

Next FOOD

EDUCATING THE NEXT GENERATION
OF PROFESSIONALS IN THE AGRIFOOD SYSTEM

D6.10: Publications in peer-reviewed journals

WP6 - Communication, dissemination, and exploitation



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Contributors				

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Table of Contents

1. Deliverable outline.....	4
2. Published research outputs	5
3. Research outputs accepted for publication.....	7
4. Research outputs provisionally accepted for publication	9

1. Deliverable outline

The present document provides a description of the publications produced by consortium partners during the project lifetime (May 2018 – April 2022). The requirement for a minimum of two publications in peer-reviewed outlets has been met, whilst a number of additional research outputs are currently in different stages of the publication process. NextFOOD research outputs are presented in the following sections according to their publication status.

2. Published research outputs

Two research articles have been published in international, peer-reviewed outlets in the last two years of the project.

Author(s)	Sørensen, L.B., Germundsson, L.B., Hansen, S.R., Rojas, C. & Kristensen, N.H
Publication year	2021
Title	What skills do agricultural professionals need in the transition towards a sustainable agriculture? A qualitative literature review
Publication type	Research article
Publication outlet	<i>Sustainability</i>
Abstract	<p>Agriculture is facing mounting challenges across the globe and must move towards more sustainable practices to combat climate change and meet changed production requirements. Education has been acknowledged as highly important in a sustainable transition, but there is no clear agreement about what skills are needed for professionals in the agricultural system. The purpose of this paper is to identify and analyse skills needed for professionals in the agricultural system to engage in the transition towards sustainable agriculture and elaborate on the implications of this for a transition towards sustainable agriculture.</p> <p>The review is based on a qualitative semi-systematic literature review of 20 peer-reviewed articles concerned with sustainability, skills, and agriculture. Five categories of skills were identified and analysed, including systems perspective, lifelong learning, knowledge integration, building and maintaining networks and learning communities, and technical and subject-specific knowledge and technology. As the identified categories of skills have emerged from different contextual settings and a diverse group of actors, these five categories encourage a broad and inclusive understanding of skills that can be translated into different contextual settings, scales, and professions within the agricultural system.</p> <p>The article concludes that professionals engaged in the transition towards sustainable agriculture need skills that encourage a perspective that moves beyond generic discipline-based skills and instead builds on heterogeneity, inclusion, and use of different actors' knowledge, practices, and experiences, and the ability to respond and be proactive in a constantly changing world.</p>
DOI / Link	https://doi.org/10.3390/su132413556

Author(s)	Melin, M., Lieblein, G., Breland, T.A. & Francis, C.
Publication year	2022
Title	Network learning and transitional change in a global project for transforming sustainability education
Publication type	Research article
Publication outlet	<i>Open Research Europe</i>
Abstract	<p>Educational strategies globally are changing from an authoritative, top-down model to one focused on greater student and stakeholder participation and collaborative involvement in planning and implementation of educational activities. In addition to emphasis on student-centred education, strategies are evolving to encompass learning organizations and learning networks. These are essential to address the complexity and scope of tomorrow's challenges, involving issues that could be called 'wicked problems' not easily addressed by single disciplines nor resulting in solutions that please all the players. Such incommensurate problems make it essential to tap into all possible sources of information, to explore multiple learning strategies for solutions, and to seek answers that will be acceptable to all those impacted. Such an approach includes knowledge co-production, and methods of co-learning to reach mutually acceptable outcomes.</p> <p>Meaningful transitions or transformations require attention to creative network organisation, learning through practical action, cooperation and mutual respect among participants, comfortable and meaningful activities with stakeholders, agreed-upon structures and practices, agreed-upon outcomes and methods to reach them, as well as shared commitment to complete tasks and share of credit for accomplishing them. The NextFOOD Network is used as an example of how these goals were set, and how a transformation through their implementation is playing out. A successful transition involves ownership by all the players, meaningful and lasting changes in roles of various players and their institutions, willingness to experiment with new methods, and shared responsibility for outputs and impacts.</p> <p>NextFOOD Network partners are making concerted efforts to overcome institutional, disciplinary, and long-established barriers to this type of transformation in education, and have dealt with the unique pandemic challenges to creating a meaningful transition that will emerge as a resilient and pro-active</p>
DOI / Link	https://doi.org/10.12688/openreseurope.14407.1

3. Research outputs accepted for publication

Two research outputs generated as part of the NextFOOD project have been accepted for publication after having undergone peer review. These are expected to be published in the coming months.

