A3.4 Content Enrichment Strategy

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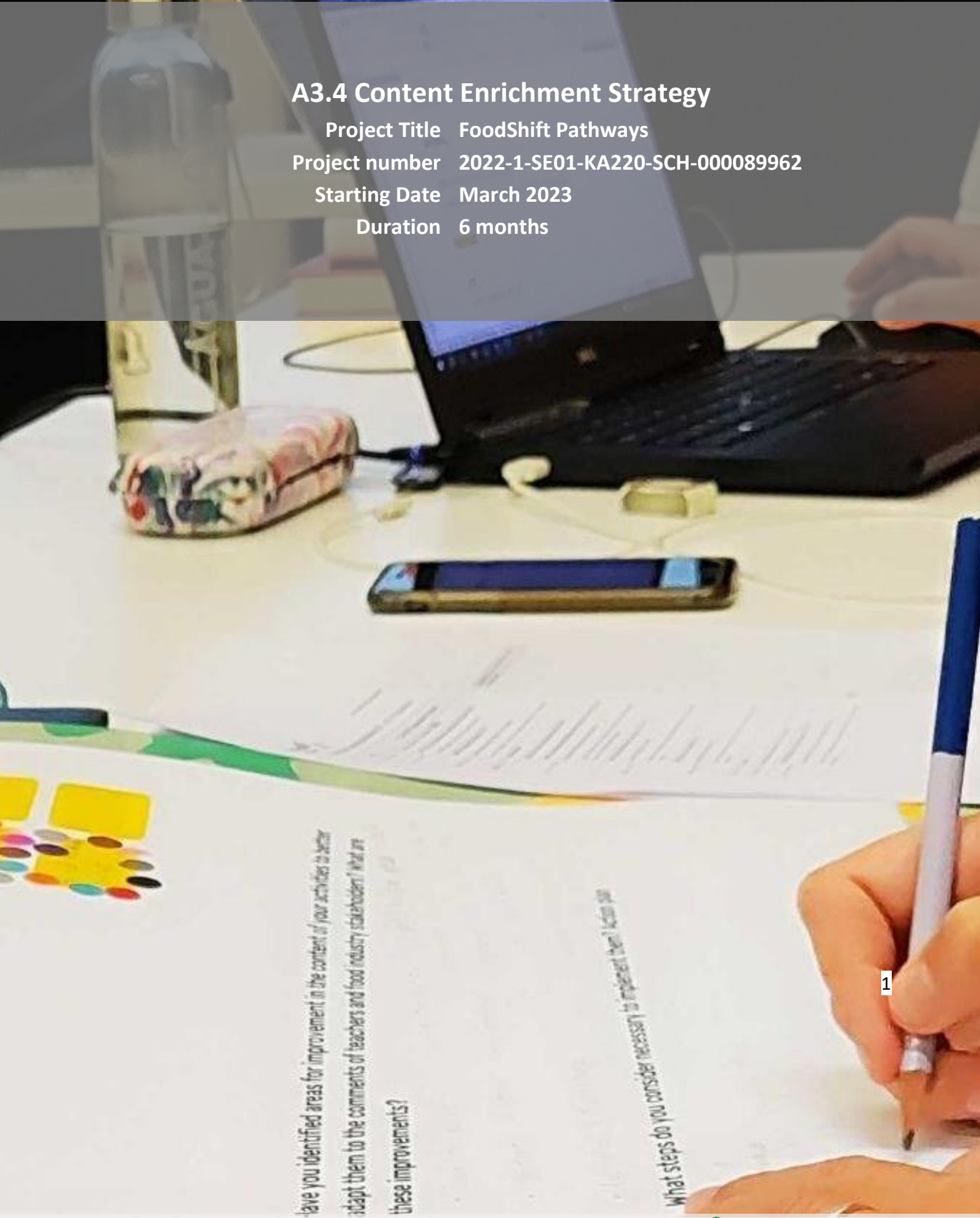

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FOODSHIFT Pathways

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Executive Summary

This report details the Foodshift Pathways strategy to improve educational content related to sustainable and healthy food in various aspects of the food system, ranging from responsible agricultural practices to the adoption of conscious consumption habits. The strategy focuses on topics such as local production, the impact of food marketing on purchasing choices, and the promotion of healthy and sustainable diets for both people and the environment.

Developed to assist educators in introducing food sustainability concepts to elementary school students, the strategy includes the creation and enhancement of new educational materials and the integration of interactive technologies. The report details the process of devising this strategy by formulating a guide for collaborators to identify key objectives and facilitating a collaborative workshop with the six project partners. This approach ensures an orderly and effective implementation of the strategy.

In a nutshell, the foundation of the strategy is based on a thorough analysis of educational needs and the assessment of existing resources. It is anticipated that the resulting educational materials and methods will be highly effective in conveying sustainable food concepts to both students and educators. Beyond enhancing the learning process, the strategy seeks to instill a solid understanding of the importance of sustainability in the food system. Overall, this strategy is positioned as a key resource to achieve the FoodSHIFTPathways' goal of equipping the current and next generations with the knowledge and values necessary to make informed decisions.

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Introduction

In an ever-changing world, education plays a key role in preparing future generations to face the challenges of today and tomorrow. In this context, the European FoodShift Pathways project stands to support pedagogical innovation and sustainability by uniting the efforts of six partners from Spain, Greece, Portugal, Sweden, the Netherlands and Denmark. This landmark project aims to transform the educational experience and empower students to be active agents in building a conscious and sustainable food system.

The FoodShift Pathways project builds on and extends upon its sister project, FoodSHIFT 2030, which pursues the aim of leading a transition in the European food system towards a circular and low-carbon future, driven by citizen participation. The FoodSHIFT 2030 approach involves a comprehensive transformation that includes a reduction in meat consumption and a promotion of plant-based diets. Inheriting the principles and goals of FoodSHIFT 2030, FoodShift Pathways continues this vision, working to drive sustainable, but also healthy, changes in food production, distribution, and consumption, in pursuit of a healthier and more environmentally friendly food system *from the classroom*.

An important part of FoodShift Pathways lies in its educational content enrichment strategy. The main purpose of this strategy is to raise the quality of learning by providing teachers and students with appropriate baseline educational resources, and then enrich them with additional engaging activities and tools that complement the standard curriculum. This strategy not only seeks to enrich the educational experience, but also to foster deeper, more meaningful, and participatory learning. In doing so, it aims to stimulate students' interest and encourage their active involvement in the learning process.

The central theme of this initiative is the sustainability of our food system. In a world where concern for the environment and the preservation of natural resources is becoming increasingly urgent, understanding the interconnection between our food choices and the impact on the planet is essential. The educational content enrichment strategy aims to expand the educational materials used in academic settings, providing students with an in-depth understanding of food sustainability.

This project transcends borders and addresses the issue of sustainable food from multiple perspectives and cultural contexts. The diversity of approaches and the richness of perspectives presented in this deliverable reflect the complexity of the food systems and highlight the importance of a holistic approach.

Overall, the pedagogical content enrichment strategy of the FoodShift Pathways project strengthens students' understanding of food sustainability and empowers them to contribute positively to a more sustainable food system.

Glossary

In this report, we use the following concepts, which were created in collaboration with the partners:

OER: A digital resource, or Open Educational Resource (OER), usually refers to any type of educational content or material that is freely available and accessible online. That is, any educational resource that we provide to the teacher or learners to further the teaching that is the focus of the Swedish video and that is freely available and accessible online. It can include a wide range of resources, e.g.:

- **Textbooks:** Openly licensed digital textbooks that can be freely downloaded, shared, and modified.
- **Class notes:** Class notes, presentations or slides created and shared online for others to access and use.
- **Videos:** Educational videos, lectures, tutorials or documentaries available on platforms such as YouTube, Khan Academy or other open platforms.
- **Interactive modules**: Interactive online learning modules, simulations or virtual labs that provide hands-on learning experiences.
- **Websites:** Educational websites or web pages that provide instructional content, reference materials or learning activities.
- **E-books**: Digitally published books that are freely available for reading and downloading.
- **Images and infographics**: Visual resources such as diagrams, charts, graphs, illustrations, or infographics that enhance understanding of a specific topic.
- **Audio recordings and podcasts**: Audio-based resources such as recorded lectures, podcasts or interviews covering educational content.
- **Course materials**: Course syllabi, assignments, quizzes, and exams that educators openly share for self-study or adaptation by others.
- **Software and apps**: Educational software, apps or tools that facilitate learning and skill development in specific areas.

STEAM: STEAM is an acronym that stands for Science, Technology, Engineering, Arts and Mathematics. It is an educational approach that integrates these five disciplines into a cohesive learning framework. The goal of STEAM education is to provide students with a comprehensive, interdisciplinary learning experience that fosters critical thinking, creativity, problem solving and innovation.

Interactive tools: are digital resources designed to improve and enhance the learning experience of students. These tools are used in educational environments to make content more dynamic, engaging and participatory. By incorporating interactive elements, such as videos, simulations, games, online quizzes, and other types of multimedia content, they seek to increase student engagement, comprehension and retention. Some examples of interactive tools to enrich pedagogical content include:

- **Online Learning Platforms:** These platforms allow educators to create online courses with interactive materials such as videos, presentations, discussion forums and quizzes.
- **Educational Simulations:** These are applications that mimic real-world situations for students to experience and learn hands-on. Educational Games: Games designed to teach concepts and skills. They can be word games, problem solving, etc.

- **Interactive Infographics:** Visual representations that combine images, graphics and text to present information in an attractive and understandable way.
- **Interactive Quizzes:** Tools that allow educators to create online quizzes with multiple choice, true/false or open-ended questions to assess student knowledge.
- **Annotation and Markup Tools:** These tools allow students to interact with digital documents by highlighting, annotating, and taking notes directly on the content.
- **Virtual Reality (VR) and Augmented Reality (AR):** These technologies allow adding digital elements to enhance understanding of difficult concepts.
- **Interactive Educational Videos:** Videos that incorporate interactive elements such as questions in the middle of the video to ensure that students are engaged and understanding the content.
- **Online Collaboration Tools:** Platforms that allow students and educators to work together in real time.
- **Interactive Concept and Mind Maps:** Tools that allow students to create visual diagrams of ideas and concepts, which can help them understand the relationships between different elements.

Section 1 Content Enrichment Strategy Development timeline

A detailed roadmap guides the process of enriching existing FoodShift Pathways content, with the goal of increasing the quality, relevance, and value of resources for our audience. In this section, we explain the essential steps taken and the timeline associated with each of them:

Initial Planning and Evaluation Stage (May 1 to July 2): In this initial phase, a thorough review of existing content was conducted. Areas for improvement were identified and specific objectives for enrichment were defined. This stage established the scope and criteria for measuring success; As well as some useful technological tools for content enrichment that can be found in Annex A table 2: "Review of Tools for Interactive Video Creation".

- **Action 1: Template design**

IAAC developed a template with the purpose of establishing a structured and coherent framework for planning how to improve and enrich the existing content. This template served as a guide to make informed decisions on how to add value to and optimize existing content.

A template was used with each of the partners involved in the project can be found in this link.

- **Action 2: 1st meeting: Introduction to partners**

IAAC's team met with each partner individually to present the structure of the educational content template, instructing the specific needs from each pilot.

- **Action 3: Template completion**

TThis action took place from May 22 to June 11, 2023. During this period, each partner completed their template, and tagged the IAAC team for questions, suggestions, considerations, etc. In turn, IAAC's team replied to the doubts via Google Docs, a platform that was chosen to coordinate this activity due to its collaborative nature.

- **Action 4: 2nd follow-up meeting: Co-creation activity**

This second meeting served to clarify the main concepts used about the tools and for the definition of the interactive tools. These tools not only make the learning process more interesting and effective but can also be adapted to different learning styles and individual student needs. It is important that educators choose the right tools according to their educational objectives and the specific content they are teaching. The key concepts that are detailed in the Glossary of this document were defined together during Action 4.

