



HOFA Handbook

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DEPARTMENT OF CIVIL ENGINEERING
AALBORG UNIVERSITY



HOFA Handbook

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HOFA Handbook

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Dear reader,

In the globalized food systems, consumers, especially children, are increasingly disconnected from the understanding of how and where their food is produced. This has an impact on eating habits and food choices that might affect health, the environment and other ethical dilemmas such as animal welfare and fair trade. Teaching children about food, health and nutrition is, therefore, an essential part of not only securing the public health and wellbeing of future generations, but also ensuring a more balanced and sustainable environment and world.

According to scholars, the school is an essential arena to address this knowledge gap; an ideal environment to nurture a connection and understanding between children and nature, a good context for promoting health and an understanding of food and food production. This has added benefits; research underpins and documents what educators already know: Healthy pupils and students are better prepared to learn.

It is on the basis of these issues, and on the understanding of the school as an essential arena that the Learn4Health project was started.

Learn4Health is an EU Erasmus+ Strategic Partnership consisting of twelve partners representing 6 European countries, which aim to create, strengthen and sustain health, nutrition and food literacy among pupils in primary and secondary schools in Europe. The Learn4Health project has developed new, interdisciplinary and innovative approaches, i.e. innovative teaching methods and learning contexts, aiming at teaching children about food, nutrition and health, providing hands-on learning contexts to strengthen their understanding of the origin of food, and the structure of food production. This way, Learn4Health strives to promote food literacy and educate children to be able to act on the basis of this knowledge, to create a healthier self and a better, more sustainable world.

To secure the intention of wide applicability and transferability of the insights and detailed information developed throughout the Learn4health project, we hereby present the HOFA Handbook; a complete instructional guide book offering detailed instructions and curricula guides to the different Learn4Health Activities.

These thorough guides and manuals will ensure that other schools interested in doing a similar project will have a finished “recipe” for building and implementing their own Hands On Food Activities and projects. The HOFA Handbook has been made freely available in this PDF format through the Learn4Health website. This open access will secure wide applicability, dissemination and great transferability. The HOFA Handbook will secure the sustainability of the Learn4Health project, as the insights, experiences and the knowledge accumulated within the project period will be passed on to a wide audience, easily available for application, and therefore also optimizing the overall impact.

On behalf of the Learn4health project,

Anna Marie Fisker, project Leader

Video Resources (Institutional Context)

Intellectual Output 2

Fundació Escoles Garbí, Spain



Name of Intellectual Output: IO2 - Video Resources (Institutional Context)

Duration: A school year

Responsible Learn4health partner: Fundació Escoles Garbí, Spain

Description:

Fundació Escoles Garbí (Barcelona, Spain) manages two schools linked by the same pedagogical principles, based on the aim “educating and preparing young people for life”.

The project-based learning is the root of our Educational Project and the school is conceived as a city, where all the students perform as active citizens.

The School is always providing contexts to offer students an opportunity to learn and enrich themselves at different levels, providing an added value in all areas. As in the case of the green garden and the dining room, which turn to be learning environments, where the students can develop and improve different values, attitudes and actions.

This way, lunch time and gardening are considered integrated cross curricula projects influencing the integral learning of the students and also the school community.

Both projects last throughout the whole year and play an important part in the evolving aspects of the person: interpersonal, social, health and intellectual.



Pupils at lunch time, once they have already started eating.

Scale Options:

The possibilities will be presented in the following.

Experience:

Lunch time: The dining hall is placed in the very centre of the school, representing the agora or main meeting point of the school-society. Lunch time is a key aspect of our school and it is not the simple act of eating, but it represents an important social act.

This midday timeframe is ruled by a set of procedures, which students have learnt throughout the school. Those are mainly based on know-how to be fostering different personal competences such as respect, health, autonomy and personal initiative.

The dining hall is shared by all the students of primary and secondary level, and the kindergarten pupils stay in their classes for lunch, though the protocol is the same from 3 to 16-year-old pupils. Organisation is very important during that hour and everyone is committed to having an adequate behaviour for the proper functioning. So, students take on responsibilities, which change along the weeks. Thus, each table has a leader pupil in charge of laying the table before the group arrives, serving lunch to the rest of the students. The representatives of the pupils share any news or cultural events, as well as the school coordinators make announcements if necessary. Having lunch also involves a pleasant conversation among students and a relaxed meeting place with the tutor or teachers.

Gardening: 4th year Primary pupils are throughout the year responsible for all tasks related to the gardening (Weeding, soil preparation, planting, harvesting). They are the main protagonists of green garden, although the school community also gets somehow involved in some parts of the project. Apart from the pupils, the teachers of the level and a professional in charge of the green garden, are the ones who lead the project. At the beginning, pupils are introduced to the tools required for working in the garden and from that point, they are guided in the different steps while gardening along the school year.

Every week 4th primary pupils spend one hour working in the green garden in four different turns. Thus, at the end of the week it is four-hour gardening work.

The green garden is approximately 250 square meters big; it contains a shed where all the tools and required material are kept. After harvesting, the cook staff prepare some plates for the students in order to taste what they have grown, or they take them home to share them during the family dinner.

Challenges:

The cleaning and preparation of the soil was so hard for the pupils and not rewarding for them at first instance. At this point, they were not that motivated with the project. But once they started the germinate process, that encouraged them a lot to follow with the cycle of planting, taking care of the plants and harvesting, the most enjoyable moment for them. Unfortunately, during some seasons, it was necessary to combat some plants illnesses and ensure a good growing of the vegetables, which taught the students to solve a problem with the help of the teachers.

The creation of a compost bin and its use was an added value to the pupils learning, since this process required of different teaching areas.

A challenge that is unavoidable is the weather; on rainy days or on the scarce snowy ones, pupils don't do gardening. However, the leader of the project must keep an eye on the garden despite the weather. The same happens on holidays when pupils don't go to school, someone must take care, especially if there is some harvest to be done.

Recommendations:

Lots of disciplines and school subjects can be implemented within the garden project. It is easy to have a maths lesson (deciding how many beans you need to feed the whole class), an art lesson (creating a scarecrow for the garden) language (writing a report every week or fifteen days to have the proof of the progress) photography (attaching the photos to the report) science (composting process and plant's illnesses investigation, as well as remedies) and health (creating healthy menus with the planted vegetables).

That is the reason why the school considered this activity as a cross-curricular subject.

Possible implementation in curricula:

Both projects are cross curricular in our schools, but it is easier to implement the green garden project as long as there is a piece of land next to the school, big enough to plant some vegetables.

Further Information:

For further information, see appendix 2.1

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Cleaning and preparing the soil.



Harvesting.



A teacher and pupils eating at lunch time.

Video Resources (Lesson Plans)

Intellectual Output 2

Open University of Catalonia & Fundació Escoles Garbí, Spain



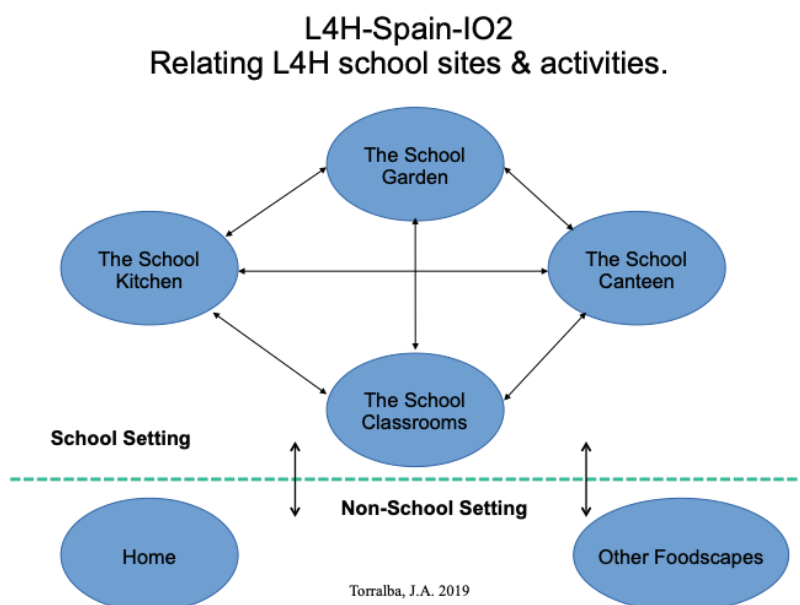
Name of Intellectual Output: IO2 - Video Resources (Lesson Plans)

Duration: 1-5 weeks

Responsible Learn4health partner: Open University of Catalonia & Fundació Escoles Garbí, Spain

Description:

The video resources are designed to demonstrate the relevance of and links that exist between the school academic curricula and the different foodscapes of which pupils are central agents. Foodscapes are sites and moments in which students come in contact with meals, food products and activities related to their eating practices. The main objective of these four (4) video cases is to show schoolteachers how to employ these resources for classroom-based projects. Each video case showcases a lesson plan that links a particular site (school garden, school lunch room, kitchen, etc.) and the activities that take place there with the school curricula. Video cases 1 & 2 center on different activities done at the school garden, while video case 3 focuses on the school kitchen, and video case 4 provides a broad perspective of the school lunchroom.



Scale Options:

While these video cases took place within the context of a charter school in Catalonia (Spain), and its particular or unique food ways (i.e., Mediterranean Diet), the possibilities for scaling up or down the cases are quite reasonable within the school context across schools in Europe or beyond because they exemplify activities that commonly take place in schools anywhere.

Downscaling the Training Course:

Since the video cases offered in this intellectual output centers on one particular activity (e.g., planting, serving food, collecting at the school garden, etc.), downscaling any of the video cases, implies narrowing somehow the activity and align it much more tightly with a particular academic concept. For instance, planting and preparing the soil at the school garden with essential needs of plants (biology), cutting bread with the notion of fractions (basic mathematics).

Up-scaling the Training Course:

The issue of up-scaling the video cases is much more realistic since, as mentioned above, the cases already have a rather restricted conceptual and practical scale. At the curricular level, the video cases can be upscaled by relating the activity across multiple academic disciplines simultaneously. For instance, planting at the garden can be related to mathematical, biological and social academic concepts. Likewise, the activity can be extended through time and thus transformed into a longer classroom-based project. At the institutional level, the up-scaling can be done across different grades and thus involve several teachers. Lastly, many of the activities offered can be employed to link schools locally or beyond. For instance, the focus of video case 2 (Learning around School Garden) can be taken up by different teachers across European networks to examine the different ways in which school gardens are transforming project-based curricula.