Author(s)	Dimitrievski, I. & Jönsson, H.
Title	Rethinking Impact – Unwrapping the social processes behind an institutional term
Publication type	Book chapter
Publication outlet	<i>Humanities Meets Business: The Human Perspective in University-Industry Collaborations</i> London: Routledge
Abstract	<p>Today researchers are obliged to identify, measure, and report the impact of their work. Many concerns have been raised regarding this development, including misgivings about the nature of impact, how to define it, and how best to assess it. Social studies have largely focused on critically interrogating such concerns. By contrast, little has been written on the ordinary practices involved in doing impact. Addressing this gap, the chapter aims to illustrate the social organization of research impact understood as textually mediated practices.</p> <p>Empirically, the chapter focuses on “practice abstracts”, which is a format developed by the European Union for incentivising knowledge exchange between partners. Drawing on Dorothy Smith, the chapter demonstrates how institutionally standardised texts make impact available as a reading to diversely situated actors. It shows that impact work is organised so that it makes crucial aspects of that work invisible, while naturalising an institutionalised form of social organisation that readers must take for granted for the claimed impacts to make sense. In the conclusion, the chapter outlines the implications of this approach for the social sciences and humanities as objects of impact policies, as well as, importantly, in terms of their place in impact-making outside academia.</p>
Expected publication date	May 2022

Author(s)	Dimitrievski, I. & Jönsson, H.
Title	Farming is learnt on the field, not in a classroom – Farming skills as social organization
Publication type	Research article
Publication outlet	<i>Kritisk Etnografi – The Swedish Journal of Anthropology. Special issue: Skills and Enskilment for Sustainable Food</i>
Abstract	<p>The article addresses the social processes underlying the recognition, assessment, transfer, and management of farming skills in the context of sustainable agriculture. The aim is to explore how farmers and educators describe what being a “skilled farmer” entails, how skills matter and why, as well as how skills are part of everyday farming activities. This in turn, raises critical issues in relation to the dominant perspectives on skills and learning in higher agricultural education. We draw theoretical inspiration from Richard Sennett’s concept of skills, and from Dorothy Smith’s concept of social organization. In line with the concept of social organization the article addresses how human and nonhuman entities in specific farming scenarios are organized to provide for the accountability of farming skills. The empirical material consists of interviews and focus groups with farmers and agricultural educators.</p> <p>The results show that farming skills predominantly arise outside formal skilling contexts, such as education, in the amalgamations of people, things, technologies, and values. The skills achieved in this way are informal and cannot be stored and shared in the same way as other professional qualifications. In these informal farming contexts, skilling is socially distributed, and involves the organization of local expertise and authority, the management of various interpersonal relationships and the negotiation of differing stakes. The results also highlight farming skills as temporal.</p> <p>In conclusion, the authors propose a need for agricultural educators to reflect in relation to what they take for granted about their students and propose a perspective on skills and learning in higher education which accounts for the social and temporal dimensions of skilling, as a way towards more sustainable practices in the agri-food system.</p>
Expected publication date	June 2022

4. Research outputs provisionally accepted for publication

A total of nine articles have been provisionally accepted for publication in a special issue of the [Journal of Agricultural Education and Extension](#) entitled “Transforming agri-food education to meet the sustainability challenges”. The special issue is expected to be published by the end of 2022.