Focus group: During this second meeting it was mentioned how activity 2.4 of work package 2 "Focus group" could help to define what contents are needed in each pilot, according to the

perspective of the participating teachers in each country. It was recommended during the Focus Group activity to invite the teachers to evaluate the videos made in WP3 in order to improve and enrich the contents of each pilot. This point is further explained in detail in section 2 in point 2.3.2.

Research and Compilation (July 3 to July 30): During this stage, in-depth research was conducted to gather up-to-date information, relevant data and emerging trends related to the topics covered in the content. This research supported the creation of new materials.

- **Action 5: Focus group implementation**
  A soft consultation/validation was carried out with the teachers in some pilots. Gathering their perceptions and suggestions on the tools created by the project. and enhancing teachers' involvement/engagement.

Within the research, the analysis of the interviews conducted with teachers has been considered (activities 2.1; Needs Analysis and 2.3: Key Features of the Sustainability Competence of WP2 - State of the art and pedagogical design, carried out by SUSMETRO). This point is explained in detail in section 2 in point 2.3.2.

Review and Validation (September 11 to September 17): Prior to final implementation, a thorough review of the content was conducted. It ensured that the information was accurate, consistent, and aligned with the initial objectives.

- **Action 6: Reflexivity activity**

Although we conducted an initial analysis of the Focus Groups in order to be able to conduct the Collaborative Workshop and for the Design of Strategies, additional analysis is crucial to understand the needs of teachers and, from there, to assess whether our content fits those needs.

Conclusions (September 18 to September 24): Conclusions are analyzed and shared with the partners.

- **Action 7: Presentation of the Deliverable - Draft**

After performing the actions described above, the IAAC team meets with the purpose of evaluating the input from the partners and adapting the structure and contents according to the recommendations received.

The results and insights derived from these joint analytical actions (IAAC+Partners) have contributed to holistic insights/strategies to improve the content. These insights/insights are summarized in the "*collaborative workshop*" section to provide guidance to the partners in their (more autonomous) work in the future.

- **Action 8: (IAAC) Preparation and delivery of the result**

Consolidation of an integrated approach, considering local and global perspectives (knowledge transfer).

Section 2 Methodology

A content enrichment strategy is a plan to enhance the educational experience of students through the integration of new and engaging materials and resources. Below we will detail the methodology developed for content enrichment in the FoodShift Pathways program:

2.1 Design

The needs, interests, and knowledge levels of the students from 10 to 16 years old were understood, which allows customizing the contents according to their characteristics and requirements. From the beginning of the project, specific age ranges were established, such as 10 to 12 years old and 13 to 16 years old. The rationale for using these specific age ranges when creating the project's educational resources is based on the need to adapt the content, approach and teaching strategies to the developmental characteristics, interests, and abilities of students at those ages, in order to optimize their learning experience and promote effective educational progress. Below (see table), there are some concepts that were considered. These aspects were mentioned briefly during the face-to-face meeting in Stockholm. They are of vital importance to develop a more effective content strategy.

Table 1 - Educational Content Enrichment Strategy Design

Cognitive and Psychological Development: Children and adolescents go through stages of cognitive and psychological development that influence their ability to understand and assimilate information. The selected age ranges overlap with specific developmental stages, allowing resources to be tailored to the needs and abilities of students at those ages.
Content Differentiation: Girls, 10-12 year olds are typically in the middle stage of childhood, where they are developing more abstract and critical thinking skills. On the other hand, adolescents ages 13 to 16 are in early and middle adolescence, facing issues of identity and more abstract thinking. Educational resources can differ in complexity and depth to address these developmental differences.
Interests and Motivation: Students' interests and motivations vary by age. Educational resources designed for specific age ranges can incorporate topics and activities that resonate with the concerns and passions of students at those ages, which can increase their participation and engagement in learning.
Collaborative Learning: Girls, boys and adolescents often interact more with their peers in terms of learning. By grouping students based on these age ranges, it makes it easier to create activities and projects that encourage collaboration and sharing of ideas among peers of similar development.
Assessment and Feedback: Instructional resources can be designed to accommodate assessment styles appropriate for each age range. Assessment strategies should be consistent with students' cognitive and psychological development, ensuring effective and relevant feedback.

Educational Regulations: As we could see in the research developed in activity 2.2 Harmonization with European Policies of WP2 - State of the art and pedagogical design led by SUSMETRO, in many educational systems, curricula and standards are designed according to age groups. Creating resources that align with these standards ensures that students are exposed to concepts and skills appropriate for their level of education.

Preparation for Later Stages: Educational resources designed for students ages 13-16 can help prepare them for later educational and career stages, such as higher education or career choices. Resources can focus on developing research, critical thinking, and decision-making skills.

2.2 Educational goals

This subsection serves as an introduction and explanation of why it is necessary to consider objectives, progress measurement, active planning, and alignment to needs. These reasons are fundamental to begin the process by defining objectives, as they provide a clear direction and focus for the process, as well as help set concrete goals avoiding dispersion. Here are some key points where having well-defined objectives can be optimal:

Table 2 - Educational goals

Measuring progress: Objectives provide measurable criteria for evaluating the progress and success of the enrichment strategy. They allow progress to be tracked and the strategy to be adjusted if necessary to ensure that the desired results are being achieved.
Motivation: Clear objectives provide a sense of purpose and motivation for both educators and students. Knowing where they are going and what is expected to be achieved can increase engagement and enthusiasm in the educational process.
Alignment with needs and goals: Educational objectives help ensure that the enrichment strategy is aligned with the specific needs and goals of the students, the educational institution and the curriculum. This ensures that enrichment is relevant and beneficial.
Effective planning: Defining educational objectives aids in the effective planning of resources, time and activities needed to achieve enrichment. It facilitates the assignment of tasks and distribution of responsibilities in an organized manner.
Communication and collaboration: Clear educational objectives facilitate communication between members of the educational team, students, and other stakeholders. Everyone will understand what you are trying to achieve and can collaborate more effectively to reach those goals.

Evaluation and continuous improvement: Setting objectives allows for a more accurate assessment of the effectiveness of the enrichment strategy. If objectives are not being met, adjustments and improvements can be made to optimize results.
Customization and differentiation: Educational objectives allow the enrichment strategy to be tailored to the individual needs of students. This facilitates personalization and differentiation of learning to cater to diverse abilities and learning styles.

The use of the template designed by IAAC as part of activity 3.4 WP3 Content Enrichment Strategy - Training Framework (Interactive Videos and OLS has helped to clearly define the content enrichment objectives of each pilot.

2.2.1 Educational objectives of each partner

The learning objectives developed with each partner are detailed below:

Country	Denmark
Institution in charge of the research	MK

Pilots approach

Tomorrow's Cuisine is about bringing urban and rural areas together by enabling local food producers to deliver healthy food to canteens, soup kitchens and restaurants in Copenhagen. This practice creates new jobs and sustains life in rural and coastal areas. We visit the workshop and show what innovation and entrepreneurship look like in reality. The material is made for young chefs who will work in hotels, fancy restaurants, and cafeterias. A question to think about: How can you make sure the food you order is good for the environment? One should understand how it's made, stored, and packed. More often, it's better to choose an option of available food that comes from nearby places, like within 100 kilometers (Km0), as it helps reduce pollution.

The specific objectives to be achieved are:

- **Food sustainability awareness:** inform students about the importance of choosing food and cooking practices that are environmentally friendly and promote a more sustainable food system.
- **Knowledge of local and seasonal ingredients**: Fostering an understanding of the growing season for various foods and highlighting the relevance of using local ingredients to reduce the carbon footprint and support the local economy.
- **Reducing food waste:** Teach techniques to minimize food waste in the kitchen, i.e. using unconventional parts of ingredients and proper storage.
- **Efficient use of resources**: Show how to optimize water and energy use in the kitchen, through practices such as proper use of appliances, meal planning and waste management.
- **Exploring sustainable diets:** Introduce students to different sustainable dietary approaches, such as vegetarian, vegan, or flexitarian diets, and highlight their environmental benefits.
- **Sustainable cooking techniques**: Teach culinary methods that bring out the natural flavors of foods and avoid excessive use of processed ingredients, fats, and sugars.

- **Creating sustainable menus:** Guiding students in the creation of nutritionally balanced and sustainable menus, considering the variety of ingredients, seasonality, and preferences of diners.
- **Connecting with local producers:** Facilitate the relationship between students and local farmers and sustainable food suppliers, fostering collaboration and understanding of the food chain.
- **Critical skills development:** Empowering students to critically evaluate food and sustainability information, helping them make informed decisions in their future culinary careers.
- **Inspiration for innovation:** Stimulate students' creativity in the search for innovative culinary solutions that integrate sustainability, enriching gastronomy in a responsible way.
- **Cultural and ethical awareness:** Highlight how food sustainability is connected to cultural and ethical issues, encouraging appreciation and respect for local and global food traditions.

Country	Greece
Institution in charge of the research	EA

Pilots approach

Regional and healthy food for all or how to connect consumers directly with local producers? The Athens pilot shows how to connect the ordinary "citizen" with local producers. Among other things, it promotes the sale of plant-based foods, the region's gastronomic heritage and the local food economy. The workshops also work to increase general food knowledge and health awareness and prevent food waste. Scope of video production. The pilot project aims to develop the sustainability competencies of teachers and students, as well as increase their adherence to the Mediterranean diet. Its main activities encourage the adoption of a healthy eating lifestyle, while decreasing the environmental and economic impact of food production and processing.

The specific objectives to be achieved are:

- **Awareness of local food:** Fostering understanding and appreciation of local Greek foods, their diversity, nutritional benefits and connection to the country's culture and history.
- **Sustainability and respect for the environment**: To teach children the importance of choosing local and sustainable foods to reduce carbon footprint and protect the environment.
- **Connection to the local community**: Raise awareness about the importance of supporting local farmers and producers, which strengthens the local economy and fosters community.

- **Culinary skills:** Teach basic cooking skills that enable them to prepare and enjoy healthy and delicious local dishes.
- **Nutrition education:** Providing knowledge about a balanced diet, food groups and the importance of a varied and healthy diet.
- **Promotion of healthy eating habits**: Instilling the importance of a balanced diet and how it can positively affect their physical and mental well-being.
- **Appreciation of culinary tradition:** Promoting knowledge and appreciation of the rich Greek culinary tradition, including typical dishes and local recipes handed down from generation to generation.
- **Empowerment to make informed decisions:** Helping children develop skills to evaluate food quality and make informed decisions when shopping.
- **Empowerment**: Encouraging children to be actively involved in planning and preparing their meals increases confidence and sense of responsibility.
- **Integration with other subjects:** Integrate local and sustainable food concepts into other subjects, such as science, geography, and history, to promote interdisciplinary learning.
- **Creating educational materials**: Develop educational materials and visual resources that are appropriate for the age and level of understanding of the children.
- **Community involvement**: Involve parents, teachers, and community to create a holistic approach to promoting local and sustainable food.
- **Evaluation and follow-up**: Regularly evaluate the effectiveness of the workshops and adjust as needed to improve the outcomes and learning experience of the children.

Country	Netherlands
Institution in charge of the research	SUSMETRO

Pilots approach

Susmetro will introduce us to the use of the MFP tool, a digital map capable of showing us the ecological footprint of a given land use. This (digital) map shows the land use of 12 different food groups representing 90% of the food consumed. It calculates the amount of "local hectares" needed for each food group to produce enough food for the entire urban population of the area. By comparing the satellite geographic data (actual land use) with the population's food consumption data (necessary land use), show where there is a disproportion. Students can draw on the map to change land use towards the real needs of the urban diet and create a proposal for a new land use, as the map shows changes in land use immediately.

The specific objectives to be achieved are:

- **Environmental awareness**: Raise students' awareness of the importance of soil as a limited natural resource and its relationships.