Experience:

The video cases were developed as part of the Learn4Health project and also utilizing existing educational work that had taken place at the school sites. The goal was to graphically illustrate how a particular curricular activity could be designed and implemented using resources that are often peripheral to the school curricula (i.e., eating, cooking, gardening, etc.). Through the use of videos and photos taken during repeated and extended visits to the Garbi schools, we selected activities that highlight the unique nature of the school, but that can be recognized by any school as doable. Because the target group for the video cases was teachers, the most appropriate products were thought to be lesson plans that:

- a) could embed the target activity (e.g., cooking, planting, etc.) within a recognized curricular format, and
- b) provide photos and videos to augment the proposed lesson plan and show how it took place at the Garbi schools.

Challenges:

The main challenges encountered (and possibly to be encountered) during the development and implementation of these video cases are of curricular and technical nature. At curricular level, the main challenge is to a certain well what concepts and/or competences pupils are to learn from engaging in the target activity. For instance, during activities shown in video case 2 (learning around the school garden), there were too many activities done by pupils from which there was not a clear learning goal. While pupils eagerly and happily engaged in collecting vegetables, cutting them and learning some culinary skills, there was not a clear conceptual goal that could then be exploited and extended in the classroom. In that case, and how the graph below illustrates, a conceptual framework and key themes could have been identified to generate clear objectives and a way to evaluate the engagement and its effect on pupils' learning.

At the technical level, the leading challenges were associated with capturing images (photos or videos) that could illustrate teaching and learning. At times, it was quite difficult to capture that type of imagery because the nature of those activities (pupils walking around a school garden, etc.) and the settings where the activities took place. Filming teaching and learning is quite a complex endeavour inside classrooms; doing it outside of it brings additional variables that make video making quite difficult (e.g., capturing good audio records).

Lastly, and partly because of the diverse nature of the activities documented, a challenge encountered was coordinating the documenting of those activities with the schedule produced by teachers to accomplish them and the technical staff at the school garden and the kitchen to conduct them. Producing videos at the school kitchen was mainly guided by and constrained by the work that took place there, and this at times demanded very limited time to film.

Recommendations:

Based on the issues mentioned above, we feel the leading recommendations for the design, construction and implementation of video cases can be summarised as follows:

- The technical and practical aspects of video making and photo taking should be thought out well and in relation to the target activity (if the aim is to document and show to others how such learning and teaching takes place. Making videos and taking photos to illustrate teaching and learning IS NOT the same as doing so for personal or recreational purposes. It requires a conceptual alignment between the expected teaching or learning and the way in which such processes can be captured (see further information below for guides).
- The lessons plans are “useful” tools for teachers, but the activities documented through these 4 video cases can also be employed through other means and forms. For instance, teachers can design project-based activities for students to document their own eating throughout one or several days and incorporate those activities in the existing curriculum. Or, they can view these video cases as a way to think how to begin to enter those sites (garden, lunch room, kitchen) and explore their academic potential.

Possible implementation in curricula:

Because the main goal of these video cases and the lessons plans, found within each case, already discuss implementation, we refer the reader to the video cases.

Further Information:

1. Video Case 1: Learning to Plant
2. Video Case 2: Learning around the School Garden
3. Video Case 3: Teaching and Learning at the School Kitchen
4. Video Case 4: The Lunch Time and Lunch Room as Learning Resources for Developing Healthy Eating and Social Habits.
5. How to employ Video for teaching and learning.
 - a) Practical aspects (<https://relobie.wordpress.com/pedagogies-in-videos/how-to-use-videos-as-a-resource-for-teaching-and-learning/>)
 - b) Methodologies and Research-based use of video (<https://relobie.wordpress.com/pedagogies-in-videos/how-to-use-videos-as-a-resource-for-teaching-and-learning/>)

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Video Case 1: Learning to Plant.



Video Case 2: Collecting Tomatoes.



Video Case 3: Chef & pupils make soup.



Video Case 4: Table leader serve others.

Teacher Manual Soil'n Garden Program

Intellectual Output 3

Arden School, Denmark



Name of Intellectual Output: IO3 - Teacher Manual for Soil'n Garden Program (SGP)

Duration: A school year

Responsible Learn4health partner: Arden School, Denmark

Description:

This teacher's guide is an example of a practical and researching teaching that unites the work in the classroom with the work outdoors near the school. The teacher's guide is based on the curriculum of science in Denmark. The teaching focus on the subject specific goals, the scientific work method and developing the 4 competences. The teacher manual is about working scientifically using problem based learning, growing food using your knowledge about practical considerations and research. Through systematic data collection with analog and digital measurements, they learn to cultivate healthy vegetables based on their knowledge of science.

The manual aims to promote innovative thinking, health and ecological learning, collecting data, co-operation between pupils and other partners, responsibility, the Squash competition on knowledge and give the pupils a cultural education as a citizen in a global world.

The course was completed from May 2018 to October 2018 in Denmark at Arden School and in some of the partner countries of Learn4Health . The course was completed as a united competition both locally in Denmark and among the Learn4Health participants. The competition "Squash competition 2018" was based on the training course "teaching by using the scientific work method and data collecting, which the Learn4Health partners participated in April 2018 at Arden School.



Pupils in the kitchen

Scale Options:

The possibilities will be presented in the following.

Downscaling the Training Course:

The possibilities for downscaling the Training Course are written in examples below:

- It is possible to make the teaching a part of the curricula.
- It is possible to work with part of the manual at different times during the school year (e.g. the photosynthesis).
- It is possible to grow different vegetables with different growing seasons.
- It is possible to grow different sprouts inside the classroom.
- It is possible to work interdisciplinary within the existing curricula.
- It is possible to work in collaborations between schools and across different grades (age).
- It is possible to keep the competition within the Class, School, City and Municipality, making it local.

Up-scaling the Training Course:

The possibilities for up-scaling the Training Course are written in examples below:

- It is possible to invite other classes, schools, countries to participate.
- It is possible to work even more interdisciplinary at the school.
- It is possible to make the Teacher Manual for Soil'n Garden Program part of a political, cultural or social event.
- It is possible to add more curriculum subjects e.g. genetics - cytology, the circle of water and carbon, or what happens if part of the photosynthesis is missing.
- It is possible to compare different nutrients e.g. ecological and conventional fertilizer.
- It is possible to teach more about healthy food and living.
- It is possible to teach more about self-sufficiency.
- It is possible to teach about climate problems and solutions in different countries.
- It is possible to teach more about sustainable agriculture.
- It is possible to involve parents, grandparents, other teachers and experts.
- It is possible that the oldest pupils teach the younger pupils curriculum subject.
- It is possible to use the vegetables for cooking lessons.
- It is possible to use the Teacher Manual for Soil'n Garden Program - The Sprout Wagon.

Experience:

The teacher manual was developed within the Learn4health project. The idea was based on making a manual for teaching that focused on curriculum, to motivate the pupils to learn more and at the same time transferring the knowledge from the classroom to the natural surroundings near the school. All Learn4health partners were given a squash kit with measuring materials, data chart, seeds for growing and The Teacher Manual for Soil'n Garden Program - part 1. In Denmark at Arden School all ten grades also participated in the Squash competition and were given a Squash Kit. The international winner was Primary School Franceta Prešeren and the local Danish winner was third grade. The evaluation was good between participants. The teachers say that the pupils were more motivated to learn more curriculum and the pupils said that it was much more interesting when the lessons were active and they find that they have learned a lot more than in normal lessons. As they said: "Now I know why I have to learn those things". The Learn4health partners have agreed on doing the Squash competition again this year 2019 even though this Erasmus+ intellectual output has ended in 2018.

Challenges:

Time to teach the pupils during the growing season can be a challenge if the headteacher isn't involved in making time for the teacher and the pupils during the week. It can also be a challenge if it is only one teacher who is involved and have responsibility alone.

The first challenge is to convince someone to participate if you want to make a competition. Otherwise the teacher can do it with one class only between the pupils in the class. Other challenges have been most practical. The teacher has to find a suitable area, have access to garden tools, and building materials and tools. Acquiring knowledge about growing crops, and the weather can be a challenge. We had some problems with seeds that did not germinate as good as hoped in the different countries. The watering of the plants during the summer holiday has to be planned in advance.

Recommendations:

First of all arrange a meeting with the headteacher or another person who can decide how it will be possible. You have to be the person responsible for the project, a person everybody can ask questions. If it is possible try involving the school service staff. They can have a lot of useful advice and knowledge about tools and other practical problems. Write a short description of the project to those you want to work together with. Generally the practical challenges can be solved before the teaching begins. About watering the plant during summer holiday make an arrangement with other local parents, grandparents and the pupils. The pupils like to be responsible and it can have great impact on their self-esteem. Finally it is important that all participants have the same measuring kit, data chart and know how to teach problem based.

Possible implementation in curricula:

The Teacher Manual for Soil'n Garden Program part 1 is developed from the Danish curriculum guidelines for pupils aged 6 to 16 (grade 0 - 9). The guidelines are given from the official Danish department of education. In Denmark the science teaching have to educate the pupils in subject specific goals and the four competences: Research, modelling, communicative and transferring. Different work methods are also part of the curriculum. The teacher manual includes the following curriculum parts but many more could be pointed out:

Subject specific goals:

- Health, sustainability, photosynthesis, the cycle of water, carbon and nitrogen.

Work methods:

- The scientific work method
- Collecting data with analog and digital measuring.

Competences:

- Research: When the pupils are seeking for knowledge how to grow a certain vegetable when the pupils uses their knowing from the photosynthesis and the different cycles for water/carbon/nitrogen for making the best conditions for the plants - when they measure analog and digital during the growing season and change the growing conditions for a better harvest
- Modelling: When the pupils make drawing and small prototypes of the growing area (1m³) - the data chart the pupils make with the measurements.
- Communicative: When the pupils use the proper scientific words when they write, tell and explain during the project
- Transferring: When the pupils can use their knowledge from the classroom to grow vegetables in the actual surroundings near the school.

The teacher manual could be a part of the curriculum for science education for different grades if the different parts will be down-scaled or up-scaled accommodating to the actual grade.