Author(s)	Rosenlund Hansen, S., Lindner, L., Rojas, C. & Flynn, K.
Title	Education for sustainable agrifood systems – a literature review of existing experiences
Abstract	<p>Purpose: Education is viewed as one of the key strategies towards a sustainable future. The recent decade has seen a rise in education targeting sustainable agri-food systems, with several empirical studies and reports of existing experiences in developing and teaching these studies. This paper presents a review of literature from 2010 to the present with a twofold purpose: 1) To provide an overview of current research and experiences with education for sustainable agri-food systems, and 2) to compare these insights with education for sustainable development beyond the field of agri-food systems.</p> <p>Methodology: A qualitative literature review on education for sustainable agri-food systems began with a systematic search using search blocks of keyword combinations previously tested for accuracy. In total, 30 studies were selected by iterative agreement criteria and coded using a mix of predefined codes and explorative coding to gather information across the studies.</p> <p>Findings: The article provides an overview of existing experiences with the practical applications of teaching and learning and their development within sustainable agrifood system education. The key themes identified include didactics and learning aims, inherent values, as well as the hindering and supporting forces experienced in implementing and running such education on several levels, from faculty to national and international policy and accreditation frameworks. The article puts these findings into perspective by comparing with education for sustainable development more broadly to shed light on potential differences and similarities.</p> <p>Practical Implications: The analysis can serve as inspiration to all education stakeholders, including policy makers.</p> <p>Theoretical Implications: The paper analyzes concepts and theories underpinning education in sustainable agri-food systems and the complexities involved therein.</p> <p>Originality: The paper reviews the state-of-the-art in education for sustainable agrifood systems by compiling and analyzing existing knowledge, and bridges this field of education with developments in education for sustainable development broadly.</p>

Author(s)
Title
Abstract

Burleigh, S., & Jönsson, H.

Agri-food and forestry education in Europe – an informatics approach

Purpose: To characterize the current state of agri-food education in Europe using an informatic approach and discuss potential gaps in education concerning the ‘Inventory of Skills’ as defined by the NextFOOD project.

Methodology: The strategy was to collect texts from European Masters program websites, determine whether each program was involved in agri-food education, and if so, quantify their involvement. We then applied the same approach to quantify each program’s association with the eight ‘Inventory of Skills’ themes as defined by the NextFOOD project. From this data we draw some conclusions about the current state of agri-food education in Europe and discuss potential gaps in education concerning these ‘Inventory of Skills’.

Findings: The study provides insight into the current state of agri-food education in Europe, revealing the degree of interdisciplinary interactions within agriculture, food and forestry Masters programs and identifying potential gaps, as well as a few areas of apparent expertise, in education involving the eight ‘Inventory of Skills’ themes as defined by the NextFOOD project.

Practical Implications: This informatic approach can serve as a practical decision-support tool for assessing potential gaps in European agri-food education at the Masters level.

Theoretical Implications: The paper broadens the scope of educational assessment and development through the use of web based quantitative data. The study shows that a text-based, objective informatic approach to assessing quality in agri-food education is possible and the results can complement more traditional qualitative interviews and literature studies in this field of research.

Originality: This website-based informatic approach to assessing quality in agri-food education is a unique method of analysis in this field of study and offers a more objective and non-targeted analysis of agri-food higher education when compared to traditional methods involving qualitative interviews with stakeholders.

Author(s)

Title

Abstract

Lenaerts, L. et al.

Transition to action learning in education for sustainable agrifood systems: Processes, supporting and hindering forces, and ways of dealing with them.

Purpose: To unravel processes involved in transforming education for sustainable agrifood systems and key prerequisites for transition to action learning.

Methodology: This article is based on 3 years of action research in 7 European and 2 Indian educational cases as part of the H2020 project Nextfood. Qualitative data consist of yearly case development reports with preliminary results, minutes of 27 individual follow-up meetings with cases, and minutes of 5 final reflection workshops with 2 cases each. The data were deductively coded for processes involved in transformation and transition, categories of supporting and hindering forces, and ways of dealing with them.

Preliminary findings: Supporting forces are open-mindedness and willingness to change among teachers, students and educational institutions alike. Availability of resources are also often mentioned. Good relationships between external stakeholders, teachers and institutions are also supporting transformation. Lack of understanding of the action learning approach and motivation for embracing it hinder successful participation of teachers, students, and stakeholders.

Practical implications: The findings provide information about what it takes from institutions, teachers, students, and external stakeholders for successful transition to an action learning approach. Further, they unravel processes involved in transforming education in agrifood systems and give necessary insight into forces potentially supporting and hindering such a transition and into ways of dealing with them.