- **Knowledge of different land uses:** Teach students about the different ways in which soils are used.
- **Understanding sustainable food**: explain sustainable food logics without compromising the needs of future generations.
- **Identifying sustainable practices**: Show student concrete examples of sustainable agricultural and food practices, such as organic farming, agroforestry, food waste reduction and responsible consumption.
- **Assessing environmental impacts:** Help students understand how certain land uses can have positive or negative impacts on the environment and how choosing sustainable practices can mitigate negative effects.
- **Encourage active participation**: Design interactive and participatory activities that motivate students to investigate and discuss issues related to soil and sustainable food.
- **Promote innovative solutions:** Stimulate creativity and critical thinking by exploring innovative ideas and solutions.
- **Connect with the community:** Facilitate learning through visits to local sustainable farms, community gardens or other projects related to sustainable food and agriculture.
- **Encourage respect for biodiversity:** Teach students about the importance of maintaining biodiversity in the soil and how this contributes to more resilient and sustainable agricultural systems.
- **Promote action and commitment:** Inspire students to take concrete steps in their daily lives to support food sustainability, such as adopting more conscious consumption habits and participating in local projects related to soil protection and promoting sustainable agricultural practices.

Country	Portugal
Institution in charge of the research	CV

Pilots approach

Consumers at the forefront. How can any citizen be aware of what is at stake, concerning environmental and health issues, as well as fairtrade conditions, when choosing the food to put on the plate? The pilot will work to promote food knowledge that in turn will promote conscious decisions in food consumption. The importance of sustainable methods of food production, of local and seasonal consumption, and of a plant-based diet will be among the topics to be approached in the video, with the participation of consumers, food producers and researchers. The dilemma is: Why should we have to search for food knowledge when we have such easy access to food anyway? The economic and social progress of the last decades has contributed to our detachment from nature and from the processes of food production, transformation, and distribution.

The specific objectives to be achieved are:

We encourage teachers and students to reflect on the origin of the food they consume, namely: Was the food we consume produced guaranteeing the conservation of the soil, water and the genetic resources of plants and animals? Were the techniques used environmentally non-degrading and economically and socially sustainable? Are the foods we consume seasonal, thus enhancing the nutritional characteristics and reducing the need for cold storage and the use of preservatives? Are the foods consumed locally or regionally sourced, thus reducing the carbon footprint and the need to use packaging? Are we avoiding processed or ultra-processed foods, giving priority to fresh or less-processed foods?

Country	Sweden
Institution in charge of the research	KI

Pilots approach

The video will be a tool to enable teachers to appreciate the impact of the food environment on dietary habits, in relation to health and sustainability. We want to inspire teachers to pass this knowledge on to their students and students to actively participate in this innovative educational process (i.e., provide data for science and become a scientist myself). We also hope that the video will get both students and teachers interested in what the food environment around them and their school is like, using the local food advertising environment as an example. We hope that they feel that the video gives them enough information and tools, so that they feel comfortable leading their own projects in their school, where they research and discuss these issues.

The specific objectives to be achieved are:

- **Junk food marketing awareness:** Students gain understanding of what junk food marketing is, how it is presented in different contexts (television, internet, billboards, etc.), and how it influences their food choices.
- **Identifying marketing tactics**: Help students recognize the tactics and strategies junk food companies use to attract consumers, such as the use of animated characters, promotional giveaways, and emotional messaging.
- **Development of critical thinking:** Encourage critical thinking so that students can question and analyze the content of junk food advertisements.
- **Understanding health effects:** Explain negative impacts that junk food can have on their physical and mental health in the short and long term.
- **Promoting healthy eating habits**: Motivate students to opt for healthier, balanced food choices rather than being influenced by junk food marketing.
- **Empowering marketing resistance**: Equip students with skills to resist the persuasion of junk food marketing and explain about their food choices.

- **Application in everyday life**: Help students to apply their knowledge to make more conscious and healthier food choices.
- **Raising awareness about advertising aimed at children**: Informing students about junk food companies' approach to children as a target audience and how this can influence their food preferences.
- **Consumer empowerment:** Empowering students to become critical and responsible consumers, able to make informed choices and resist the manipulative tactics of junk food marketing.
- **Fostering social change**: Inspire students to be change makers.

Country	Spain
Institution in charge of the research	IAAC

Pilots approach

To build a sustainable future, students need to understand and address food waste. This global issue involves tons of daily food waste, harming the environment and depleting resources. Teaching students to reduce food waste promotes individual responsibility and planet conservation awareness.

The specific objectives to be achieved are:

- **Food waste awareness**: Students will learn about the magnitude of the food waste problem, both locally and globally. They will understand that wasting food has a negative impact on the environment.
- **Valuing food:** Students will learn to value food and recognize its value regardless of its appearance. They will learn to appreciate the number of resources it takes to produce it.
- **Food chain literacy**: Students will learn about the food supply chain, from production to consumption. They will understand how food is grown, harvested, processed, distributed, and sold, and how each step can contribute to food waste.
- **Meal planning skills:** They will learn how to plan meals efficiently, considering the amount of food needed and avoiding overbuying. They may also learn to read and understand expiration dates, storage labels, and other cues to reduce food waste in the home.
- **Proper storage practices**: Students will learn how to store food properly to prolong its shelf life. They will learn about refrigeration, freezing and other food preservation techniques to prevent premature spoilage.
- **Creativity in the kitchen:** Students can learn how to use leftovers and food scraps in creative ways, avoiding waste. They can discover techniques to make the most of ingredients and reduce food waste in the kitchen.

- **Personal responsibility and action:** They will learn that everyone can take steps to reduce food waste in their daily lives. They can learn to be responsible when buying, cooking, and consuming food, and to encourage sustainable practices in their environment.
- **Different types of waste**: Students will learn to differentiate which food waste is avoidable and unavoidable.
- **Composting**: Students will learn how to select appropriate materials for compost, how to prepare compost, and how to use compost to improve soil quality and plant growth.
- **Manufacture of biomaterials from food waste**: Students will be able to explore the creative potential of food waste and the different biological materials used in the manufacture of biomaterials, as well as the importance of these as sustainable alternatives to traditional materials. They will understand how biomaterials can help reduce environmental impact and promote the conservation of natural resources.
- **Teamwork and social skills:** By participating in biomaterials manufacturing activities, students will have the opportunity to work in teams, collaborate with others and share ideas. This will help them develop social skills, such as effective communication, cooperation and group problem solving.
- **Social awareness:** Participating in food waste activities can help students develop empathy and social awareness. They can learn about inequality in access to food and the ways in which food waste affects the most vulnerable communities. This can motivate them to take action to address the problem in their community.

2.3 Analysis of existing contents

Information gathering and research play a pivotal role in developing a pedagogical content enrichment strategy. They offer valuable insights into the unique requirements of learners and the challenges they face. Through information gathering, we can pinpoint areas where content enhancements can be made to better cater to these needs.

2.3.1 Existing knowledge and tools of each partner

Tools can cover a wide range of educational areas and elements, such as knowledge, applications, software, platforms, digital resources, or even physical materials that have already been developed by partners in the past. A3.4 has made it possible to evaluate the existing pedagogical content. This process involved analyzing relevance, accuracy, timeliness, level of difficulty in relation to the learning objectives and its pedagogical potential in each partner context. Identifying deficiencies or areas for improvement in the existing content was fundamental to planning how to enrich it. The following subsection summarizes the scenarios for such contextualized content strategy upcoming implementation.

MK - Denmark

MK has conducted research to identify areas of cash improvements in the audiovisual issues of the project. In summary:

MK operates exclusively in the field of science communication in the form of film production and teaching at university level in visual science dissemination / communication. In recent years, they have collaborated with researchers within i.g. Biology, Biotechnology, Physics and Chemistry, as well as within humanities i.g. Theology, Philosophy and Social Sciences.

In this context, their expertise is in short to make complex scientific content accessible and applicable for students on different levels in primary and secondary schools.

EA - Greece

EA has conducted detailed research on transforming schools into agents of community well-being. In a nutshell:

EA's Research and Development Department, created in 1995, serves as a test bed for research applications in educational design, development, and implementation of educational research activities. It acts as a link between pedagogical research, technological innovation, and the school community. Its approach encompasses broad aspects, in particular the experience in EU projects has positioned EA as a leader in innovative educational approaches, e.g. The Accelerator Living Lab in the framework of FoodSHIFT2030, in which schools are seen as sites of food experience and food system transformation.

In this context, EA brings together school communities, researchers and innovation actors to address local challenges in social services in the context of SALL, by developing the dialogue between schools and food actor networks.

SUSMETRO - Netherlands

SUSMETRO has conducted detailed land use research, providing assessment tools, data management and innovative geo-design solutions for the improvement of metropolitan regions. In a nutshell:

Amid intensified global meat production and environmental concerns, farmers face challenges that impact welfare, ecology, and public perception. The Netherlands struggles with intensive livestock farming and emissions reduction, a situation mirrored in Germany, France and Denmark. In this context, SUSMETRO stands as a pioneering planning and research body, weaving sustainable designs for urban landscapes through circular economy principles. Rooted in evidence-based planning, multi-stakeholder solutions and transformative values, SUSMETRO extends its approach to food system sustainability. Collaborating with educational entities and participating in bioeconomy projects, SUSMETRO

champions circular ideals, nourishing landscapes and encourages healthy and sustainable changes in food systems. By partnering with networks such as 013Food and EU initiatives such as FEAST, SUSMETRO embodies the dynamic pursuit of greener urban regions and resilient food systems. More detail in the link available in CV ANNEX A.5, in section II of the individual report, "Section II, already existing tools, context".

In this context, SUSMETRO has been developing a tool that uses the average food consumption patterns of the urban population of a city in Europe to calculate the amount of land needed in terms of "local hectares" to produce these goods. The MFP (Metropolitan Footprint Planning) tool helps to understand how much agricultural land is needed to feed an urban population. A digital map shows land use for 12 food groups that account for 90% of consumption. By comparing satellite data with consumption data, it shows imbalances. Students can change the land use on the map and propose more sustainable uses. The tool also allows the creation of scenarios of healthy and sustainable diets. It facilitates discussion on land use and is interactive for enriching debate. New proposals can be saved and compared in different formats. Check more of these content in Appendix B "video 1" and in SUSMETRO's APPENDIX A.3, in section II of the individual report, "Section II, already existing tools, context".

Ciência Viva - Portugal

Ciência Viva has invested years in education, which has contributed to the creation of the Open Learning Scenarios of FoodSHIFT Pathways and enjoys close contact with science, culture and innovation in a rural context. In a nutshell:

Ciência Viva is the National Agency for Scientific and Technological Culture of Portugal, with more than 20 years promoting public awareness of science and technology, and science education, especially among young people. Initially part of the Ministry of Science and Technology, now as an association, it collaborates with public entities and research centers. Its approach encompasses science education in schools, public awareness, and a national network of science centers. Ciência Viva supports educational projects and internships in laboratories, organizes events such as the National Week of Science and Technology, and has a network of 21 science centers and 237 school clubs. It also stands out for its experience in more than 50 European projects and in innovative projects such as the Ciência Viva Science Farms, which combine traditional knowledge and advanced science to boost local development in a rural environment. For example, the Ciência Viva Farms are innovative spaces focused on agricultural production, which aim to promote the social and economic development of the local region in which they are deeply rooted.
More detail is in the link available in CV ANNEX A.5, in section II of the individual report, "Section II, already existing tools, context".

In this context, Ciência Viva has carefully selected a series of videos and designed didactic material with the objective of simplifying and clarifying sustainable food concepts for educators. These videos not only provide essential information, but also manage to capture teachers' attention and encourage deeper engagement with the subject matter. Each element addresses different aspects of sustainable food, from the food supply chain to conscious food choices and regulatory policy formulation. Check more of these content in Appendix B “List of Videos and Cards”.

KI - Sweden

The Karolinska Institute (KI) has for years studied food advertising in detail, which opened the door to discuss this topic for the first time (as previously stated content) in this project. In a nutshell:

Karolinska Institute's Impact research group is a vanguard in deciphering the dynamic between dietary habits, food environment, and public health, with two decades of specialized insight into childhood nutrition and obesity prevention. Pioneering digital tools for data collection and interventions, the group's Department of Biosciences and Nutrition has published over 20 influential papers on school-related dietary behaviors and their implications, playing a crucial role in shaping Swedish Public Health Institute's policy recommendations. Currently driving two significant National Swedish research projects funded by UNICEF Sweden, Hjärt-Lungfonden, and FORTE, the group is intently examining the influence of food marketing, especially on unhealthy foods, on children's health, across 20 schools in three Swedish cities, amplifying their network and commitment to enhancing the intersection of food, well-being, and young lives.
More details in the link available in KI ANNEX A.2, in section II of the individual report, "Section II - Already existing tools - Context".