Further Information:

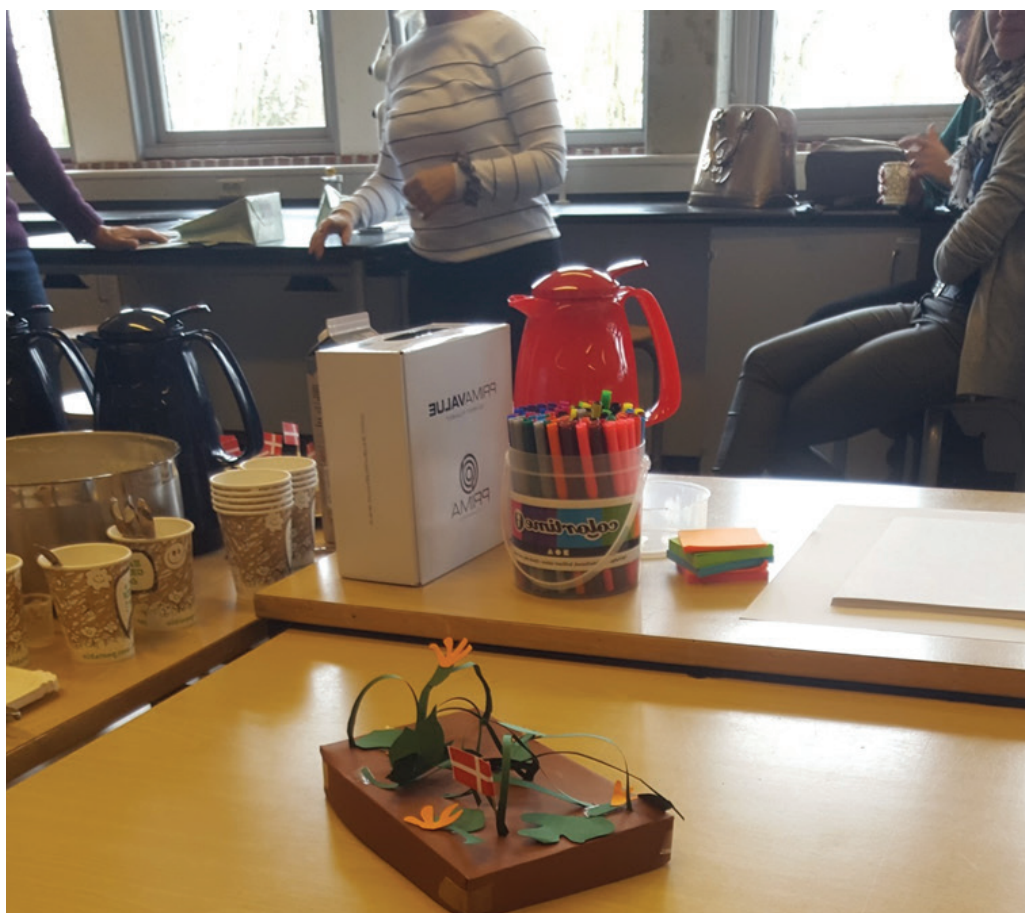
For further information, see appendix 3.1

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Pupils working.

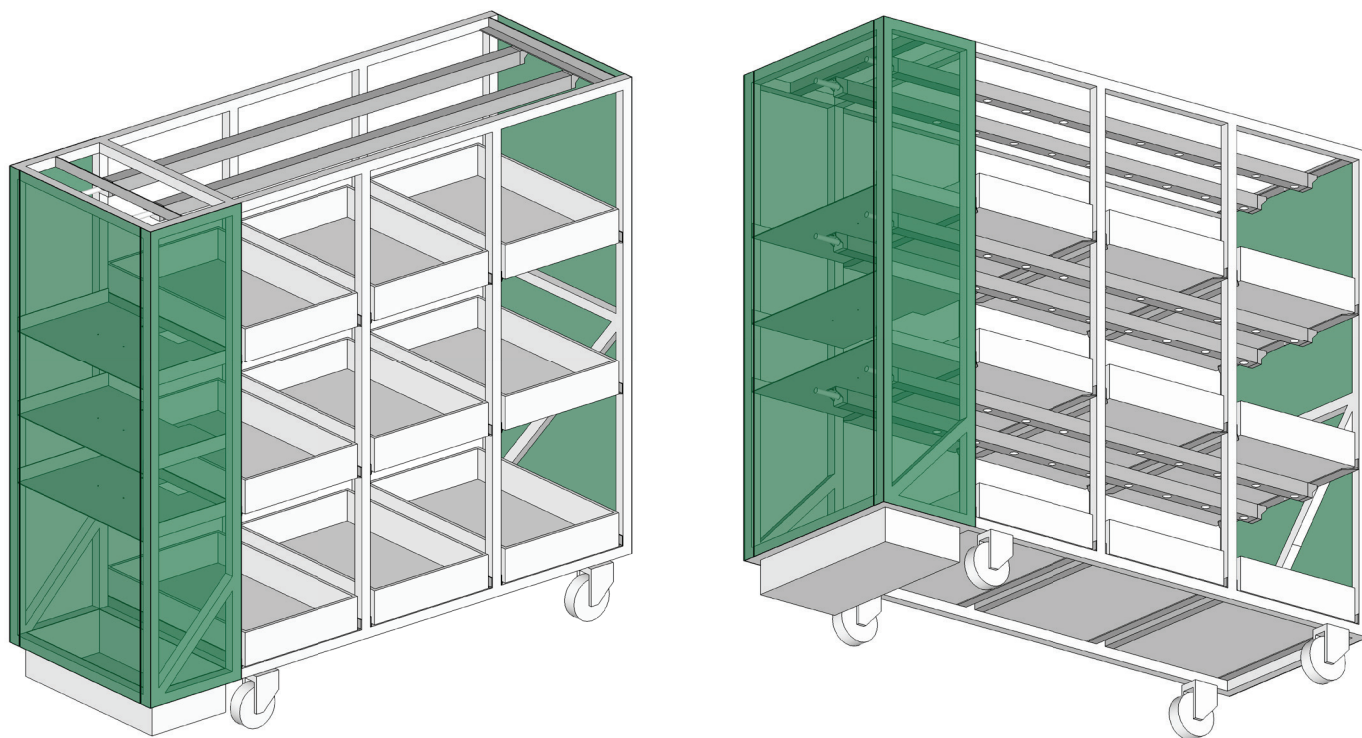


Pupils working.

Teacher Manual Soil'n Garden Program - The Sprout Wagon

Intellectual Output 3

Arden School & Aalborg University, Denmark



Name of Intellectual Output: IO3 - Teacher Manual for Soil'n Garden Program (SGP) - The Sprout Wagon

Duration: A school year

Responsible Learn4health partner: Arden School & Aalborg University, Denmark

Description:

This teacher's guide is an example of a practical and researching teaching that unites the work in the classroom with practical and researching work.

The teacher's guide is based on the curriculum of science in Denmark. The teaching focus on the subject specific goals, the scientific work method and developing the 4 competences. Through systematic data collections with analog and digital measurements, the pupils learn how to cultivate healthy sprouts based on their knowledge of science.

The course was completed from May 2018 to October 2018 in Denmark at Arden School. The sprout wagon was presented by teachers and pupils at The World Summit 2018 in Copenhagen - The Bite. In this connection how to use the sprout wagon for teaching was presented for the university students who participated in the Case Competition facilitated by Aalborg University. Likewise other participants at The World Food Summit 2018 were able to participate in the presentation of the sprout wagon.



The Sprout Wagon.

Scale Options:

The possibilities will be presented in the following.

Downscaling the Training Course:

The possibilities for downscaling the Training Course are written in examples below:

- It is possible to make the teaching a part of the curricula.
- It is possible to work with part of the manual at different times during the school year (e.g. the photosynthesis)
- It is possible to grow different sprouts in the class room
- It is possible to grow different sprouts in different materials
- It is possible to work interdisciplinary within the existing curricula.
- It is possible to focus on part of the scientific work method at different times of the year

Up-scaling the Training Course:

The possibilities for up-scaling the Training Course are written in examples below:

- It is possible to grow sprout all year round
- It is possible to work even more interdisciplinary at the school
- It is possible to add more curriculum subjects e.g. genetics - cytology, the circle of water and the circle of carbon
- It is possible to compare different nutrients e.g. ecological and conventional fertilizer
- It is possible to teach what happens if part of the photosynthesis is missing
- It is possible to teach more about healthy food and living
- It is possible to teach more about self-sufficiency
- It is possible to teach about climate problems and solutions
- It is possible to teach more about sustainable agriculture
- It is possible to involve other teachers and experts
- It is possible that the oldest pupils teach the younger pupils curriculum subject
- It is possible to use the sprouts for cooking lessons
- It is possible to use the Teacher manual for soil'n garden program part 1

Experience:

The teacher manual was developed within the Learn4health project. The idea was based on an idea from Aalborg University about building a wagon for growing sprouts. The drawings are made by a professional architect in co-operation with Arden School. The Teacher manual focuses on curriculum, motivating the pupils to learn more and at the same time transferring the knowledge from the classroom to use the Sprout Wagon for growing sprouts. The teacher manual is about: Working scientific using problem based learning, growing your food by using your knowledge, practical and research work based on evidence, promote innovative thinking, health and ecological learning, collecting data, co-operation between pupils, responsibility and giving the pupils a cultural education as a citizen in a global world. The evaluation was good. The teachers says that the pupils were more motivated to learn more curriculum and the pupils said that it was much more interesting when the lessons were active and they find that they have learned a lot more than in normal lessons. As they said: "Now I know who to grow my own food even though I don't have a garden".

The Sprout wagon will now also be a part of other subjects e.g. sustainability, hunger around the world and climate problems.

Challenges:

Building the Sprout Wagon needs to be in cooperation with other partners, e.g. a blacksmith. There are some expenses connected with the building process, buying seeds and material for growing e.g. cotton. The watering of the sprouts during the week has to be planned in advance.

Recommendations:

In regards to the challenges mentioned above the following paragraph will include some recommendations when initiating the Teacher Manual for soil'n and garden program.

First of all arrange a meeting with the headteacher or another person who can decide how it will be possible. You have to be the person responsible of the project, a person everybody can ask questions. If it is possible, try to involve parents or other local experts.

Sort the practical challenges together with the pupils. They will also learn something during this process.

How to make sure to water the sprouts during the week? We made an automatic watering system using Arduino coding and some plastic tubes.