Theoretical implications: The present study bridges the gap between conceptual literature on what a transformation of education for sustainability could look like and practice-oriented literature on educational activities supposed to foster transformational learning in an educational case in agrifood systems. It explores the processes that link practicalities to realization of a conceptual ideal.

Originality: The study provides new, much needed knowledge on the processes of implementing action learning in agrifood systems under widely different geographical, socio-economic and cultural conditions.

Author(s)

Title

Abstract

Melin, M. et al.

Action learning in agri-food (and forestry) systems: Students' experiences, learning outcomes and factors influencing their learning.

Purpose: To explore learners' experiences, learning outcomes and factors influencing learning for sustainability in action learning agri-food (and forestry) courses.

Methodology: In each of twelve international cases a novel action learning educational approach within agri-food (and forestry) was implemented, and data were collected and reported as a part of the H2020 NextFOOD project. Inductive and deductive content analysis of the respective case reports and cross-case comparisons were then conducted.

Findings: The students' experiences with action learning in the diverse cases ranged from [insert findings] to [insert findings]. As expected, student learning outcomes varied, but there was clear evidence of good to outstanding achievement of knowledge and competences regarded as essential for dealing with sustainability challenges in agri-food systems. Learning and competence development were reportedly ascribed to key properties of the action learning approach and affected by variables pertaining to [insert findings].

Practical Implications: The findings can build trust in the effectiveness and feasibility of the action learning approach to fostering competences needed for sustainable development in agri-food systems under widely different geographical, socio-economic and cultural circumstances. Further, they highlight factors important for achieving good student experiences and learning outcomes and can further inform the implementation and integration of similar approaches into other courses, to enable true inter- and transdisciplinarity as an integral part of educating the next generation of sustainability professionals.

Theoretical Implications: The findings reinforce the assumption that action learning is effective for acquisition of knowledge, familiarization with methodology and training of competences considered essential for sustainable development. They also broaden the perspective on factors that are key for good student experiences and learning outcomes. As such, this research can enrich and nuance the literature on action learning and education for sustainable development (ESD) initiatives and inform the implementation and integration of ESD- and action-oriented pedagogies.

Originality: This comprehensive explorative, cross-case analysis of learning outcomes and students' experiences in these action learning sustainability courses adds to a small, but growing number of empirical investigations within the field of education for sustainable development in general, and agri-food (and forestry) education in particular. As little research has previously been conducted on the implementation of action learning approaches across such a large group of heterogeneous cases, the findings provide examples of how ESD approaches can be integrated into specific fields of knowledge, to enable sustainable development across all sectors.

Author(s)

Title

Abstract

Rastorgueva, N., Lieblein, G. & Migliorini, P.

Education in Agroecology: action learning and students' learning outcomes before and under COVID-19 restrictions

Purpose: This research is focused on action and experiential learning for agroecology and compares its activities and outcomes before and during COVID-19 disruption (i.e., onsite and online experiential learning). The main research objective of this paper is to explore to what extent there are differences in students' mid-set and learning outcomes after onsite vs. online experiential learning in a short course in agroecology.

Methodology: The research is based on data collected in 2018, 2019 and in 2020. The study employs quantitative and qualitative methods to explore the changes in the students' mindset as the main learning outcomes. A quantitative self-assessment test and its further analysis were used to map the students' competence development. Qualitative data analysis was applied for questions and learning goals that the students prepared before and after the short course. The questions were coded in 4 codes; differences of the amount of the text in these 4 codes used for pre- and post- course data allowed to define the change in the students' mindset. NVivo 23 software was used for qualitative analysis, whilst SPSS 26 was used for a t-test.

Findings: The results demonstrate that both approaches of action learning have provided similar learning outcomes to the students. Thus, notwithstanding of the course duration, it's good organisation and carefully selected online cases could provide to the students the sufficient learning outcomes both in an onsite as well as an online setting.