In this context, KI has been developing tools that allow students to become citizen scientists and collect data about their local food environment. The data collected can then be shared with the school community, where it can be used to further educate students on the topic of healthy and sustainable food systems. Potentially these tools can support the pilot implementation locally, if applicable.

IAAC - Spain

Fab Lab Barcelona acts as a link between pedagogical research, technological innovation and the STEAM and Maker education community.

Its approach encompasses broad aspects, in particular its experience in EU projects has positioned it as a leader in innovative educational approaches. It counts on tools emerging in

the context of project such as Remix the School[1] which aimed at Implementing food recycling and upcycling principles at school. Remix el Barrio, a series of biomaterial videos[2] (see figure), a learning repository and Gitbook[3] of the SISCODE[4] project. And the Living Lab Food Tech 3.0 Accelerator in the framework of FoodSHIFT2030 demonstrates its commitment to the transformation of inclusive food tech[5] logic.

In this context, maker education was used to enrich the educational activities of the Foodshift pathways project. Focusing on a community-based pedagogical context and approaching sustainability from a holistic perspective, it integrates open design practices, operates within an ecosystem of participants and prioritizes equity and accessibility.

2.3.2 Relevant outcomes from previous project research

In this section, we are investigating where the main content materials from FoodShift Pathways comes from, as well as those that are shaping the videos and Open Learning Scenarios. These materials are the basis of what we call "Previous Research".

The findings presented served as the basis for the creation of the content enrichment strategy and represent a very concise version of the needs identified by SUSMETRO, which are the basis for the content strategy. Without these findings, it would be impossible to understand the needs of the teachers.

Useful conclusions from the needs analysis that served to create the content enrichment strategy:

- Teachers have limited knowledge about sustainability education and need more training and teaching resources.
- Lack of time, curricular overload, and lack of collaboration between teachers are barriers to the integration of Education for Sustainability.
- Teachers show a high level of motivation.

Useful conclusions from the analysis of the key characteristics of the sustainability competency:

- Curricular approaches vary between countries, some focus on general competencies, others on specific subjects.
- The lack of a universal structure in curricula makes it difficult to effectively integrate sustainability in education.

1 https://fablabbcn.org/projects/remix-the-school

2 https://www.youtube.com/playlist?list=PL33KKs9g8Y1K4MJGAUHpMZn-wMcbOVhnV

3 https://flbcn.gitbook.io/remix-el-barrio/ (in Spanish only)

4 http://siscodeproject.eu/

5 http://siscodeproject.eu/

- Gaps and barriers in content and methodology are identified.
- Lack of clear suggestions for the implementation and integration of FS in educational policies.
- Need for effective and tangible evaluation methods.
- Some competencies, such as "Critical thinking" and "Valuing the environment", are better represented than others.

Useful takeaways from the focus group by key categories:

A) Current snapshot of sustainable food education as seen by participants.

Challenges and opportunities in teaching sustainable food in classrooms:

- Transmission of knowledge is insufficient for changing eating behaviors.
- The term "sustainability" can create mental barriers.
- Students struggle to grasp the complexity of sustainability.
- Practical implementation of sustainability remains limited.
- Disparity between elite and disadvantaged schools:
- Sustainable food is often seen as a luxury in elite schools.
- Lack of resources in disadvantaged schools hinders sustainability.
- Evolution of the pedagogical approach to food:
- Shift from teaching the food pyramid to understanding food as a social act.
- Many teachers lack training in the food equity perspective.
- Negative attitudes towards diets like vegetarianism:
- Perceived as a minority practice leading to prejudice.
- Overabundance of unreliable information on the Internet.

B) Recommendations for the top management of educational centers, according to the perspective of the participants.

- Recognize teachers' essential needs in schools for improving education quality.
- Teachers need support and resources for effective work.
- Encourage teacher creativity and explore new pedagogical methods.
- Incorporate sustainability concepts across subjects and lessons.
- View sustainability as an integrating axis in education.
- School leadership plays a crucial role in fostering a sustainable environment.
- Engage in coherent projects involving the community and clear values.
- Implement changes systematically from top to bottom.
- Introduce vegetarian options and sustainable food in schools.
- Invest in teachers' professional development.
- Positive results are essential to motivate teachers in promoting sustainable education.

C) Recommendations on the pedagogical design and evaluation method, according to the perspective of the participants.

- Teachers in education face pedagogical design and evaluation needs for effective learning.
- Concrete assessment methods for sustainability content understanding are imperative.
- A clear framework is required for sustainability education with defined methods and expectations.
- Adequate resources are needed to support teachers in changing their methods.
- Non-formal education plays a crucial role in sustainability education.
- Focus on practical improvements like food reuse and understanding origins.
- Meaningfulness and functionality are essential in pedagogical design.
- Grounding knowledge before and after experimentation is crucial for critical thinking.
- Interdisciplinarity connects with social actors and resources for holistic understanding.
- Teaching competencies should go beyond food sustainability to life skills.
- Pedagogical approaches should be engaging for students from early stages.
- Education is a dynamic and transformative process.
- Teachers need support, resources, and methodologies to address changing societal needs.
- Interdisciplinarity, relevance, and experimentation create an empowering educational environment for a sustainable future.

D) Social and Political Aspects, according to the perspective of the participants.

- Teachers face fundamental needs for sustainable and integral education.
- Priority: Promoting a balance between global food and environmental sustainability.
- Beyond CO2 reduction, it's about social justice and food security for all.
- Involving traders as key actors in education is crucial.
- Close contact between academia, retailers, and the field for holistic understanding.
- Incorporate families and parents for a more comprehensive approach.
- Living labs foster inclusive and participatory education.
- Involvement of students, parents, politicians, and social agents.
- Connecting students to urban environments and challenges.
- Address students' real needs and problems for greater engagement.
- Goal: Form citizens who are aware, participatory, and committed to sustainability.

E) Recommendations on the production of the pedagogical videos and activities generated in the Foodshift Pathways project, according to the perspective of the participants.

- Educational videos are essential in teaching, offering visual and engaging knowledge transmission.
- Teacher feedback shows a consensus on optimizing educational impact.
- Videos enrich lessons, enhance engagement, and connect with experts outside the school.
- Collaboration between teachers and partners in content creation is crucial.
- Involving educational institutions like audio and video schools can enhance video quality.
- Local approach helps students connect with topics, promoting inclusivity.
- Videos should foster critical thinking and awareness of broader issues.
- Activities should include sections explaining how they are learned and their learning outcomes.
- Cultivating "learning to learn" skills is important for students' development.
- Consider legal and health aspects in video production, e.g., food banking and anemia prevention.
- Topics of interest include food symbols, global comparisons, and economic/social inequalities.
- Participants desire a direct point of contact for assistance and webinars for knowledge exchange.
- Adequate financial resources are vital for the success of initiatives.
- Collaboration among entities and individuals is essential for efficiency and effectiveness.
- Integration of the gender perspective is crucial for equal representation in videos.

2.4 New Content Development

The findings and investigations consolidated during the research process provided valuable and contextualized insights into the perceptions and needs of teachers and stakeholders in the current food system that will need to be further instigated in the phases of the project. The foreseen collaboration and emerging input from the teachers and stakeholders identified in the aforementioned chapter have significantly enriched the FoodSHIFT Pathways understanding of the challenges, opportunities and dynamics present. Practical resources are suggested as follows.

2.4.1 Exploring Food Sustainability

The creation of new educational materials is a complex process that involves planning, designing, adapting, and enriching content to meet the needs of different levels or audiences. To ensure consistency and alignment with established goals, we have worked in alignment with the educational objectives outlined in Chapter 2.2, 'Defining Educational Objectives'. These objectives provide the fundamental framework that guides our actions and decisions throughout the process.

We have also addressed the results obtained from the investigations detailed in Chapter 2.3.2 entitled 'Previous Investigations', which focused on the initial interaction with teachers and key stakeholders within the sustainable food system.

2.4.2 New Resources for Teachers and Students

This section provides first access information on the video tutorial for partners who are interested in utilizing Barcelona's case interactive video on their own countries. Later, there is offered information on the collaborative workshop with all partners.

2.4.2.1 Video

This video was designed to be completely localized during the implementation phase, with the possibility for partners and teachers to fully translate the provided storyboards and slides in Canva.

Video created by Fab Lab Barcelona with a Creative Commons CC BY license: All templates are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License

link: [Pathways Barcelona video instructions]

2.4.2.2 Collaborative Workshop

As part of the "Research and Compilation" process mentioned in Section 1 "Timeline of Activities", an opportunity arises to organize a collaborative workshop. The purpose of the workshop was to bring together ideas to improve the content in a more effective and cohesive manner. In short, the idea was for the consortium to work as a collaborative team focused on *refining* a collective content improvement strategy for the six partners involved in the project.

The workshop was held during our face-to-face meeting in Lisbon, Portugal, with representatives of the six countries. During the workshop, we had the opportunity to reflect on the preliminary analysis of teachers' needs, extracted from the focus groups and from the analyses previously developed by the SUSMETRO team (WP2). The result of this reflection was a condensed list of needs and challenges identified by teachers, which can be found in Annex A Image 3 "List of Challenges and Areas of Opportunity in the Educational Sphere". This list also has a glossary of definitions (which can be found in Annex A, Table 1), to ensure the unification of the different concepts shown in the list. This glossary was shared with the project partners who have reviewed and provided thoughtful feedback, which was then integrated and agreed upon. After unifying the knowledge about the needs of the teachers collectively, each partner individually proceeded to analyze each of the 10 activities (OLS) and the video developed previously, the objective was to detect if the resources designed met the needs expressed by the teachers. See the table below for a step-by-step presentation of the collaborative workshop.

Collaborative Workshop for the Design of Strategies for the Enrichment of Sustainability Pedagogical Contents

Description: the following workshop has been designed to effectively use the information obtained from the research conducted in WP2's state of the art, the pedagogical design, focus groups and alike.

Workshop objective: The objective to be achieved is to evaluate whether the educational content that we are developing within the framework of the project effectively covers the needs of the teachers, which were detected in the previous analyses by WP2 and the focus groups. Once possible improvements have been detected, a content enrichment strategy will be collaboratively designed, using the 60 available activities + 6 videos.
The specific objectives are:

- Promote the creation of the strategy collaboratively.
- Analyze teacher feedback.
- Identify areas of improvement

Materials Needed:

- Meeting space with projector and screen.
- Writing materials (paper, pens, whiteboards, etc.).
- Multimedia resources for examples (videos, images, etc.).
- List of Challenges and areas of opportunity in the educational Field (Annex A - Image 3 - List of Challenges and areas of opportunity in the educational Field).
- List of Open Learning Scenarios by country
- 6 sheets din A2 of the template "Content Enrichment Strategy". Annex A - Image 4 - List of Challenges and areas of opportunity in the educational Field).

Duration: 60 min - 90 min

Participants: 6 pilots, 7 people.

Workshop format: The workshop will be divided into several interactive sessions that will allow participants to analyze, discuss and propose improvements to existing educational activities and resources. Group work methods, discussions and practical exercises will be used.

Workshop agenda:

1. Intro (3') Presentation of the workshop objectives.
2. Activity (10') Introduction and setting in context (challenges / Focus Group)
3. Activity (10') Open learning scenarios (guide for teachers) / Video / Match between Video / OLS vs challenge list.
4. (10') Share detected challenges
5. Activity (15') Design of Pedagogical Strategies
6. Activity (10') Presentation and Feedback
7. Wrap-up (2') Reflection of the need of definition

By the end of the workshop, participants will have worked as a team to analyze and improve existing activities, visualizing how each activity contributes to overcoming educational challenges. The result is a detailed plan to improve and optimize the educational resource package based on input from all involved.