Possible implementation in curricula:

The Teacher manual for soil'n garden program part 1 is developed from the Danish curriculum guidelines for pupil's age 6 to 16 (grade 0 - 9). The guidelines are given from the official Danish department of education. In Denmark the science teaching have to educate the pupils in subject specific goals and the four competences: Research, modelling, communicative and transferring. Different work methods are also part of the curriculum.

The teacher manual includes the following curriculum parts but a lot more could be pointed out:

Subject specific goals:

- Health, sustainability, photosynthesis, the cycle of water, carbon and nitrogen.

Work methods:

- The scientific work method
- Collecting data with analog and digital measuring.

Competences:

- Research: - when the pupils are searching knowledge on how to grow sprouts - when the pupils use their knowledge from the photosynthesis and the different cycles for water/carbon/nitrogen for making the best conditions for the sprout - when they measure analog and digital during the growing season and change the growing conditions for a better harvest
- Modelling: - the data chart the pupils make with the measurements.
- Communicative: - when the pupils use the proper scientific words when they write, tell and explain during the project
- Transferring: - when the pupils can use their knowledge from the classroom to grow Sprouts in the wagon and eat them as a part of their lunch

The teacher manual could be a part of the curriculum for science education for different grades if the different parts will be down-scaled or up-scaled accommodating to the actual grade.

The teacher manual could be a motivation for learning for pupils with the focus on the different abilities they all have and all like to develop when they are at school.

Further Information:

For further information, see appendix 3.2

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Sprouts growing in the class room.



Presentation of the Sprout Wagon - BITE CPH 2018.



Tasting the sprouts.

The WannaB Foodie Entrepreneur

Intellectual Output 6

Centre for Health and Development Murska Sobota & Primary School Franceta
Prešeren, Črenšovci, Slovenia



Name of Intellectual Output: IO6 - The WannaB Foodie Entrepreneur

Duration: A school year

Responsible Learn4health partner: Centre for Health and Development Murska Sobota & Primary School Franceta Prešeren, Črenšovci, Slovenia

Description:

The WannaB Foodie Entrepreneur is an instructional guide for developing transversal skills-module how to develop entrepreneurial skills through innovative approaches such as growing herbs. Pupils and teachers from the primary school Osnovna šola Franceta Prešerna Črenšovci participated in the project Learn4Health, since there is a tendency for the slovenians to neglect their gardens. The majority of the students live in houses with gardens, but most of them are not interested in growing of herbs, vegetable etc, and have lost connection with the history and origin of their food. The aim of this programme is to get the pupils involved in the hands on activities and increase their interest in their gardens and origin of their foods.

The programme focused on gardenbeds. Primarily the pupils started to build the gardenbeds under supervision from their art teachers. Next the biology teachers focused on the discussion about which herbs and plants were most appropriate in regards to the soil, the weather etc. Whereafter the pupils planted more than ten different sorts of herbs. In the summer the pupils harvested their herbs and started to dry them with the purpose of making dried herbs for i.e. cooking. During the summerholiday workshops were held with the aim of gathering information that could guide the pupils and teachers in how and what the dried herbs could be used for. In the late summer the local traditional fair – Jenamena festival was taking place, where the pupils exhibited their products and had to use their entrepreneurial skills to collect donations. The pupils from the secondary school, School of Economics from Murska Sobota, developed digital competences, critical thinking in mother tongue and foreign language, self-initiative and entrepreneurship and thereby developed a business and marketing plan.



The pupils used their senses a lot during the programme to learn.

Scale Options:

The possibilities will be presented in the following.

Downscaling the Training Course:

The possibilities for downscaling the Training Course are written in examples below:

- One class adopts one gardenbed and prepares an entrepreneurial idea and participates in the local festival.
- Working with a group of children from nursery to take care of the garden and herbs during the holidays.
- Pupils become teachers for children from nursery.
- Cooperation with an external amateur herbalist in making various products.
- An interdisciplinary competition for the most innovative idea of the use of herbs can be organized.
- The project can be prepared as a cross-curricular collaboration of teachers of several subjects as a multi-week project.

Up-scaling the Training Course:

The possibilities for up-scaling the Training Course are written in examples below:

- An upgrade of the existing project and inclusion into other projects related to food and tradition.
- The possibility of expanding the project to other schools in the region.
- The possibility of inclusion, upgrade to secondary schools – preparation and elaboration of a business plan.
- Cooperation with an ethnic group and exchange of recipes.
- Presentation at the international fair of practice companies.

Experience:

- The experience gained from the project were very positive for pupils and teachers.
- The themes were related to real-life experiences and proved to be interesting for students who eagerly worked both in regular school time and within an extended programme.
- The pupils were very happy to cook and even came to check the herbs during school holidays.
- The teachers and pupils were active even outside of their 'school' time (picking herbs, drying, sorting, packing, also as school holiday activities).
- Very good experience with the presentation at Jenamena Festival, where pupils collected money for a school fund.
- Very good cooperation with a nursery.
- The children and nursery teachers watered the allotments during school holidays.

Challenges:

Encountered obstacles:

- Legislation – children are not allowed to sell products. Due to the legislation, it is not allowed to use the grown herbs in a kitchen and for school meals.
- How could the pupils in spite of everything earn some money?
- What could they do with the money collected?
- Which grades to include? One or more?
- Which subjects, which teachers?
- How to plan time from sowing to cutting the herbs?

Recommendations:

- To organise a herb growing club for those children who are really interested.
- To invite an expert prior to sowing the herbs, so that the pupils can decide, based on the acquired knowledge, which herbs to grow.
- To include parents, retired experts and other enthusiasts to help with running the club and nurturing herbs during summer holidays.
- Intergenerational cooperation with cooking – ensuring to pass on the cultural heritage – development of cooking recipes.

Possible implementation in curricula:

- The project may be continued and expanded within the existing curriculum at nursery and school, because the themes are important for everyday life (they may be a part of all the subjects, especially in first-cycle teaching, or a part of an extended school's programme);
- The themes of the project can be beneficially used in other projects, for instance in a project of promoting entrepreneurship or growing herbs such as lavender.
- The themes of this project can also be disseminated in cooperation with other primary or secondary schools in our region, our country or across the borders in Croatia, Serbia, and Hungary.
- The themes of the project can be brought forward to various competitions, such as Zlata kuharnica (Golden Spoon), Turizmu pomaga lastna glava (Help Tourism With Your Brain)

Further Information:

For further information, see appendix 6

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Garden beds.



Cooking with homegrown vegetables.



Cooking session.



Pupils selling dried herbs at local farmers market.

Teenagers' Eating Culture

Intellectual Output 7

Lithuanian University of Health Sciences & Karmelava Balys Buracas Gymnasium,
Lithuania



Name of Intellectual Output: IO7 - Teenagers' Eating Culture

Duration: Half a year

Responsible Learn4health partner: Lithuanian University of Health Sciences & Karmelava Balys Buracas Gymnasium, Lithuania

Description:

This intellectual output is designed to evaluate the teenagers' eating environment and their eating culture. Pupils are influenced by parents and teachers, but during adolescence formed eating habits are tested. Teenagers are influenced by friends and the surrounding environment. It has been scientifically proved that environmental factors can make a significant contribution to the development of appropriate (or inappropriate) eating habits. We decided to explore these habits with the "tool" which teenagers use the most – mobile phone. The developed methodologies have been tested in schools of project partners in Lithuania, Slovenia and Denmark. The collected information allows comparisons between classes, schools, regions and, in the case of the project, countries. Two methods were applied – first, the creation of 24 hours videos and, second, a questionnaire. Based on the analysed information and comparison between countries, recommendations for a healthy diet and a healthy eating environment have been created. The aim of this IO is to find out, compare and discuss teenagers' eating habits in different countries and try to create the model of healthy teenagers' eating culture.



Teenagers' eating habits and social media.

Scale Options:

The methodology can be adapted to the needs in a narrower and broader sense.

Downscaling the Training Course:

The possibilities for downscaling the Training Course are written in examples below:

- It is possible to work with a group of pupils in the classroom by integrating intellectual output into lessons (for instance English/other languages/biology/home economics etc.).
- It is possible to work with a group of pupils during extracurricular activities.
- Assignment could be included in several lessons (for instance English, cooking, health education, IT etc.).
- Methodology could be used by public health professionals working at school and could be used for health education activities.
- The close relationship could be established with companies running the school canteens, trying to change the eating environment.

Up-scaling the Training Course:

The possibilities for up-scaling the Training Course are written in examples below:

- The collected information could be compared between the groups of children in the classroom or between the classes at school. Comparison between schools, cities or regions could be made as well as comparisons between countries.

Experience:

This method of taking photos, video and questionnaire was used in three project partners' schools in Denmark, Lithuania and Slovenia. The collected information allowed us to compare teenagers' eating habits among countries. By surprise, teenagers eating culture do not differ so much.

The students evaluated their usual day. Maybe that is why the differences were not so obvious. If the meals during national holidays or just national dishes were taken into account, the differences by all means should have been clearly seen. This is one of the ways to use this method for future activities. Students in all countries prefer the food they can cook themselves such as pancakes and pasta. For breakfast they usually have eggs or oat porridge. The drinks they like most of all are water and cocoa. Unfortunately, teenagers have their meals preheated and usually they eat alone. Usually preheated food is not home-made, like sausages, ravioli etc.

Recommendation: Families and groups of friends should make and eat their meals all together.

Challenges:

While testing the developed methodologies we have faced with a number of challenges which should be considered when using this tool. Despite the fact that the instructions have been provided in detail, different interpretations can occur. This could make difficulties when comparing information. For example, not all children may want to film food and record their voice. Not everyone feels comfortable to do it. In addition, not all children may want to show what they eat because they could feel ashamed of. Especially, when it comes to the socio-economic situation of the family or the weight of the child.

There may also be technical issues such as - how to collect information, how to present it and deliver it. Sometimes it could be difficult to record voice (noisy place) or it is uncomfortable to do it (eating alone in public places). Some methodologies can be applied to photos when there is no possibility of making a video.

Recommendations:

We recommend pupils aged 14-16, but other age groups could be chosen as well. To make comparisons between children of a similar age is easier. However, if your goal is to highlight the differences between age groups, then you can choose different ones. We recommend that you choose days of the week according to a similar daily routine (Monday-Thursday). What should be recorded? Each time students eat, drink or have a snack over 24 hours. Videos could be collected and sent using google drive, onedrive, dropbox, wetransfer.com etc. - in the way that is most convenient for students and responsible person.

