GRAINS

Students age	10 - 12
General topic	Sustainable development and grain nutrition
Leading teachers (Tartu Raatuse School)	Evelin Jõgeda Tuuliki Vuks
Cross-curricular themes	Environment and sustainable development Cultural identity Lifelong learning and career development
Integrated subjects	Science Mathematics Home economics Technology Art Languages History
Goals	- Develop key and general competencies of students described in the lower secondary school curriculum focusing on healthy diet, environmental awareness and art. - Apply knowledge on the relationships between environment and healthy dieting, analyze the importance of grains vegetation in various European regions and their processing into food products, assess the role of fields as ecosystems and the impact of human activities on soil. - Create a comprehensive understanding of the interactions between human activities and natural factors in the production process of crops and their daily usage. - Broadening intellectual horizons.
Skills development	1. Environmental awareness 2. Analytical skills 3. Entrepreneurship 4. Artistic and aesthetic sense 5. Craft skills 6. Communication skills 7. Digital skills
Links with curriculum	1. Studing technology provides students to critically examine consumption and production from the perspective of fairness, sustainability, and ethics. Students gain knowledge about the material world around them, laying the foundation for sustainable living and development, encompassing the student's living environment, the cultural heritage of different groups, and the cultural diversity in schools. Technology subjects provide students with the prerequisites to shape their interests and future work life, thereby influencing their self-fulfillment opportunities and well-being. These subjects allow for unbiased selection and experimentation with various manufacturing technologies.

2. Home economics focuses on general well-being and coping with everyday life, shaping the necessary knowledge, skills, and attitudes. Through cooperation and critical thinking, students discover their potential in various subject-related activities, understand the sustainability of their living environment, and their role in ensuring it. The course values Estonian food culture and traditions while fostering an open mind towards the food culture and customs of other nations.

3. Science develops scientific knowledge, research and problem-solving skills, and attitudes that value sustainable development. It helps recognize everyday life problems and make intelligent and well-founded decisions using scientific knowledge and skills. In addition to personal life, scientific competence enables self-fulfillment at work. In natural science subjects, students develop research skills, including observing objects and phenomena, defining problems, gathering and analyzing background information, formulating research questions and hypotheses, planning and conducting experiments, collecting reliable data, analyzing and interpreting it, and drawing valid conclusions. The overall goal of acquiring research skills is to use them in everyday life, helping students make intelligent and considered decisions in their personal lives.

4. The aim of mathematics education in middle school is to develop age-appropriate mathematical competence in students, which means knowing mathematical concepts, relationships, and procedures, understanding their internal logic, and being able to apply them in solving both real-life and subject-related problems.

5. Art subjects competence is based on the understanding that a student's development is lifelong and influenced by culture, and that the arts (music, art, literature, drama, film, dance) and culture in general (visual culture, heritage, and folk culture, etc.) are dialogue partners throughout a person's life. The arts are important tools for developing values, communication culture, empathy, and critical thinking. Alongside the creation of the arts as professional high culture, investigative and inventive creativity and culture as a broadly interpreted human activity are also important.

6. Languages: The aim of foreign language education is to ensure that students develop the ability to understand, express, and interpret concepts, thoughts, feelings, facts, and opinions in various languages, both orally and in writing (listening, speaking, reading, and writing) in different social and cultural situations, according to their needs and desires.

7. History: The competence in social studies aims to enable students to cope with themselves, to be able to act in their immediate environment, to be ready and capable of being active and responsible citizens, and to

	understand social relationships in historical contexts and universal values. In learning, students acquire important knowledge about the past and cultural heritage of their local area and the world, which helps them navigate cultural spaces. Through the subject, students are guided to become aware of, analyze, critically evaluate, and interpret past events and processes, their interconnections, and their connections to the present, as well as the reasons for different interpretations of historical events. History education develops the skill to understand the influence of past phenomena on current development.
Planned activities	1. Presentation of research work and quiz. 2. Language bingo. 3. Visiting grain fields and a mill. 4. Collecting materials for art and crafts. 5. Preparing breakfast porridge. 6. Data analysis, calculating nutritional values and product cost. 7. Designing bread packaging. 8. Preparing national foods and drinks from grains. 9. Crafts: national patterns, weaving from grain stalks. 10. Ceramics: making a porridge bowl or cup with grain patterns and/or painting and making patterns. 11. Examining chemical compositions in the lab, experiments. 12. Visit to Estonian Agricultural Museum. 13. Visit to Hellenurme mill.
Expected learning outcomes/results	Student is: 1. Able to collect data on a given topic, assess the reliability of information, plan, compile, and present research results. 2. Able to use ICT tools and online environments to support learning and consolidate knowledge. 3. Knows various grains and their growing locations. 4. Knows the names of grains in different languages. 5. Able to prepare a product according to a recipe. 6. Able to design product packaging. 7. Able to calculate the cost of a product. 8. Able to calculate the nutritional value of food. 9. Able to collect and assess the suitability of natural materials for art and crafts. 10. Able to weave simple patterns on a loom. 11. Able to mold a clay object and apply a pattern to it. 12. Knows the agricultural history of their local area.
Evaluation/feedback/ of students progress	Throughout the project, students will receive feedback on the knowledge and skills related to the activities (including key competencies, skills, and cross-curricular themes). Teachers will provide feedback on the student's participation activity and the application of their abilities and skills throughout and at the end of the project.

Blended activities (before and after the exchange week)	1. Research on grains grown in their (country) region. 2. Data analysis: calculating nutritional values and product cost, charts and diagrams
Teachers involved (Tartu Raatuse School)	Languages, art, science, mathematics, technology.