Results of the "Collaborative Workshop for the Design of Strategies for the Enrichment of Sustainability Pedagogical Contents".

In Annex A, Imagen 5 and Imagen 6, you can find the table of results reflected after the delivery of the workshop. In conclusion, the sixty Open Learning Activities developed by the six countries and the videos were analysed. They show a strong focus on meeting the needs identified by the teachers during the focus groups and pre-interviews. These activities address a wide range of key concepts to improve education and promote collaboration at multiple levels.

First, it is encouraging to see that over 80% of the activities focus on teacher training and implementation of teaching resources. This indicates a commitment to the professional development of educators and improving the quality of teaching. The integration of activities with educational curricular requirements and the presentation of interdisciplinary content is another area where these activities stand out. This demonstrates the intent to enrich the students' learning experience and foster a broader understanding of concepts.Over 60% of the activities involve civil associations and social actors, as well as food system actors. This demonstrates an effort to connect classroom learning to the real world and promote collaboration with the community.

However, it is also important to highlight areas where activities can be improved. Only 11% of the activities meet the need for hands-on activities involving political entities, suggesting an opportunity to strengthen the connection between education and political decision making.In addition, 17% of the activities that take into account the time needed for faculty to implement them could also benefit from additional attention to ensure that educator workloads are manageable.Collaboration with the health sector and school administration could also be increased, as only 22% and 24% of activities respectively address these areas.Finally, although 44% of the activities feature assessment methods, it may be beneficial to work on increasing this figure to ensure effective feedback and measure student progress.

In summary, the open learning activities developed by these six countries are a step in the right direction in addressing the needs identified by teachers. However, there is room for improvement in including practical activities with political entities, consideration of teacher time, collaboration with the health sector and school administration, and implementation of more robust assessment methods. Overall, these activities represent a solid commitment to educational improvement and community involvement.

Partners of the foodshift pathways project during the Collaborative Workshop for the Design of Strategies for Sustainability Pedagogical Content Enrichment.

2.4.2.3 Digital tools/Open Educational Resources

The term "OER", as defined by UNESCO, encompasses learning, teaching and research materials available in the public domain or published under open licenses that allow access, reuse, adaptation and redistribution by others. In the context of the FoodSHIFT Pathways project proposal, "Digital Resources/REA" refers to supplementary materials that accompany videos and assist users in their appropriate use. It is essential that these resources have open licenses that allow them to be shared freely.

As part of the content enrichment strategy, part of the process was dedicated to developing digital tools that would enrich the educational experience of the videos in each pilot. On the other hand, the Portuguese partner, Ciença Viva, has developed 60 OER's corresponding to each of the 60 Open learning scenarios that will be mentioned in the chapter "Creation of theoretical and practical activities".

Digital tools to enrich the pedagogical videos.

In the case of digital tools, IAAC included in the content enrichment strategy template a section dedicated to this type of tools, as described in Annex A, List of templates, Section II of the content enrichment strategy template.

The project foresees the use of 60 digital tools to enhance the videos produced. These tools will complement the OER and contribute to the success of the project.

Development of digital tools to enrich the pedagogical videos.

The Portuguese and Spanish partners have successfully compiled a list of 10 OER. This list, presented in Table 3 of Annex A, is subject to refinement during the implementation phase, and IAAC will provide support to the project partners in the "Pilot (development of user-generated open learning scenarios)" stage.

The Swedish and Dutch partners are currently in the identification phase of their respective OER. Opportunities for improvement and refinement are expected during the implementation stage.

The partners from Greece and Denmark are in the initial stages of identifying their OER and their progress continues.

The FoodSHIFT Pathways project has made significant progress in the development of AERs, with some partners making more progress than others. The process of identifying, refining and coordinating OER is an ongoing effort, and the commitment of all partners remains crucial to the ultimate success of the project. With IAAC's support, the project is well positioned to meet its objectives and ensure the effective use of digital resources for the benefit of all stakeholders.

2.4.3 Creation of an introductory package for the teaching staff

Within the content enrichment strategy, the creation of an introductory information package is a cornerstone of the project. This package seeks to support teachers by providing them with the essential knowledge of each of the topics and facilitating their implementation in the classroom. The package contains:

Introductory Readings: The package consists of a series of readings as an introduction to each of the 6 topics developed in the project. These readings provide a solid foundation for understanding the essential concepts surrounding food production and its influence on our daily lives. By providing an overview of the challenges and opportunities in this area, it prepares educators and students to dive into deeper learning. In appendix "A" you can find within the templates of each partner these introductory readings specifically in "Task 3.4" per pilot.

Sources of additional information: To create the project resources, reliable and updated sources were researched for relevant information, books, academic articles, videos, etc. This research helped to add valuable and accurate information to the contents, which can be included in the information package that will be given to teachers.

Research Entities: that are part of the feeding system.

Interactive Webinars: The delivery of webinars enriches the educational experience by allowing direct interaction with subject matter experts. These webinars will provide the opportunity to collectively learn, ask questions, participate in discussions and delve deeper into each of the specific project topics.

Detailed Training Guides: The training guides will act as detailed road maps that break down complex concepts into practical steps. By providing clear instructions and concrete examples, the guides help educators design effective lessons and students apply knowledge in meaningful ways. These guides are essential to ensure that learning is not only theoretical, but also applicable in real-world situations.

Tools for Teachers: The tool kit designed specifically for teachers is an invaluable resource. It will include multimedia resources (6 interactive videos), classroom activities, assessments, and case studies. By offering ready-to-use materials, the toolkit reduces educators' workload and promotes coherent and effective teaching at all levels of education.

In short, this comprehensive set of educational resources covers a full range of topics related to food production and consumption. From understanding how food choices affect our health to recognizing how marketing can influence our purchasing decisions, and from addressing food waste to adopting a circularity mindset in the food chain.

Creation of theoretical and practical activities

It is imperative to find innovative solutions that ensure the integration of abstract concepts on the sustainability of our current food system in the classroom. In this context, the FoodShift Pathways project focuses on the creation and development of ten theoretical and practical activities (Open Learning Scenarios) by each of the participating countries. Each activity aims to address different aspects of food sustainability, from local agricultural production, responsible land use, analysis of supply chains to awareness of the influence of marketing on our food and responsible consumption. The diversity of approaches and perspectives brought by the six countries involved in the project ensures an enriching exchange of knowledge and best practices at a global level. Each country brings its own experience and cultural context, resulting in a wide range of creative and adaptable solutions for different environments. In Annex A image 2 you will find the structure designed for the Open Learning scenarios. We mention some benefits of the OLS structure when designed as hands-on activities:

First, they cultivate and strengthen essential skills, allowing participants not only to acquire theoretical knowledge, but also to apply it in a practical way in the search for effective sustainable solutions. In addition, the target audience must be clear as the material provided is designed to be taught in two broad age blocks according to teaching needs (10 to 12 years old and 13 to 16 years old). Finally, the structure proposed in the OLS facilitates the pedagogical design suggested by the teachers:

THE ISSUE: It provides initial information that substantiates the topic to be addressed and uses this information to create a debate among students, thus creating the basis for the development of the ability to question assumptions, analyze data and objectively evaluate

the proposed sustainability strategies. In this way, the need for substantiation mentioned by the teachers in the focus group is covered.

INTO THE COMMUNITY: First, it promotes the use of the knowledge acquired and the conclusions resulting from the debate to be put into practice in the immediate environment, involving the social actors related to the problem, in this way they can corroborate that the hypotheses suggested in the classroom exist in the real environment and in this way the students begin to formulate possible solutions. Next, it fosters systems thinking by facilitating the understanding of the interconnections between ecological, social and economic elements, promoting the identification of holistic solutions rather than fragmented approaches. Finally, it fosters interdisciplinary collaboration as it promotes effective cooperation between individuals with different backgrounds and perspectives, with the goal of addressing sustainability challenges from multiple angles.

THE CO-CREATION PROCESS: Encourages sustainable innovation by stimulating creativity and the generation of ideas to develop products and/or services that minimize their ecological footprint and maximize their contribution to society.

THE (SUGGESTED) SOLUTION: Promotes ethical decision making informed by environmental and social considerations and encourages individual and collective responsibility towards a sustainable future with actions aimed at the disclosure of the results obtained throughout the development of the activity.

To be considered for improvement, according to the perception of the teachers extracted from the focus groups, some points are important clarifications for the improved content strategy:

- The purpose of the hands-on activities should be to enhance and develop a set of fundamental sustainability-oriented skills, i.e., it should be cross-cutting, rather than focusing only on sustainability-related competencies.
- As participants engage in these activities, they are expected to strengthen essential skills in key areas to address the environmental and social challenges of our time, but no evaluation method is proposed to measure progress and propose improvements.
- Include tools for life cycle analysis to enable participants to assess the environmental impact of products and processes throughout their life cycle, from the extraction of raw materials to final disposal.

In conclusion, as an observation on the design process of the pedagogical tool, it is worth mentioning that the teachers' perspective has not been included in the initial design/creation phase of the videos and OLS, however, it would be very beneficial for the success of the pedagogical tool and to maximize its impact on student learning, to have the experience and knowledge of teachers who are in the front of the classroom to enrich these contents. Their perspectives can provide valuable insights on how to make the tool more practical and effective in the real educational environment. In addition, their participation could help

anticipate potential challenges and ensure that the tool is aligned with educational needs and objectives. Based on the above, it is suggested to consider organizing feedback or consultation sessions with teachers, where they can share their ideas and concerns about the design of the tool specifically (OLS + Videos) and be prepared for possible modifications to existing materials. This would not only strengthen the quality of the final product, but also demonstrate a genuine commitment to continuous improvement and team collaboration.

Final considerations

On the road to constant improvement of the pedagogical content enrichment strategy, it is imperative to highlight the relevance of collaboration and strong commitment among the different actors involved, including partners and task leaders. A concrete proposal that promises to generate significant impact is the implementation of the collaborative workshop, as detailed in session 2.4.1.1 entitled "New Resources for Teachers and Students". The execution of this workshop undoubtedly emerges as an essential catalyst for progress and success during the design and implementation phase of this innovative strategy. It is essential to recognize that the pedagogical design is in its early stages of development, which, in itself, is a limiting aspect to be considered. However, despite this limitation, the strategy is based on clear objectives and effective collaboration among the Foodshift Pathways project partners.

On the other hand, it is crucial to address the lack of understanding of sustainability and disparities in education head-on. To this end, the inclusion of sustainability as a central and cross-cutting theme within the pedagogical content enrichment strategy is strongly recommended, while promoting and encouraging the involvement of school administration. The content itself should serve as a support for educators, fostering collaboration between various communities and stakeholders (such as the health and political sectors, for example, something forgotten in the pedagogical contents, according to the teachers' perspective) without forgetting the integration of these pedagogical activities in accordance with the educational curricular requirements and the presentation of interdisciplinary contents. Ultimately, the conclusions drawn from the analyses and approaches presented emphasize the need to adopt an interdisciplinary and flexible approach to teaching Sustainable Food Systems (SFS). Continuous teacher training and the provision of adequate resources and teaching tools emerge as essential factors for effective education in this field. At this point it is encouraging to see that more than 80% of the OERs developed under the FoodShift Pathways project focus on teacher training and the implementation of teaching resources. However, there is still much to be explored in terms of evaluation methods, and it is recommended that this section be explored in greater depth to ensure effective feedback and measure student progress. Intersectoral collaboration, citizen participation and preparation of future generations become vital foundations for addressing environmental and social challenges. The integration of sustainability into the fabric of the education system must be comprehensive, adapting to local needs and realities, while placing an undeniable emphasis on equity and food justice. The strategy outlined in FoodShift Pathways, with its structured and systematic approach to improving educational content, through the active involvement of partners and teachers in a collaborative process, presents a clear path towards educational transformation. In this context, constant analysis and ongoing validation stand as pillars to ensure the relevance and quality of the educational materials developed.

ANNEX A List of Resources

Miro Pathway Toolkit:

The FoodSHIFT Pathways Toolkit can be accessed by using this link here. From the implementation phase, the Miro can function to support each partner to keep improving their interactive tools in the collective Toolkit.