In some cases, it is better to take pictures rather than videos (for some personal or technical reasons).

One more important thing - if rules of your school or national laws require - you need to have parents' permission for child participate in the survey.

Possible implementation in curricula:

The methodology can complement the existing school program and be included in the lessons (for example foreign language, IT, home economics, cooking, health and etc.). It could be used as an after-school activity or as a school project. Changes, based on the IO results, could be made in school canteens. Health friendly environment and table manners should be considered at school canteens. Even students could be involved in canteen's work. Insights and recommendations could be used during the family and/or parent meetings.

Further Information:

For further information, see appendix 7

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Cooking Classes.



Learning about spices.



Cooking, tasting and knowledge sharing.

Food Education in Different Countries

Intellectual Output 8

Wageningen University & Research, The Netherlands



**Een superinteractieve digibordquiz over
fruit en groente in 20 minuten!**

Start direct een challenge

Name of Intellectual Output: IO8 - Food Education in Different Countries

Duration: 4 hours + the duration of the field trip

Responsible Learn4health partner: Wageningen University & Research, The Netherlands

Description:

A Taste Mission is a digital, interactive food education programme which consists of lessons but also hands-on food activities e.g. taste experiments, growing your own fruit, an excursion to a fruit grower, a cooking lesson and a visit to a supermarket. Every Taste Mission is introduced by a main character who challenges the pupils to learn more about their food and gives the pupils feedback. To motivate the pupils, principles of gamification are used.

The Taste Mission Fruit is translated to English and the applicability is tested by schools in Denmark and the United Kingdom. Because the dietary guidelines differ per country, we have decided to make a separate version for each country. For the international versions we had the permission to use Prue Leith, CBE as a main character. As a result, the Taste Mission Fruit is now available in the Netherlands, Denmark and the United Kingdom.



Teacher starting the Taste Mission Fruit via the interactive whiteboard.

Scale Options:

It is possible to downscale or upscale the intellectual output. The possibilities will be presented in the following:

Downscaling the Training Course:

The possibilities for downscaling the Training Course are written in examples below:

- When there is not enough time to give all the lessons, it is also possible to select some of the elements. For example, the fruit quiz, small experiments and cooking lesson can be selected to give separately.
- Sometimes it is too time consuming or just not possible to go on an excursion to a fruit grower or food company. In this case the teacher can choose to search for some videos where the processes of growing fruit are explained.
- Maybe it is possible to just make a general translation to English where the sections that may differ per country are indicated. The country itself has to add this specific part of information.

Up-scaling the Training Course:

The possibilities for up-scaling the Training Course are written in examples below:

- It is possible to make the Taste Mission part of the curricula so it will be implemented every year.
- It is possible to connect the Taste Mission to other topics or school methods which are already used, so it's more integrated in the curricula.
- A school can include the Taste Mission in their food policy.
- It is possible to invite a chef for the cooking lesson to make it an even better experience.
- Other Taste Missions can also be translated so all the groups of a school can execute a Taste Mission.
- It's possible to search for a main character from every country that works with the Taste Mission. In this way pupils can relate more to the main character.

Experience:

The Taste Mission Fruit is translated to English. Because of the differences in dietary guidelines per country, two different versions are made. The Taste Mission Fruit is available for Denmark and the United Kingdom. Also, all the digital elements, like the movie, quiz, interactive feedback moments etc. are available. The applicability is tested by schools in Denmark and the United Kingdom. The school in Denmark was very enthusiastic about the Taste Mission. They gave very high scores for the Taste Mission and would love to do the other Taste Missions and will repeat the Taste Mission Fruit next year.

The pupils of the school in the United Kingdom also enjoyed the Taste Mission, they indicated the taste sessions as their favourites. The teacher of the school in the United Kingdom implemented the Taste Mission as a project. But she found that the lessons didn't fit with the class topics and methods for that half term. She also didn't use the interactive whiteboard module with is a pity because it is a major and innovative element of the Taste Mission.

Challenges:

It was quite some work to translate the Taste Mission and also to adjust it for the two countries. It's not only about translating the teachers' manual but also the work sheets, digital white board module, movies etc. Translation is also a challenge because the dietary guidelines differ per country and guidelines are often written in the language of that country.

It would be nice if every Taste Mission had their own main character which differ per country. In this way pupils can relate to this character, recognise it and become enthusiastic to help him/her. This is now only done for the United Kingdom where Prue Leith is the main character.

The Taste Mission was tested in February/March 2019. This is a challenge because an excursion to a fruit grower is part of the Taste Mission but in this time of the season it is almost impossible to see fruit growing. Another important challenge is to link the Taste Mission Fruit to topics and methods that are already covered in the curriculum. In this way it becomes part of the curriculum and isn't just a project on its own.

tis de pa con nat fugit et que sitis eos prate quo optam repudit laboribusa aliciunt erum lis The Taste Mission is tested in February/March. This is a challenge because an excursion to a fruit grower is part of the Taste Mission but in this time of the season it is almost impossible to see fruit growing. Another important challenge is to link the Taste Mission Fruit to topics and methods that are already covered in te curricula. In this way it becomes part of the curricula and isn't just a project on its own.

Recommendations:

The Taste Missions are feasible and easy to implement by other countries. With this module a school can connect Hands-On Food Activities with lessons in the class in an innovative way which is also proven to be effective. In the ideal situation you would want to have a unique version for every country that wants to work with the Taste Missions. In this way it fits with the knowledge and experiences of the pupils in that specific country and the dietary guidelines of the country can be applied. The teacher then only has to go through the manual and start giving the lessons.

During Learn4Health, there was a lot of interest for the Taste Missions from different countries. It would therefore be great to translate even more Taste Missions in the future and to make a lot of pupils abroad also enthusiastic about food education.

Possible implementation in curricula:

A Taste Mission is developed to connect Hands-On Food Activities with a proven effective education programme. It can therefore be used very well as a basis for also linking food policy. Include a Taste Mission in the curriculum and then connect all the activities to it and describe this in the food policy of the school. In this way the school is working on food education in an effective way and the teachers are working on teaching the pupils how to become more food literate.

Further Information:

- Instructions Taste Mission
- Taste Mission Fruit the Netherlands: www.smaakmissies.nl/missie/fruit/
- Taste Mission Fruit Denmark: www.smaakmissies.nl/dk/missie/fruit-dk/
- Taste Mission Fruit United Kingdom: www.smaakmissies.nl/en/missie/fruit-en/
- Evaluation Taste Mission
- Other educational materials of Taste lessons: www.smaaklessen.nl/lesmateriaal

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Pupil doing a small experiment with different sorts of fruit by using her senses.



Pupil discovering new flavours.



Teacher teaching some theoretical parts of the Taste Mission Fruit.

Policy Recommendations

Intellectual Output 9

Health Education Trust, UK



Name of Intellectual Output: IO9 - Policy Recommendations

Duration: A school year

Responsible Learn4health partner: Health Education Trust, UK

Description:

The policy recommendations document is aimed at policymakers to support member countries and the EU as a whole to develop further their food recommendations, regulations and guidance for schools. It also enables staff from primary, secondary and higher educational settings to develop their own whole school food policy. The policy recommendations contain an overview of the effectiveness of different hands-on based approaches to learning about food, nutrition and health. It includes a brief overview of Learn4Health tools and recommendations on how to implement Learn4Health innovative project based hands on learning about food, nutrition and health. The whole school food policy contains a guide on relevant stakeholders and a process to involve them in the transformation of school food.



Haworth school (UK) - the garden provides the most memorable lessons.

Scale Options:

Policies can be scaled to suit different needs or possibilities within settings and countries. The same principles of consistent messages through a whole school approach should apply to any level of policy as this has been shown to make a difference to the eating habits and therefore the health of pupils.

Downscaling the Training Course:

The school policy is downscaled from the national policy to make it suitable for educational settings although the same principles still apply. The school policy can be scaled down further to adjust it to specific needs of the different key stages / age groups within the education system or school setting. Each key stage will have specific curriculum needs.

The national policy could also be adopted at a regional level. This could then be more specific on the link between producers and educational settings both for food provision, to support local and seasonal food for meals and snacks, as well as for educational visits.

Up-scaling the Training Course:

The school policy could cover a set of feeder schools and its secondary school to ensure that pupils have consistent education and messages throughout their educational career. This might be particularly beneficial in relation to the curriculum as it can then be cumulative and progressive from the early years right up to the final years of education.

The national policy could be adopted by the EU to provide guidance for all European countries that are part of the EU. This would support not only the health of the pupils but also the environmental impact of food and so reduce carbon emissions.

Experience:

Health Education Trust has worked with many schools across England to transform school food culture by developing a food policy and action plan by the involvement of all stakeholders through a School Nutrition Action Group (SNAG). Broadening this to other European countries has meant that practices based in the cultures from the partner schools could be included in the policy recommendations and an overall more inclusive policy document could be produced.

Challenges:

The challenges that Health Education Trust experienced is that many countries and their educational settings have good practice examples but often this is not accessible unless you speak the language of that country. Some research has been carried out before but not much of this is recent. There are some country comparisons made for example on school meals but the information contained is brief and does not provide an overview of how the country got there.

Some of the practices are very country specific and might be difficult to translate to other countries which have different food cultures.

Food is a very broad topic and a policy can include a wide variety of related areas such as nutrition and health; food safety and hygiene; food production and processing; food quality including additives; food poverty; equality; food related conditions such as allergy and diabetes; seasonality, food miles, environment and sustainability; packaging and waste; culture, religion and tradition. It is difficult to cover this range of areas within a policy which is useful and does not alienate its target audience by being too extensive.

European countries have various schooling and catering systems, which makes it difficult to provide universal recommendations.

Recommendations:

The recommendations are for governments to have more comprehensive regulations and guidance about food in schools. Schools staff are experts in education and not in food, nutrition or health. Schools also may find it useful to have this guidance from government when dealing with parents who may object to the school telling them what to feed their child.

Schools are very convenient settings for universal health promotion as the vast majority of children and young people attend schools. Government therefore can directly impact on the health of pupils by giving schools the tools to make a difference.

Governments can also improve the economy and the environment by having clear standards on food procurement for school food.

Possible implementation in curricula:

Learn4Health tested a number of different projects in the curriculum of the partner countries. This included Taste Missions, which is a food programme for primary schools as well as a squash competition which forms part of science curriculum. This shows how food can be taught as a stand-alone subject or integrated as part of other subjects or taught thematically.