Practical Implications: The results of the research demonstrate that short courses of online action learning could have a similar efficiency/result as the onsite one. Its efficiency in terms of the students learning outcomes and competence development, requires a good organisation (time and appropriate online tools) and preparatory work (practical part of action learning could be substitute by web-cases or online visits of farms). Thus, in case of another emergency, the short courses of action learning will not be interrupted and will provide appropriate learning outcomes.

Theoretical Implications: On the one hand the research demonstrates the application of online action learning in cases of necessity. On the other hand, the study contributes to methodology of defining and comparing the students' learning outcomes, that is important for evaluating results of courses based on action learning.

Originality: The research brings together several topics that were separately discussed in the scientific literature with regards to higher education in Agroecology, short action learning and online courses under the COVID-19 restrictions.

Author(s)
Title
Abstract

Sadovska, V., Rastorgueva, N., Melin, M. & Migliorini, P.

Stakeholders' engagement in education for sustainability: cases from Norway, Greece and Italy

Purpose: To identify types of stakeholders engaged into the education process, to analyze their motivations and mutual benefits for the universities and agri-food stakeholders. Furthermore, one of the main goals of the research is to find pathways for improvement of their collaboration in order to make education more sustainable and efficient in the future.

Methodology: This research is based on 11 cases that include interviews and observations with stakeholders from 3 different countries (Italy, Greece and Norway) carried out in 2021. Further qualitative data analysis was performed with NVIVO software in order to identify motivations and benefits. Besides, the analysis of literature was carried out in order to reveal the gaps in the scientific papers.

Findings: There were identified two types of the stakeholders who participated in the education process characterised by the different patterns of learning and engagement. Benefits received by the stakeholders were found as follows: new ideas and energy for business development, visual improvements of a farm, intercultural exchange, knowledge on sustainable development, economic benefits for participation. One of the main motivations for the stakeholders is the opportunity to find future employees for their farms with appropriate training. Language issue was pointed as one of the main hindering forces for efficient collaboration.

Practical Implications: The results of the study can create preconditions for the change of educational approach and its better adoption for the needs of the societies. Such benefits are of a mutual character for stakeholders and education institutions. The paper suggests the most efficient ways of collaboration between the stakeholders and universities. Finally, the study calls to diversify the types of engaged stakeholders in terms of their ways of agricultural production, economic stability, and the level of technological development.

Theoretical Implications: The research is motivated by the fact that scientific literature provides limited information concerning stakeholder motivation and benefits. Therefore, this study offers a nuanced picture of stakeholder engagement types and broadens the perspective on mutual learning based on collaboration between university and agrifood sector. The results of the research could be used for filling the gap in the literature focused on the stakeholder engagement into education. Furthermore the results will contribute to creating a methodology of evaluation of the stakeholders' participation in sustainable education.

Originality: The literature is limited on the topic of stakeholder engagement as higher education programs at a university level do not usually involve stakeholders into the process. Therefore, the novelty of this paper is both on this specific topic and results as well as on the analysis of the impact of innovating teaching methods that imply collaboration between stakeholders and university education.

Author(s)
Title

Steiro, Å. L., Breland, T. A. & Hauggaard-Nielsen, H.

What farmers learn for sustainable development through participatory farming system inquiry: a case study of student-farmer action learning projects

Abstract

Purpose: Explore what farmers learn regarding problems, opportunities and challenges related to sustainable development from engaging in student–farmer action learning projects and identify how experiences from such projects can inform future participatory multi-stakeholder projects.

Methodology: A case study of four student–farmer projects in south-eastern Norway was conducted. The projects were part of the MSc course at Norwegian University of Life Sciences ‘Acroecology: Action Learning in Farming and Food Systems’ (<https://www.nmbu.no/course/pae302>). With facilitator teams consisting of 4–5 students, the projects followed a holistically-, action-oriented, stepwise protocol aiming at improved ecological, economic and social sustainability according to agroecological principles. Data for the present investigation were collected through participant observation at key events throughout the projects and follow-up in-depth interviews of farmers. Additionally, documents delivered by each student group to their respective farmer.

Findings: *Forthcoming*.

Practical implications: The analysis demonstrates how farmers and their advisors, by making their interactions more participatory and structured according to a stepwise inquiry and planning process, can improve their approaches to dealing holistically and action-oriented with problems, opportunities and challenges related to sustainable development.