List of Images

Image 1 .- Breakdown of the schedule of activities in A3.4

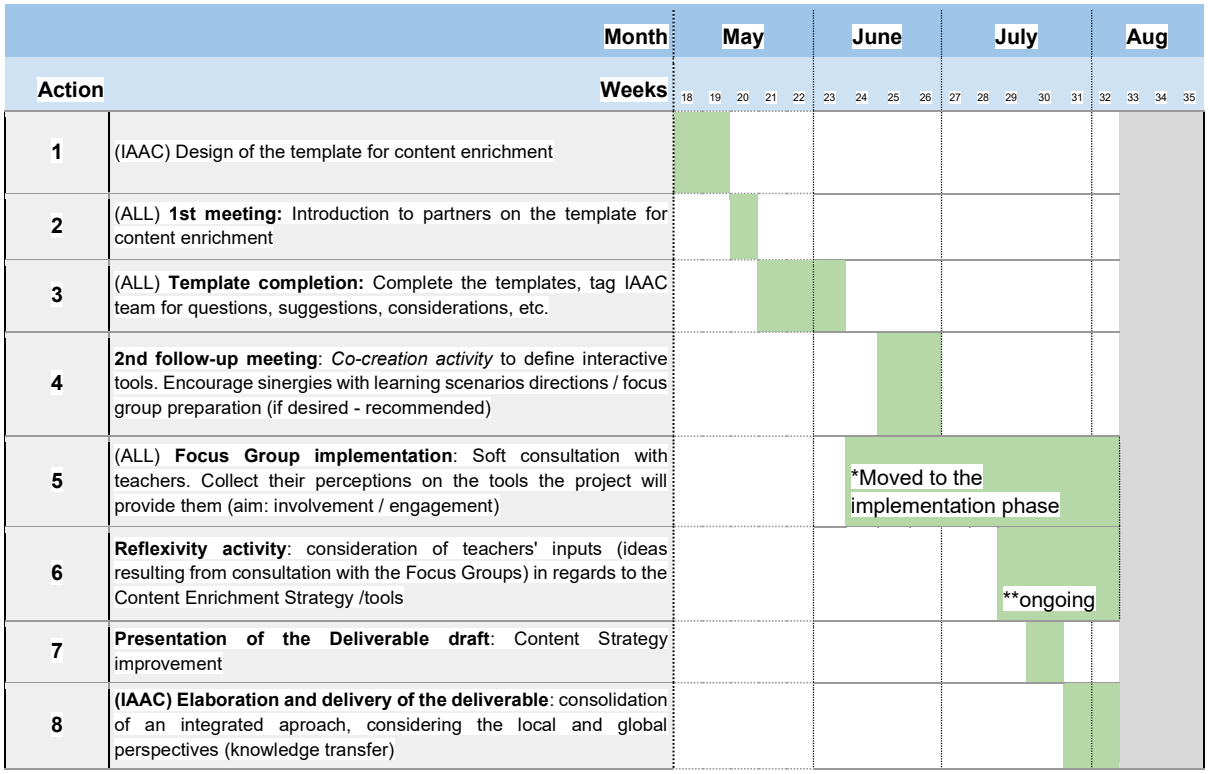


Image 2 .- Template Structure of the open learning scenarios [by Ciência Viva].

that they find in the area

7. Take your students around the school to explore the food advertisements with the defined methodology.

THE CO-CREATION PROCESS

8. Back in the classroom, download the pictures and other information gathered by the students into a common online platform, allowing access for all students.
9. Discuss with students which societal actors can help them to reflect on the nutritional value of the food which is being advertised around school.
10. Help student to invite the identified societal actors (eg. physicians/nutritionists, families, members of the school community) for a co-creation event where they will analyse the advertisements, discuss the nutritional value of the food advertised and compare it with dietary requirements.
11. Organize the co-creation event to take place in the school space, guaranteeing it is an informal moment where the students have the same voice as any other participant.
12. During the co-creation event, discuss possible solutions to draw attention to the food that is being advertised around school.

THE (SUGGESTED) SOLUTION

13. One solution to the problem is to develop an awareness campaign about the type of food that is being advertised and to which students are exposed on a daily basis.
14. A prototype for this solution can be a digital infographics with the main findings of the food advertisements around school.
15. Help students developing the infographics and test it with representatives of the target audience - families, school community, local authorities - to find out if the prototype needs to be changed or improved (eg. more data, more visual support, etc.).
16. After developing the final version of the infographics, share it with the families and the rest of the school community.
17. If possible, take your students (or class representatives) to a Town Hall meeting to share the infographics with the local authorities.

AGE RANGE
13-16 years old

SUBJECTS
Citizenship / Civic participation

TOPICS
Citizenship / Civic participation:
Sustainable development

SETUP
Part of the activity will be developed outside school, around school premises, and other part inside school. During the activity, students will work side by side with their families and physicians or nutritionists. Ideally, students should share their findings in a Town Hall meeting.

MATERIALS
- Camera or cell phone
- Registration form (with columns to register information about each advertisement; e.g., the name of the company, the food advertised and its characteristics)
- Stationery to be used in the co-creation event

FOODSHIFT Pathways

Co-funded by the European Union

FOODSHIFT Pathways

RAISING AWARENESS ABOUT FOOD ADVERTISEMENT

INTRODUCTION

Food advertisements are all around us: on television, on websites and social media and on the streets...What about the school surroundings?

Do students notice the food advertisements that are present around their school? What kind of food advertisements are present and what type of food do they advertise?

In this Open Learning Scenario, students are going to explore food advertisements around school and discuss with societal actors the nutritional value of the food.

THE ISSUE

1. Watch the video "Food advertisements" with your students.
2. Ask your students which are the issues being addressed in the video.
3. Ask your students if they ever noticed any food advertisement on their way to school and around their school.
4. Discuss with your students the perception they have about the nutritional value of the foods that are advertised.
5. Tell your students that they are going to explore the food advertisements that are present around their school.

INTO THE COMMUNITY

6. Discuss with your students the best methodology to explore the food advertisements around the school. One possible methodology would be:
   - Divide students into groups
   - Define an area around school (e.g. within a radius of 50 m)
   - Allocate to each group a sub-area within the defined area
   - Ask each group of students to photograph each advertisement

AIMS
- To draw attention to the food advertisements present around the school
- To explore and evaluate what type of foods are advertised around the school
- To work together with societal actors in the analysis of the food advertisements
- To raise awareness among the school community and local authorities on the type of food advertised around the school

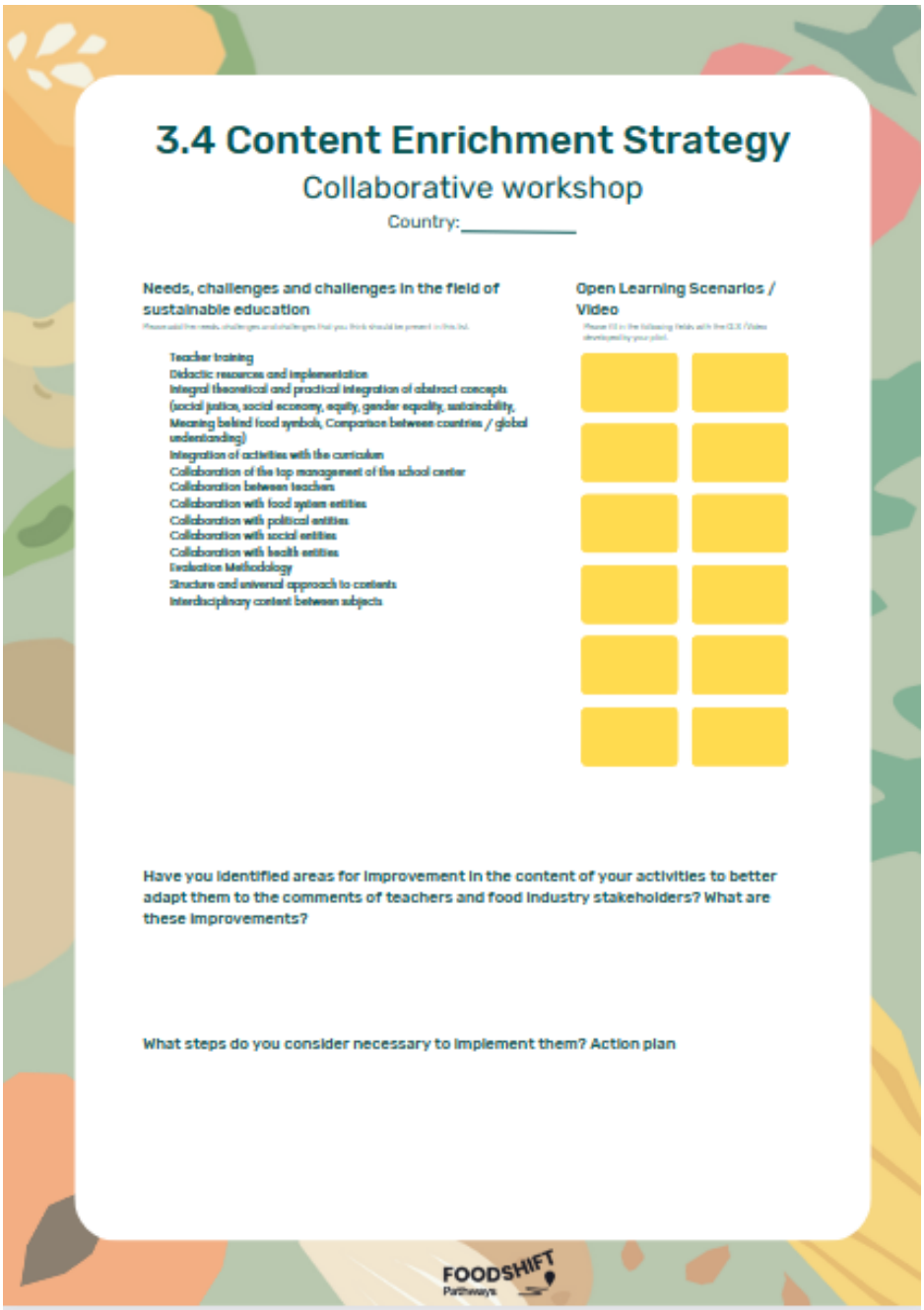
SUSTAINABILITY COMPETENCES
- Critical thinking
- Developing creative solutions

SOCIETAL ACTORS
- Physicians/nutritionists
- Families
- School community
- Local authorities

KEYWORDS
Food advertisements, food choices, marketing, nutritional requirements

Image 3.- List of Challenges and areas of opportunity in the educational Field. *Source: Condensation of the information obtained in the WP2 research, in addition to the information obtained to date in the development of the Focus groups.*

Image 4.- Template "Content Enrichment Strategy"



3.4 Content Enrichment Strategy

Collaborative workshop

Country:_____

Needs, challenges and challenges in the field of sustainable education

Teacher training
Didactic resources and implementation
Integral theoretical and practical integration of abstract concepts (social justice, social economy, equity, gender equality, sustainability, Meaning behind food symbols, Comparison between countries / global understanding)
Integration of activities with the curriculum
Collaboration of the top management of the school center
Collaboration between teachers
Collaboration with food system entities
Collaboration with political entities
Collaboration with social entities
Collaboration with health entities
Evaluation Methodology
Structure and universal approach to contents
Interdisciplinary content between subjects

Open Learning Scenarios / Video

Have you identified areas for improvement in the content of your activities to better adapt them to the comments of teachers and food industry stakeholders? What are these improvements?