Further Information:

What works well – guidance for national governments on food policy in schools

School food policy and stakeholders. See more in Appendix 8.

www.healtheducationtrust.org.uk

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Fundació Escoles Garbí schools (Spain) - the dining room is an important part of the overall education.



Arden school (Denmark) - the garden provides an opportunity to teach science.



Taste Missions (The Netherlands) - teach pupils to experience food with all their senses.

Training Course

Intellectual Output 11

Aalborg University, Denmark



Name of Intellectual Output: IO11 - Training Course

Duration: 3-day course

Responsible Learn4health partner: Aalborg University, Denmark

Description:

The Training Course was included in the yearly Case Competition as part of World Food Summit 2018 in Copenhagen. The training course was a 3-day summer school facilitated by Aalborg University in close collaboration with The Danish Ministry of Food. The summer school held 30 international students, 12 lecturers and as a result 1 winner was announced by the Danish Minister of Food at Børsen in Copenhagen.

During the Training Course the students were initially introduced to the theme of Children and Health, next they were acquainted with the tool; Stop Motion film and was lectured by expert and stakeholders simultaneously with the development of their new innovative concepts within the theme of Children and Health.

The top three stop-motion films were selected to present at the final session of World Food Summit at Børsen in Copenhagen and the winner was announced in front of experts, stakeholders, politicians etc. from the entire world.



Developing creative stop motion film.

Scale Options:

The possibilities will be presented in the following.

Downscaling the Training Course:

The possibilities for downscaling the Training Course are written in examples below:

- It is possible to make the Training Course part of the curricula.
- It is possible to keep the Training Course within the School, City and Municipality, making it local.
- It is possible to work interdisciplinary within the existing curricula.
- It is possible to keep the Training Course internal and thereby using internal resources.
- It is possible to work in collaboration between schools and across different grades (age).

Up-scaling the Training Course:

The possibilities for up-scaling the Training Course are written in the examples below:

- It is possible to invite more students to participate, which will give the possibilities for more groups or with a higher number of students in each group.
- It is possible to make the lectures more internationally, by inviting more lecturers to the Training Course.
- It is possible to work across borders.
- It is possible to work even more interdisciplinary when applying for students.
- It is possible to work even more interdisciplinary when applying for lecturers.
- It is possible to make the Training Course part of a political, cultural or social event nationally.
- It is possible to make the Training Course part of a political, cultural or social event internationally.

Experience:

The Training Course was developed within the Learn4Health project. The idea was based on Aalborg University's educational and teaching knowledge, Problem Based Learning, PBL, in mind and the theme of Children and Health in hand. The Problem-based Learning method created the ground from where the summer school could take off and gave the students the possibility of reaching a final product to present the final day. Working with vegetables through Hands-On Food Activities is what the Learn4Health project is about. It is about food-knowledge, food-skills and food-heritage and evolves around food literacy, self-efficacy and action competences.

The Training Course was implemented successfully with thirty international students attending, participating, working hard and developing new innovative concepts that took Children & Health into consideration.

Overall the evaluation was overwhelming and beyond expectations. The students were pleased with their own work and their learning curve during the days. The lecturers were satisfied with the enthusiasm of the students. Every group ended up having developed a final product that told the story of Children and Health in an innovative way and with a new approach.

Challenges:

During the preparations of the Training Course Aalborg University experienced some challenges that is described in the following.

The recruitment of the students was time consuming in the sense that there was a lot of different steps in this process. Initially an invitation to Case Competition and the Training Course were developed, sent out to universities, partners and colleagues within the field of Food related education programs. This was followed by correspondence between Aalborg University and students interested in participating. The main themes of the correspondents revolved around travel expenses, transporta-

tion, and accommodations etc. as the students had to arrive to Copenhagen on their own expense. Upon arrival, all the students were taken care of, with all expenses included until departure. During the Training Course the time was short, and the students were working hard. They constantly had to either work or listen to lecturers, which left limited time for breaks. The students were under time pressure, but all groups ended up having good learning achievements and smiling faces upon some days with both laughter and frustrations.

Another challenge can also be group work. The 30 students attending the Training Course were all divided into groups beforehand based on their educational background, which lead to some groups working better as a team than others. This is a challenge that with more time and knowledge about the students can be adjusted more favourable for all parts.

Recommendations:

In regards to the challenges mentioned above, the following paragraph will include some recommendations when initiating the Training Course in any other setting.

Generally time was a main challenge during the training course and it is recommend to keep in mind if wishing to work with this as a three-day course that the students are under pressure. They have a lot of work and limited time and adding an extra day to the course could be preferable, if wishing for final results worth presenting to the public. An extra day will secure less rushing for everyone involved including the lecturers taking their time to lecture.

According to the challenge of establishing groups, it is recommended to keep to divide students with similar background into separate groups to ensure the broadest cross disciplinary group work as possible. Further more separating students who know each other can also be a good idea to avoid any pre-understandings of each other that might interfere with the general group work.

Possible implementation in curricula:

Learn4Health is a project established on the basis of different educational background and expertise with underlines the possibilities of including the intellectual outputs in multiple subjects.

The training course could also be part of multiple subjects in the curriculum and is according to Learn4Health and the overall theme of Children and Health suitable within the subjects of home economics, biology, physical education, sports and media science/IT, language classes, mathematics and other natural science subjects.

The Training Course should be seen as an activity to add on top of already existing curriculum. It can be used as a tool to collect and connect all the knowledge given within a subject, to make the students develop something on their own, that enhances their new knowledge.

Further Information:

- Instructions/guides/blue prints
- Case Competition Program
- Course description
- Diploma ECTS

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Lectures with information that could be used as inspiration.



Committed teamwork.



Creative output.



Case competition winner picture.

Impact Assessment

Intellectual Output 4

Aalborg University, Denmark



Dear reader,

In the following, we provide you with a useful evaluation tool, the HOFA Assessment Tool, which can be used in your own project and context to evaluate and improve your work.

The HOFA Assessment Tool is developed and based on the internal impact assessment that the Learn4health partners have continuously carried out throughout the course of the project, and which has functioned as the evidence-based proof of concept. The tool has been refined and can now be transferred and used as a general evaluation tool, to be implemented on a routine basis to the continuous improvement of your projects.

In the following, we provide you with a template to use, as well as two examples of how the tool can be used in different contexts.

O4 - HOFA Impact Assessment

Description: Assessment tool that describes the feasibility of the activity and its applicability across different contexts.

Tasks: Easy2use assessment methodologies for evaluation and self-reflection on use of HOFA. This tool is based on the impact assessment that Learn4Health will carry out within the course of the project and that function as the evidence-based proof of concept.

Besides being published scientifically, it will be transferred as a general evaluation tool that can be used on a routine basis to continuously improvement of the HOFAs. The resource will be developed in English but made available in the other Learn4Health languages (Danish, Slovenian and Lithuanian, Dutch and Spanish) on the initiative of the Learn4Health partners.

Visual Ethnography / Photo essay – Introducing the tool for impact assessment:

How: Taking photos of the intellectual outputs while writing a short paragraph (five lines) about what happens in the picture. Afterwards the questions below will be answered as a self-evaluation tool. Both pictures and paragraphs will be inserted in the developed template in order for others to get an insight into the activities/IO and to create their own subjective mind on what happens in the picture and whether it is something, they would try.

The HOFA impact assessment tool is a method for self-evaluation as well as for others to get insight, into the emotions, feeling and the entire setting surrounding the projects/IO.

Why: Pictures are equivocal and can express emotions, mood and atmosphere. Pictures make room for own-interpretation. When a picture is taken, it is produced in a context and within a story, whereas if the picture is seen outside the context, the picture can be analyzed more realistically, which can provide a more objective insight into the happenings in the picture and what is presented. This is why it is important to remember the following when using visual ethnography in the impact assessment tool:



HOFA Assessment Tool

1. Take a picture during the chosen project/IO
2. Describe the picture in a few lines.
 - a) What happens on the picture? The action(s), the people, the surroundings.
3. Use the evaluating questions raised below to go deeper into the picture and the specific project/IO.
 - a) How did the students/audience/participants reach new knowledge?
 - b) What are the main areas of knowledge obtained by the students/audience/participants throughout the project?
 - c) Which parts of working with the HOFA Handbook were especially useful for the students/audience/participants?
 - d) Which parts of working with the HOFA Handbook were not particularly useful for the students/audience/participants?
 - e) What would I change if I were to work with the HOFA Handbook again with different students/audience/participants?
4. EXTRA: Strengthen the evaluation by adding self-evaluation insight from the students/audience/participants, using smiley/emoji-method.



Tick a box



Tick a box

HOFA Assessment Tool: Example 1

IO3 - Teacher Manual for Soil'n Garden Program (SGP) - The Sprout Wagon

1. Take a picture during the chosen Intellectual Output/project.



2. Describe the picture in a few lines (2-5 lines).

a) *What happens in the picture? The activities(s), the people, the surroundings.*

The picture is from the World Food Summit (BITE) in Copenhagen August 2018. 9th graders from Arden School present "The Sprout Wagon" and tell about working with the photosynthesis while handing out blind tastings of different sprouts to the audience.

3. Use the evaluating questions raised below to go deeper into the picture and the specific Intellectual Output/project.

a) *How did the students/audience/participants reach new knowledge?*

By using the Scientific competences (testing, modelling, communication) the students gain new knowledge by using their theoretical knowledge to test how they could cultivate crops outside the classroom and through their work with the model - The Sprout Wagon. The large amount of collected data connected the students' theoretical knowledge about the photosynthesis with the practical experiences through cultivating sprouts in the class room. Finally the students gained a rooted knowledge by presenting and telling about their studies to different target groups.

b) *What are the main areas of knowledge obtained by the students/audience/ participants throughout the project?*

The students have worked with the scientific work method and completed many analog and digital measurements to test the many processes of the photosynthesis. Therefore the most important areas of knowledge have been collecting data through analog and digital measurements, photosynthesis in theory and practice, crops need of nourishment with specific focus on NPK, soil analysis concerning the pH scale. Everything gathered in an experimenting and problem solving approach to the assignments, gathered in the scientific work method.

c) *Which parts of working with the HOFA Handbook were especially useful for the students/ audience/participants?*

It has been useful for the student to be able to transform theory to practice. By participating in Learn4Health there has been a great focus on documenting and presenting the students' knowledge and results to different target groups. This part has ensured a larger learning for each student because the transmission is a great way to create and implement learning for each student

d) *Which parts of working with the HOFA Handbook were not particularly useful for my students?*

Our focus has been developing teachers' guides for school use, so everything has been useful for teaching students.

e) *What would I change if I were to work with the HOFA Handbook again with different students/audience/participants?*

I would like to put even more focus on the possibility for students to present their work for people of interest, because this is a way to promote the profit of their learning.

















































4. EXTRA: Strengthen the evaluation by adding self-evaluation insight from the students/audience/ participants, using smiley/emoji-method.



