shared vision," Executive Savvy Publ., Durango, Colorado.

Unesco, 2005. en.unesco.org/themes/education-sustainable-development/what-is-esd/un-decade-of-esd

Shulman, L.S. 2005. Signature pedagogies in the professions. *Daedalus* 134:52–59.

Valley, W., Wittman, H., Jordan, N., Ahmed, S., and Galt, R. 2017. An Emerging Signature Pedagogy for Sustainable Food Systems Education. *Renewable Agriculture and Food Systems*. DOI: 10.1017/S1742170517000199.

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