What steps do you consider necessary to implement them? Action plan

FOODSHIFT Pathways

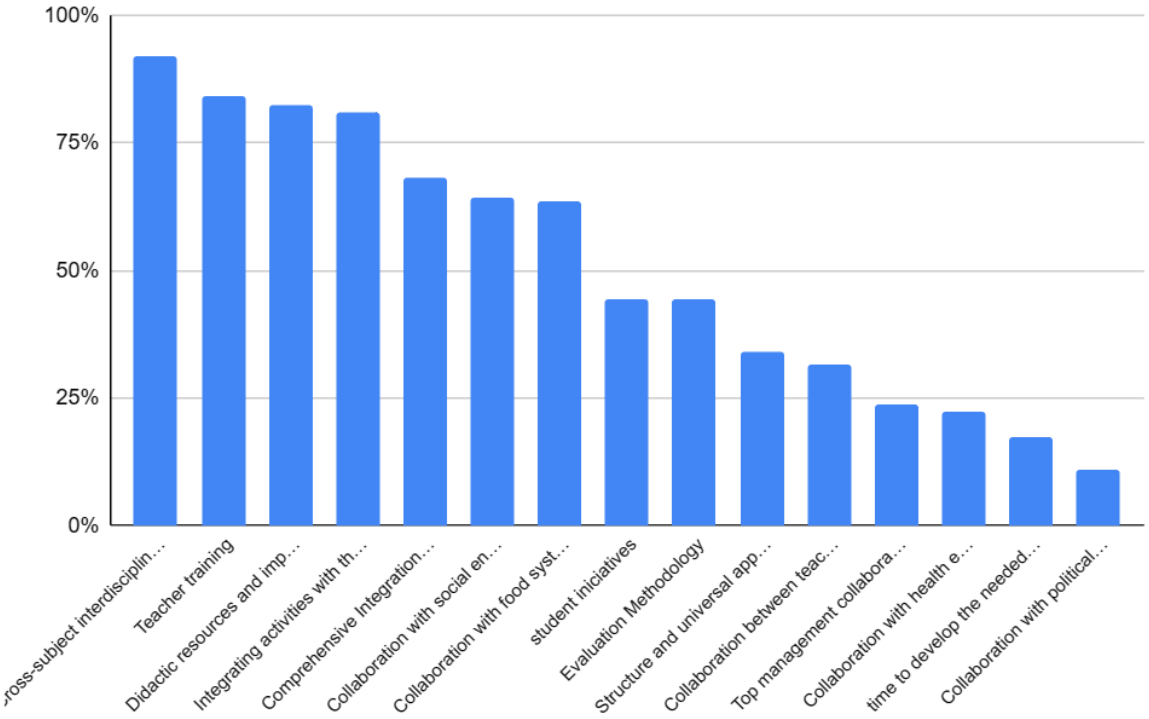
Image 5 - Table of results reflected after the delivery of the workshop "Collaborative Workshop for the Design of Strategies for the Enrichment of Sustainability Pedagogical Contents".

	Teacher training	Didactic resources and implementation	Comprehensive Integration of Theoretical and Practical Abstract Concepts	Integrating activities with the curriculum	Top management collaboration	Collaboration between teachers	Collaboration with food system entities	Collaboration with political entities	Collaboration with social entities	Collaboration with health entities	Evaluation Methodology	Structure and universal approach to contents	Cross-subject interdisciplinary content	time to develop the needed activities	student iniciatives
Video	1	1	1	0	0	0	1	1	1	0	1	0.5	1	0	0
DIGITAL TOOLS FOR EXPLORING LAND USE	1	1	1	0	0	0	1	1	1	0	1	0	1	0	0
SUSTAINABLE LAND USE FOR AGRICULTURE	1	1	1	0	0	0	1	0	1	0	1	0	1	0	0
EXPLORING ANIMAL VS PLANT-BASED DIETS	1	1	1	0	1	0	1	0	1	1	1	0	1	0	0.5
LAND USE FOR FOOD PRODUCTION	1	1	1	0	0	0	1	1	1	0	1	0	1	0	0
EXPLORING PLANT-BASED FOODS	1	1	1	0	1	0	1	0	1	1	1	0	1	0	1
SCHOOL FOOD GARDEN	1	1	1	0	0	0	1	0	1	0	1	0	1	0	1
A CLASS COOK BOOK	1	1	1	0	0	0	1	0	0.5	1	1	0	1	0	1
DIGITAL TOOLS FOR AGRICULTURE	1	1	1	0	1	0	1	1	1	0	1	0	1	0	0
	1	1	1	0	1	0	1	0	1	1	1	0	1	0	0
MEATLESS MONDAY	1	1	1	0	1	0	1	0	1	1	1	0	1	0	0.5
Video	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0
RAISING AWARENESS ABOUT DIGITAL FOOD	1	1	1	1	0	1	0	0	1	1	1	0	1	1	0
EXPLORING SUPERMARKET STRATEGIES TO	1	1	1	1	0	1	1	0	0	0	1	0	1	1	0
FOOD ADVERTISEMENTS ACROSS DIFFERENT	1	1	0	1	0	1	0	1	1	0	0	0	0	1	0
CRITICALLY EXPLORING SUPERMARKET	1	1	0	1	0	1	1	0	1	0	1	0	1	1	0
RAISING AWARENESS ABOUT FOOD	1	1	0	1	0	1	0	1	1	1	1	0	0	1	0
FOOD ADVERTISEMENTS ON SOCIAL MEDIA	0	1	1	1	0	0	0	0	1	0	1	0	1	1	0
EXPLORING SUPERMARKET STRATEGIES TO	0	1	1	1	0	1	1	0	0	0	1	0	1	1	0
FOOD ADVERTISEMENT IN DIFFERENT	0	1	0	1	0	1	0	0	0	1	0	0	0	1	0
EXPLORING SUPERMARKET CIRCULARS (simple)	0	1	0	1	0	1	1	0	1	0	0	0	1	1	0
FOOD ADVERTISEMENT AROUND US (simple)	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0
GO LOCAL	0.5	1	1	1	0	0	1	0	1	0	0	1	1	0	1
EAT LOCAL	0.5	1	1	1	0	0	1	0	1	0	0	1	1	0	1
TRY MEDITERRANEAN...LET'S EATTOGETHER!	0.5	1	1	1	1	0	0	0	1	1	0	1	1	0	1
SAY YES TO SEASONAL FOOD!	0.5	1	1	1	0	0	1	0	1	1	0	1	1	0	1
GREENER PLATES FOR THE FUTURE	0.5	1	1	1	0	0	1	0	1	1	0	1	1	0	1
BLIND TASTING CONTEST!	0.5	1	1	1	1	0	1	0	1	0	0	1	1	0	1
2 M2FULL OF BIODIVERSITY	0.5	1	1	1	0	0	1	0	1	0	0	1	1	0	1
THE PLANTS WE (DO NOT) EAT	0.5	1	1	1	1	0	1	0	1	0	0	1	1	0	1
REGIONAL PRODUCTS-A TASTY WAY TOWARDS	0.5	1	1	1	1	0	1	0	1	0	0	1	1	0	1
TOWARDS THE OPINION OF YOUR COMMUNITY!	0.5	1	1	1	1	0	1	0	1	0	0	1	1	0	1
COOKING WITH MYRTIS	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
POLLINATION (BEES)	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
OLIVE OIL	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
TRADICIONAL RECIPES (COOK BOOK)	1	0	0	1	0	0	0	0	0	0	1	0	1	0	1
MEDITERRANEAN DIET PYRAMID	1	0	0	1	0	0	0	0	0	1	1	0	1	0	0
SOCIOCULTURAL DIMENTION OF FOOD	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
HONEY	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
BY PRODUCTS (soap from olive oil residues)	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
BENEFITS	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
LINKAGE WITH HISTORY	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0
THE IMPACT OF FOOD TRANSPORTATION	1	1	1	1	0	0	1	0	0	0	0	0	1	0	0
ORGANIC PRODUCTS: WHERE ARE YOU?	1	1	0	1	0	0	1	0	0	0	0	0	1	0	1
TO EAT OR NOT TO EAT ORGANIC?	1	1	1	1	0	0	1	0	0	0	0	0	1	0	0
FROM GOOD FOOD TO GREAT HEALTH!	1	1	0	1	0	0	0	0	0	1	0	0	1	0	0
WHAT IS INVOLVED IN FOOD TRANSPORTATION?	1	1	0	1	0	0	0	1	0	0	0	0	1	0	0
ANIMAL WELFARE IN MEAT PRODUCTION	1	1	1	1	0	0	1	0	0	0	0	0	1	0	0
MEATLESS MONDAY	1	1	1	1	0	0	1	0	1	0	0	0	1	0	0
GASTRONOMIC WEEK	1	1	1	1	0	0	0	0	1	1	0	0	1	0	1
ZERO WASTE WITH A REAL IMPACT!	1	1	1	1	0	0	0	0	1	0	0	0	1	0	1
PLANT BASED MEALS ON TRIAL	1	1	1	1	0	0	1	0	1	0	0	0	1	0	0
Video	1	1	1	1	0	0	1	0	1	0	0	1	1		
THE HERO OF ZERO WASTE	1	1	1	1	0	1	0	0	0	0	0	1	1	0	1
IMPERFECT FOOD: BEAUTY IN DIVERSITY	1	1	1	1	0	1	1	0	0	0	0	1	1	0	1
ECO HEROES IN TRAINING: THE COMPOST CREW!	1	1	1	1	0	1	1	0	1	0	0	1	1	0	1
BIO WIZARD LAB: BECOME A WIZARD OF NATURE	1	1	1	1	0	1	1	0	1	0	0	1	1	0	1
ECO CLEANERS: TAKE CARE OF THE PLANET	1	1	1	1	0	1	1	0	1	0	0	1	1	0	1
FOOD WASTE AWARENESS CAMPAIGN	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1
EMBRACING THE IMPERFECT FOOD	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1
WORMS TO COMBAT FOOD WASTE (WE NOURISH	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1
MAKING WITH BIOMATERIALS	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1
MAKE CANDLES REUSING KITCHEN OIL	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1
Total	53	52	43	51	15	20	40	7	40.5	14	28	21.5	58	11	28
%	84%	83%	68%	81%	24%	32%	63%	11%	64%	22%	44%	34%	92%	17%	44%

How do you understand this picture?

In the columns, *challenges* (line one) were sorted into three groups: 1 for "present," 0.5 for "possibly included," and 0 for "absent." The partners themselves decided which group each challenge belonged to during the workshop. IAAC made a few updates afterwards, like 1) adding labels to activities that were missing for MK. And 2) classifying challenges related to "cross-subject" and "interdisciplinary content" missing for CV. Both MK and CV are invited to calibrate their answers prior to the final submission of this report.

Image 6 - Chart of results reflected after the delivery of the workshop "Collaborative Workshop for the Design of Strategies for the Enrichment of Sustainability Pedagogical Contents".



List of Videos and Cards

Video 1.- MFP Tool [SUSMETRO selection]

Source:[WRO FAL – warsztaty w ramach projektu FoodSHIFT2030 UPWr]

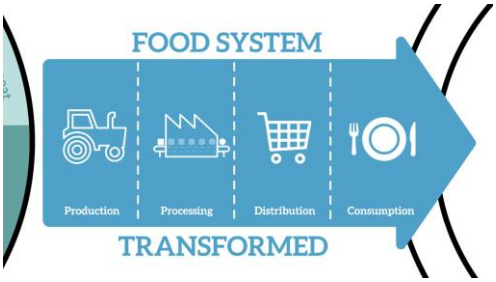
Video 2 .- Making better policies for food systems [Ciência Viva selection]

Food systems around the world face a daunting triple challenge: ensuring food security and nutrition for a growing population, supporting the livelihoods of hundreds of millions of farmers and others in the food chain, and doing so in an environmentally sustainable way. Food systems are currently a long way off from meeting those challenges. For this reason, the United Nations is convening a Food Systems Summit in 2021. Better policies are urgently needed. Learn more here.