Tick a box

















































HOFA Impact Assessment tool

- Questionnaire for evaluation:

The following questionnaire addresses pupils and their teachers participating in the Learn4Health program.	
1. What do you think about the project?	     
2. To what extend have you gained new knowledge?	     
3. To what extend have you used the knowledge outside of school?	     
4. To what extend have you used the knowledge at home?	     
5. Would you be interested in work with something similar to this project?	     
6. Would you be able to teach others about the project?	     
7. To what extend did the project bring any social activity?	     
8. Did the project bring any social benefits?	     
9. Do you have any recommendations for further development of the project?	<p>Please note in this box:</p> <p>It would be good if the students could come and see the others countries projects.</p>

HOFA Impact Assessment tool

- Questionnaire for evaluation:

The following questionnaire addresses pupils and their teachers participating in the Learn4Health program.	
1. What do you think about the project?	     
2. To what extend have you gained new knowledge?	     
3. To what extend have you used the knowledge outside of school?	     
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5. Would you be interested in work with something similar to this project?	     
6. Would you be able to teach others about the project?	     
7. To what extend did the project bring any social activity?	     
8. Did the project bring any social benefits?	     
9. Do you have any recommendations for further development of the project?	<p>Please note in this box: <i>we use using the sprout wagon for our final Examinings</i></p>

HOFA Assessment Tool: Example 2

IO8 - Food Education in Different Countries

1. Take a picture during the chosen Intellectual Output/project.



2. Describe the picture in a few lines (2-5 lines).

a) *What happens in the picture? The activities(s), the people, the surroundings.*

The teacher starts the Taste Mission Fruit via the interactive whiteboard. He has access to the online teachers manual, the worksheets and to the interactive whiteboard modules.

3. Use the evaluating questions raised below to go deeper into the picture and the specific Intellectual Output/project.

a) *How did the students/audience/participants reach new knowledge?*

At this point the students didn't participate yet. They wait for the teacher to start the lesson. The teacher can read about the Taste Mission Fruit and start the lesson via the interactive whiteboard module.

b) *What are the main areas of knowledge obtained by the students/audience/ participants throughout the project?*

The teacher knows how to give the Taste Mission Fruit and which materials are needed.

c) *Which parts of working with the HOFA Handbook were especially useful for the students/ audience/participants?*

The part where IO8 is described and the link to the online teachers manual.

d) *Which parts of working with the HOFA Handbook were not particularly useful for my students?*

To execute the Taste Mission Fruit, especially the part of IO8 is useful. Other food related activities can always be connected to the Taste Mission Fruit and therefore the other parts of the HOFA Handbook can be used for inspiration.

e) *What would I change if I were to work with the HOFA Handbook again with different students/audience/participants?*

Nothing, it was clear.



1. Take a picture during the chosen Intellectual Output/project.



2. Describe the picture in a few lines (2-5 lines).

a) *What happens in the picture? The activities(s), the people, the surroundings.*

The pupils received their mission for the Taste Mission Fruit and are exploring all kind of fruits. They are challenged to use all their senses.

3. Use the evaluating questions raised below to go deeper into the picture and the specific Intellectual Output/project.

a) *How did the students/audience/participants reach new knowledge?*

The students really liked it that they received the mission from a real chef. After his video they were very enthusiastic to start exploring all the different fruit sorts. The pupils were challenged to use all their senses. They sometimes found it quite exciting but especially very fun to do.

b) *What are the main areas of knowledge obtained by the students/audience/ participants throughout the project?*

They have learned about different types of fruit and how they can use their senses to recognize it. By tasting it they may have learned a new flavour which is now part of their tasting memory.

c) *Which parts of working with the HOFA Handbook were especially useful for the students/ audience/participants?*

The part where IO8 is described and the link to the online teachers manual.

d) *Which parts of working with the HOFA Handbook were not particularly useful for my students?*

To execute the Taste Mission Fruit, especially the part of IO8 is useful. Other food related activities can always be connected to the Taste Mission Fruit and therefore the other parts of the HOFA Handbook can be used for inspiration.

e) *What would I change if I were to work with the HOFA Handbook again with different students/audience/participants?*

Nothing, it was clear.



HOFA Appendices

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Learn4health

Teacher manual soil'n
garden program

Vibeke Prip Larsen

Scientific curriculum competences in Denmark

- ❖ Research competence
- ❖ Modelling competence
- ❖ Communication competence
- ❖ Transferring competence



Scientific work method



- 1. Step - Problem
- 2. Step - Knowledge
- 3. Step - Hypothesis
- 4. Step - Experimental testing
- 5. Step - Results
- 6. Step - Discussion
- 7. Step - Hypothesis affirmed
- 8. Step - Hypothesis confirmed

Teacher's guide to the squash-growing competition

- o Scientific work method
- o Growing
- o Measuring
- o Innovation
- o Cooking
- o Eating
- o Working together as a school, as a country and across European countries



Electronic cookbook



- o Concurrently with the experiment, create and test different recipes using squash.
- o At Arden School, we are asking all the children to send us their best recipes using squash.
- o The older students translate (curriculum).

<http://learn4health.eu/squash-competition-recipes/>

Hands on - Now it's your turn

o Scientific work method:

o **Begin with step 1: Problem**

- How can I grow the most grams of squash on 1m²?



o **Step 2: Knowledge**

<https://www.rodaleorganiclife.com/garden/squash-growing-guide>
<https://www.burpee.com/gardenadvicecenter/vegetables/squash/all-about-squash/article10036.html>
<https://www.youtube.com/watch?v=Ri3KqklkYxY>
<https://www.youtube.com/watch?v=KdS-8O0iVt0>

o **Step 3: Hypothesis**

- Take notes
- Draw sketches
- Build



Further informations

Contact

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Arden, Denmark tlf. 97114300
Vibeke Prip Larsen, Head of
Science, Mail:
vibe1488@mfkskole.dk

Link

Guidelines for science teaching:
<https://www.emu.dk/sites/default/files/Vejledning%20biologi.pdf>



Learn4health

**Teacher Manual for
Soil´n Garden Program
(SGP) part 2.
The Sprout Wagon.**

Vibeke Prip Larsen

Questions - Please contact:
Vibe1488@mfkskole.dk

Teacher Manual for Soil'n Garden Program (SGP)

Part 2.

Practical research with "The Sprout Wagon"

Teacher Manual for Soil'n Garden Program (SGP)

Intellectual Output number: O3

Responsible project partner: Denmark, Arden School.

Description: Instructional manual.

Tasks: Teacher manual for the Soil'n Garden Program (SGP). Arden will document throughout the project its leading activities with the aim of extracting the main instructional elements that will then constitute a "how-to" manual for teachers in the L4H and others on implementing a pedagogical program that links the classroom to the natural surroundings of a school. Because of its comparative nature (among the partners), this manual will have wide applicability across European countries.

Goals:

The students work goal-oriented to achieve the following scientific curriculum competences:

Research competence:

- The students can make use of different research methods by using the scientific work method's hypothesis focus, which includes several different types of analogical and electrical tests and measurements.
- The students can adjust their studies, so they achieve knowledge they can use later on when working with growing different crops in "The Sprout Wagon".
- The students can research the growing conditions of the sprouts and focus on different aspects of the photosynthesis (light, water, temperature and nutrients)

Modelling competence:

- The students can use the “The Sprout Wagon” as a model that illustrates the photosynthesis in different ways.
- The students can collect data and create graphs that depict the individual measurement’s development, and adjust their growing accordingly.

Communication competence:

- The students can communicate on a scientific level, making use of the subject’s scientific expressions and words.
- The students can understand and write in a scientific manner.
- The students know the purposes of scientific texts, their structure and their objective-oriented demands.

Transferring competence:

- By using their acquired knowledge, the students can understand and act accordingly to biological cycles focusing on a specific biotope and those farming techniques that are determined by photosynthesis to grow a specific plant.
- The students can apply their knowledge, about how vegetables are grown, to their own lives when shopping for vegetables in a global world.
- The students cultivate and work with the many aspects of the photosynthesis within “The Sprout Wagon”
- By using the Scientific work method the question of the hypothesis can be:
- What is the outcome for the sprouts, when the growth light is switch on day and night, part of the day or a specific amount of hours?
- Compare the respiration of the sprouts outside and inside “The Sprout Wagon” focusing on day and night.
- Compare the photosynthesis of the sprouts outside and inside “The Sprout Wagon” focusing on day and night.
- How do we create the most profitable growing conditions in “The Sprout Wagon”

Subjects: Geography, physics, chemistry, biology and science

Target group: 0. - 9. Grade, (6 to 16 years) however the content of the teaching must be differentiated.

It implies that the students have knowledge about the following:

- **Photosynthesis**
- **The scientific work method**
- **Know how to use different types of measuring equipment**

It is recommended that the students have been working with the Teacher Manual for Soil'n Garden program part 1 prior to part 2

Materials

The Sprout Wagon - look at the illustration

Different types of seeds, absorbent cotton or coconut mats, gloves and trays for growth.

Measuring equipment:

Analogical - thermometer, tape measure, litre measure, PH-indicator, (nitrogen, phosphorus and potassium-indicator) and scales

Digital - thermometer, PH-indicator, (nitrogen, phosphorus and potassium-indicator) and scales

Cultivating seeds

Cover the bottom of the tray. Spread the seeds in an even layer. Switch on the growth light. Water the sprouts continuously until they are ready to be harvested.

Don't let them dry out. Rinse the harvested sprouts with clean cold water. Now they are ready to be used in the kitchen.

Hygiene is very important - use cloves and clean tools when you harvest the sprouts. Clean the materials thoroughly so the process can be repeated.