Theoretical implications: This paper contributes to the field of farmers’ learning and multi-stakeholder projects by putting forth empirically-based analyses of an innovative action learning approach.

Originality: While previous efforts within this field have mainly focused on projects with a lower degree of stakeholder participation, this study reports findings from projects where stakeholders participate to a high degree throughout the projects.

Author(s)	Zafeiriou, G., Krooupa, A-M., Krystalidou, E., Papadopoulos, F., Lymperopoulos, A., Papageorgiou, M., Navrozides, M. & Papadopoulou, E.
Title	Identifying skills and competencies needed for supporting sustainable agricultural education: The Greek students' perspectives
Abstract	<p>Purpose: To identify and discuss gaps in skills and competencies needed for supporting sustainable agriculture in Greek tertiary education.</p> <p>Methodology: The study adopted a qualitative approach using focus groups as the main data collection tool. Participants were undergraduate agricultural students at the International Hellenic University in Thessaloniki, Greece. Group interviews were audio recorded and transcribed verbatim. Data were analysed for common patterns and emerging themes using thematic descriptive analysis. Analysis was assisted by the ATLAS.ti software to organise data, facilitate retrieval, assist pattern emergence and visual representation of code relationships. This study was conducted as part of the EU-funded NextFOOD project.</p> <p>Findings: Fourteen focus groups (5-6 participants per group) were held. The median duration of group interviews was 75 minutes. Data analysis identified a number of skills required by Greek students to enhance their academic performance and support their transition to sustainable agriculture as future professionals. Identified skills were grouped into four main categories: academic/lifelong learning, managerial, communication, and "green" skills. Students, as the future generation of the agricultural professionals, can translate their knowledge into action by developing their academic/lifelong learning skills. Training in managerial, communication and "green" skills needs to be embedded in educational curricula for a shift towards sustainable agriculture to be achieved.</p> <p>Practical implications: This paper identified gaps and challenges in undergraduate students' sustainability skills and competencies and can inform the design of future academic curricula in sustainability education.</p> <p>Theoretical implications: The paper draws attention to the changes needed in the Greek educational system for assisting the identified skills development in order to effectively promote a shift towards sustainable agriculture.</p>

Author(s)

Title

Abstract

Dimitrievski, I., Rosenlund Hansen, S. & Jönsson, H.

Learning outcomes - A driver for sustainability and action learning? A case study from the NextFOOD project

Purpose: European education has undergone a shift, from focusing on the pedagogical content underpinning a qualification, to an output-centred approach, focusing on learning outcomes. While the benefits and concerns regarding this shift have well been documented, relatively little is known about the social relations underlying the use of learning outcomes in actual educational settings. By examining the latter in the context of sustainable agriculture education, the paper aims to demonstrate the capacity of learning outcomes as a driver for sustainability and action learning.

Methodology: Interviews with agricultural educators from Greece and Sweden, and written interviews with educators in sustainable transition from Denmark constitute the empirical basis for analysing the social dynamics of learning outcomes in sustainable agriculture education.

Findings: The paper illustrates the social processes underlying the use of learning outcomes in sustainable agriculture education. It shows what happens when learning outcomes, being institutionalized entities, enter messy educational practices, where they are picked up, challenged, adapted, and used. These findings demonstrate how the use of learning outcomes is intimately tied to the social organization of the practices in and through which those learning outcomes are being written, presented, read, oriented to, and enacted.

Practical Implications: Learning outcomes have the capacity to steer agricultural education towards sustainability and action learning. However, for this capacity to be fully realized, tackling the content of learning outcomes is insufficient. Agricultural education must also consider the social relations tying students, teachers, and other educational actors.

Theoretical Implications: Existing scholarship has challenged the philosophical basis of learning outcomes and identified the diverse attitudes amongst academics and students. The paper takes on a constructivist approach demonstrating learning outcomes as relational. Not just immutable statements of expected skills, the paper portrays learning outcomes as accomplished in and through educational practice.

Originality: The study presents a novel view of learning outcomes as embedded in and generative of social organization in the context of sustainable agriculture organization.