Source: OECD Trade and Agriculture https://youtu.be/poaxeoVVwMs

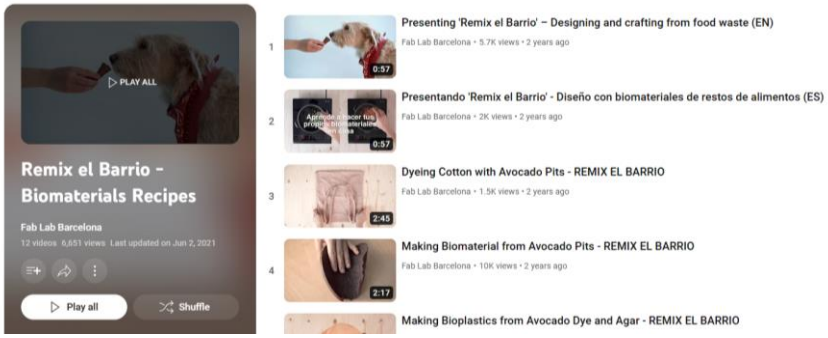
Video 3.-Why to change our food system? [Ciência Viva selection]

Every day you have to eat, just like the other 7.2 billion people on the planet. By 2050, at least 2 billion more people will join you. In this short video we explore the reasons why we need to transform the way we eat and consume our food. Ciencia Viva have used this video when developing teacher training actions on the theme of sustainability of food systems



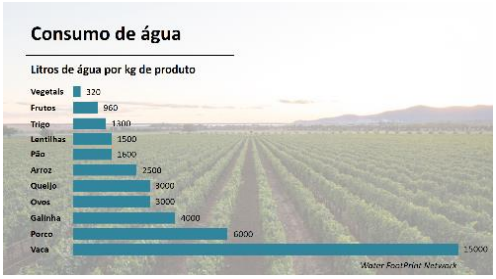
Source: UN Environmental Programme www.youtube.com/watch?v=VcL3BQeteCc
Ciência Vida used this video when developing teacher training actions on the theme of sustainability of food systems

Video 4.- Repository of Food Waste recipies.



Source: Remix el Barrio' was created during the SISCODE project which has received funding from the European Union's Horizon 2020 under grant agreement No 788217 Presenting 'Remix el Barrio' – Designing and crafting from food waste (EN)

Card 1.- Water consumption per kg of food [Ciência Viva selection]



Source: Adapted from Water FootPrint Network Ciencia viva have created and used this graphic when developing teacher training actions on the theme of sustainability of food systems.

Card 2.- Transportation of goods [Ciência Viva selection]

Source: Adapted from https://timeforchange.org/ Ciencia Viva have created and used this graphic when developing teacher training actions on the theme of sustainability of food systems to demonstrate the CO2 emissions per ton of goods per km.

List of Tables

Table 1: Glossary of concepts from the "Collaborative Workshop for the Design of Strategies for the Enrichment of Sustainability Pedagogical Contents".

Teacher training: refers to the process of preparing individuals to become effective educators. This training typically includes a combination of academic coursework, practical teaching experience, and pedagogical methods to equip with the skills, knowledge, and strategies necessary to teach and support students in various educational settings about sustainable food.
Example: Instructions Book, webinars, selection of information on the web, etc.
Didactic resources and implementation: refer to tools and materials used for teaching and learning, while implementation pertains to how these resources are effectively utilized in educational settings to facilitate meaningful instruction. Example: Video, OLS, etc.
Comprehensive Integration of Theoretical and Practical Abstract Concepts: se refiere a la incorporación holística de elementos teóricos y prácticos para aplicar eficazmente ideas complejas y abstractas en escenarios del mundo real. Ejemplo: Visitas, Talleres, Exposiciones… Palabras clave: (justicia social, economía social, equidad, igualdad de género, sostenibilidad, significado detrás de los símbolos alimentarios, comparación entre países / comprensión global)
Integrating activities with the curriculum: refers to aligning extracurricular or real-world experiences with educational objectives and core curricular competencies, enhancing learning by connecting theory and practice for a holistic education and also providing methods of examination and measuring results.

Top management collaboration: refers to cohesive teamwork among school leaders and administrators to make strategic decisions, foster innovation, and ensure the overall success and growth of the institution.
Collaboration between teachers: refers to the active and coordinated effort among educators to share ideas, resources, and strategies in order to enhance student learning, foster professional growth, and improve overall educational outcomes. Example: organization of activities between different schools or institutions.
Collaboration with food system entities: refers to partnerships and cooperation between various food industry stakeholders, such as farmers, distributors and policy makers and schools, to create educational activities together with the idea of motivating students to improve food production, distribution and sustainability.
Collaboration with political entities: refers to cooperative efforts between individuals, organizations, or groups and government bodies to achieve shared goals, influence policy, or address societal issues through strategic partnership and engagement. Example: organization of activities with the city council, etc.
Collaboration with social entities: refers to joint work between educational institutions and organizations, groups or individuals in the public or non-profit sector to address social issues, promote community well-being and achieve common goals." Example: activities between educational centers and neighborhood associations, non-profit associations, etc,
Collaboration with health entities: involves partnering schools with organizations, professionals and medical institutions to create joint activities that introduce students to the concepts of health and nutrition. Example: Public health agency, hospitals, etc.
Evaluation Methodology: of the food system educational activities" refers to assessing the effectiveness and impact of programs that teach about food systems, ensuring they promote sustainability, health, and understanding in an integral way. Example: impact evaluation
Structure and universal approach to contents: This phrase emphasizes the importance of creating a systematic and universally applicable framework for educating people about sustainable food systems, promoting long-term environmental and social well-being.
Example: We could create a clustered list of each of the needs in the list and map it to the 60 OLS using this list on the web.
Cross-subject interdisciplinary content refers to the integration of sustainable food knowledge and concepts across academic subjects in a cross-disciplinary manner to foster a holistic understanding and collaboratively solve complex real-world problems. Example: Create activities that involve several subjects in a single project.
Student initiatives where students are encouraged to set up and follow their own projects and activities. Example: committees, organize events.
Time to develop the needed activities refers to the time teacher will need to implement the activity (video + open learning scenario + user generated OLS) with their students note: even when the theme is included in the curriculum, the time available could be not enough.

Table 2: Review of Tools for Interactive Video Creation

Platform	Free Trial	Cost	Interactive Elements	Login Requirement	Level of Difficulty	Test Results	Video Size Limit
Edpuzzle	14 days	Free for basic features; Premium starts at $8.50/month	Questions, audio notes, comments, voiceover	Google or Edpuzzle account required	Easy	CSV file	Up to 500MB

Camtasia	30 days	$299 for perpetual license or $99.50/year for subscription	Quizzes, hotspots, callouts, captions	No login required	Moderate	Export: SCORM package	Up to 2GB
PlayPosit	14 days	Free for basic features; Premium starts at $120/year	Questions, discussions, polls, surveys, quizzes	Google account required	Easy	CSV file	Up to 1GB
ThingLink	14 days	Free for basic features; Premium starts at $20/month	Interactive images and videos with links, text, audio, and video overlays	ThingLink or Google account required	Moderate	Export: SCORM package	Up to 2GB
Adobe Captivate	30 days	$33.99/month for annual plan or $129.99/month for monthly plan	Quizzes, hotspots, branching scenarios, screen capture	Adobe ID required	Difficult	Export: SCORM package	Up to 10GB
H5P	-	Free	Interactive elements for videos, including quizzes, hotspots, timelines, and branching scenarios	No login required for self-hosting	Easy	API integration	-

Table 3. Tools for Content Enrichment (OERs content)

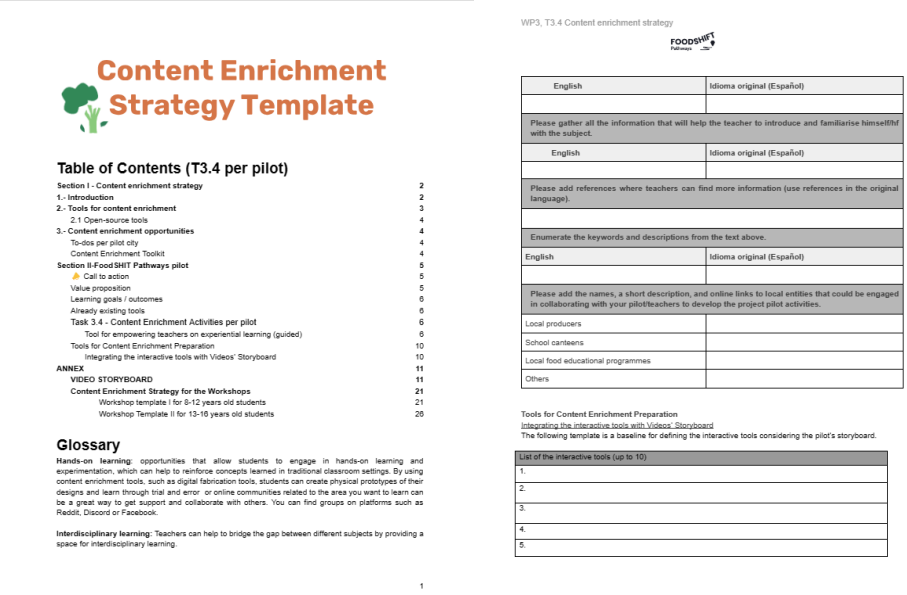
Partner	OERs number	
IAAC	1	1. Pop-up question #1 slides 2 and 3
	2	2. Browsing the web #1 slides 4, 5 and 6
	3	3. Slides 13 to 15
	4	4. Slides 17 and 18
	5	5. Mentimer
	6	6. Live poll #1 (eg. Slido) slides 7, 8 and 9
	7	7. Excursion #1 and Participatory Photography (e.g. this guide)
	8	8. Slide 15 and 16
	9	9. Slide 17 and 18
	10	10. Slido
KI	11	1. Ed puzzle or H5P subtitles
	12	2. Mentimeter

	13	3. Miro
SUS	14	1. Metropolitan Footprint Planning Tool
	15	2. Mentimeter
	16	3. Ed puzzle
	17	4. Instructables
	18	5. Excursions
	19	6. Innovation quiz
CV	20	1. Pop-up question #1
	21	2. Live poll #1 (eg. Slido)
	22	3. Pop-up question #2
	23	4. Pop-up question #3
	24	5. World cloud generator (eg. Mentimeter)
	25	6. Pop-up question #4
	26	7. Live poll #2 (eg. Slido)
	27	8. Info card #1 - Water consumption per kg of food
	28	9. Info card #2 - Transportation of goods (CO_2 emissions per ton of goods per km)
	29	10. Video #1 - Making better policies for food systems (OECD Trade and Agriculture)
	30	11. Video #2 - Why do we need to change our food system? (UN Environmental Programme)

List of templates

Template 1. Content Enrichment strategy (Template)

In the following link you can access the complete blank template for your use.



Content Enrichment Strategy Template

Table of Contents (T3.4 per pilot)

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VIDEO STORYBOARD 11
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Workshop Template II for 13-16 years old students 26

Glossary

Hands-on learning: opportunities that allow students to engage in hands-on learning and experimentation, which can help to reinforce concepts learned in traditional classroom settings. By using content enrichment tools, such as digital fabrication tools, students can create physical prototypes of their designs and learn through trial and error or online communities related to the area you want to learn can be a great way to get support and collaborate with others. You can find groups on platforms such as Reddit, Discord or Facebook.

Interdisciplinary learning: Teachers can help to bridge the gap between different subjects by providing a space for interdisciplinary learning.

1

WP3, T3.4 Content enrichment strategy

English	Idioma original (Español)
Please gather all the information that will help the teacher to introduce and familiarise himself/hf with the subject.	
English	Idioma original (Español)
Please add references where teachers can find more information (use references in the original language).	
Enumerate the keywords and descriptions from the text above.	
English	Idioma original (Español)
Please add the names, a short description, and online links to local entities that could be engaged in collaborating with your pilot/teachers to develop the project pilot activities.	
Local producers	
School canteens	
Local food educational programmes	
Others	

Tools for Content Enrichment Preparation

Integrating the interactive tools with Videos' Storyboard

The following template is a baseline for defining the interactive tools considering the pilot's storyboard.

List of the interactive tools (up to 10)
1.
2.
3.
4.
5.

Template 2. Tools for Content Enrichment Preparation (Template)

OERs template for Integrating the interactive tools with Videos' Storyboard (instructional): The following template is a baseline for mapping/identifying the interactive tools considering the pilot's storyboard.

List the interactive tools (up to 10)
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.