The sprout wagon contains 9 trays which give the possibility of cultivating different kinds of sprouts. The different crops have different growth period, which means that some types of sprouts can be cultivated more times than others.

By using the scientific work method the students make hypothesis for testing the photosynthesis, looking at the different factors as light, water, temperature, nutrients and amount of seeds. They test their hypothesis by cultivating seeds in the sprout wagon. They make measurements both analogical and digital continuously. By using these measurements, they have the opportunity to compare the results and validate their testing.

In Denmark the teaching is prepared focusing on two basic aspects:

1. The students learning about the subject specific goals.
2. The students learning the four scientific curriculum competences.

There are different subject specific goals for the subjects, Geography, physics, chemistry, biology and science.

There is freedom of choice in teaching methods in Denmark but the students have to learn to use the scientific work method through the teaching. Using “The Sprout Wagon” for teaching considers these curriculum requirements.



The four scientific curriculum competences in Denmark:

The students learn to give reasons for, explain, illustrate and write how the competences are used when they work with the subject specific goals.

4 Competences

- Research competence
- Modelling competence
- Communicative competence
- Transferring competence



These are examples of subject specific goals that teaching with “The Sprout Wagon” can imply. Find attachment 4 for examples of systematic data collection of different analog and digital measurements

Subject specific goals

- Health
- Sustainability
- Photosynthesis
- The cycle of water, carbon and nitrogen
- Different kinds of nutrition (NPK)
- Measuring - analog and digital
- And more...



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The scientific word method in headlines. Find attachment 1 for clarification.



- 1. Step - Problem
- 2. Step – Knowledge
- 3. Step - Hypothesis
- 4. Step - Experimental testing
- 5. Step - Results
- 6. Step - Discussion
- 7. Step - Hypothesis affirmed
- 8. Step - Hypothesis confirmed



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**Examples of how the scientific work method and “The Sprout Wagon”
can be combined.**

- 1. Step – Problem – How to grow....
- 2. Step – Knowledge – Photosynthesis, growing conditions
- 3. Step – Hypothesis – Pupils make hypothesis
- 4. Step - Experimental testing
- 5. Step - Results
- 6. Step - Discussion
- 7. Step - Hypothesis affirmed
- 8. Step - Hypothesis confirmed



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The particular country, school and teacher can prepare the teaching according to the specific goals which are valid for their students.

- Next step
- The sprout wagon for teaching curriculum



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Further information

- Contact

- Arden Skole, Stor Ardenvej 22, 9510 Arden, Denmark tlf. 97114300
- Vibeke Prip Larsen, Head of Science, Mail: vibe1488@mfkskole.dk

- Link

- Guidelines for science subjects:
<https://www.emu.dk/sites/default/files/Vejledning%20biologi.pdf>

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Attachment 1: The scientific work method

Scientific work method (detailed description)

1. Step - Problem:

When starting out, it is important to make sure that everyone understands the assignment and what they have to do as well as what problems you are facing.



2. Step - Knowledge:

Gather as much knowledge about the subject as possible. What do you already know? You can also look for information in books, online or by asking "experts" (people that may know more about the subject). The gathered information will prepare and help you with solving the problem/assignment.



3. Step - Hypothesis:

The hypothesis is your suggested solution to how you can solve the assignment/problem. You're allowed to come up with several solutions. Please sketch out and explain your solutions.

I THINK

In the group, discuss and assess both the positive and negative sides to your solutions. Afterwards, please pick one of your ideas. Save all your ideas, sketches and thoughts for your logbook.

4. Step - Experimental testing:

You shall now construct and test your chosen solution.

5. Step - Results:

Based on your tests you will end up with some results.

6. Step - Discussion:

Based on your results, discuss if your solution solved the problem and completed the assignment.

7. Step - Hypothesis affirmed:

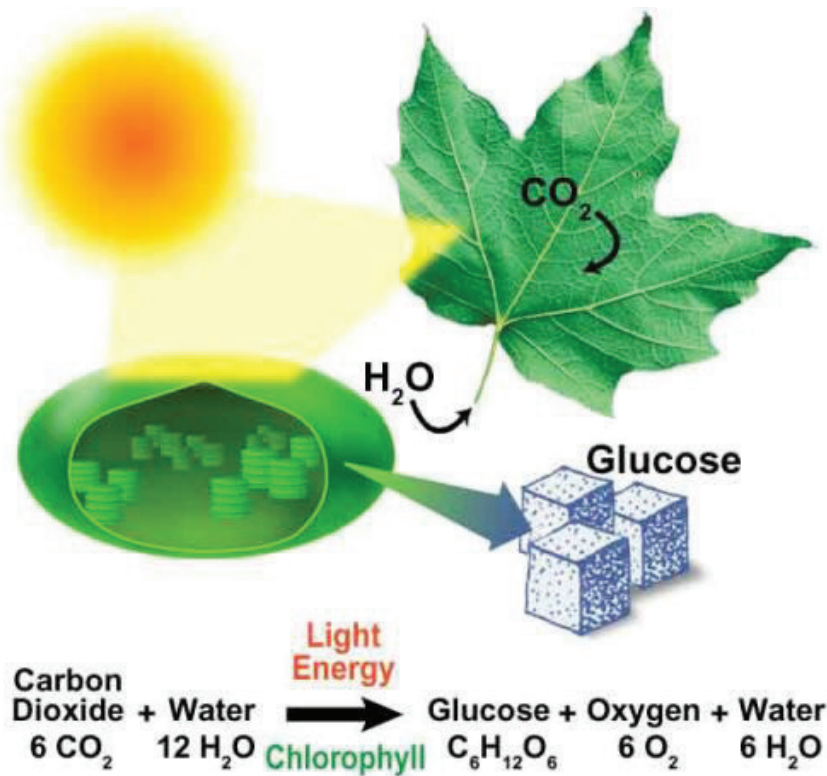
If your suggestion did not solve the problem, please go back to step 2 and/or 3. Please change at least one or more thing about your solution before trying again.

If your solution solved the problem, please proceed to the 8th step.

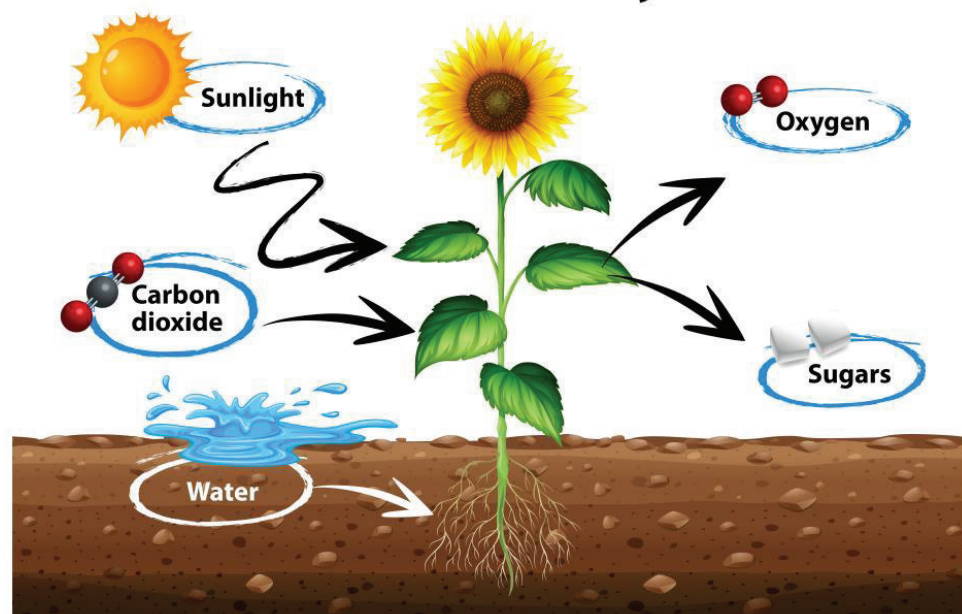
8. Step - Hypothesis confirmed:

Even if your solution proves succesful, please keep experimenting to see if you can improve it somehow.

Attachment 2: Photosynthesis



Process of Photosynthesis



Attachment 3: Data chart

The Sprout Wagon

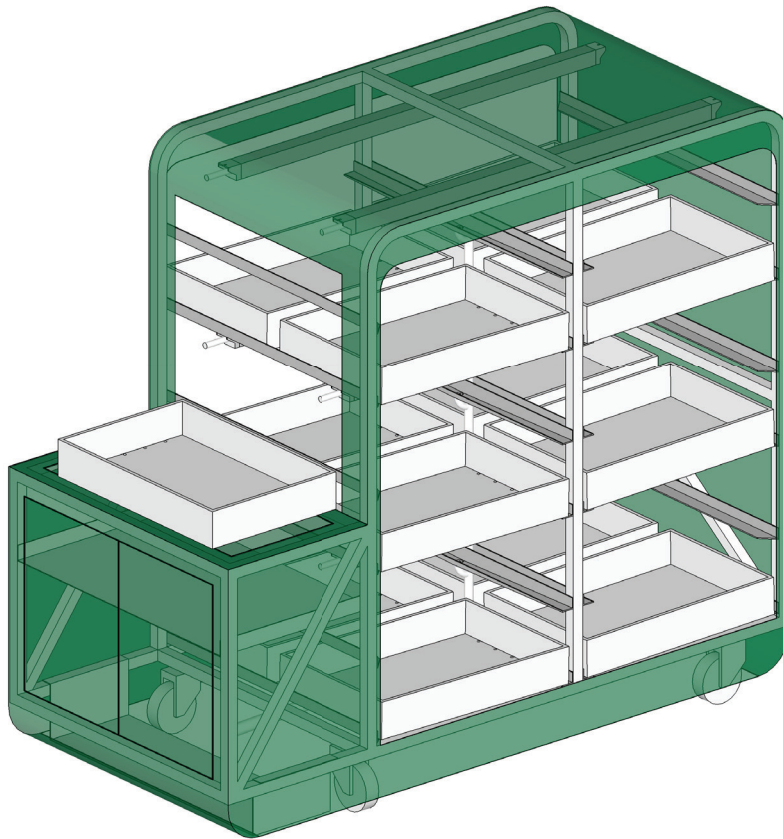
Sprout type:

Date	Temp. Air-analog	Temp. Air-digital	Temp. Water- analog	Temp. Water- digital	Amount of seeds	Harvested grams of sprouts

Attachment 5: Drawings - how to build “The Sprout Wagon”

Vækstvognen

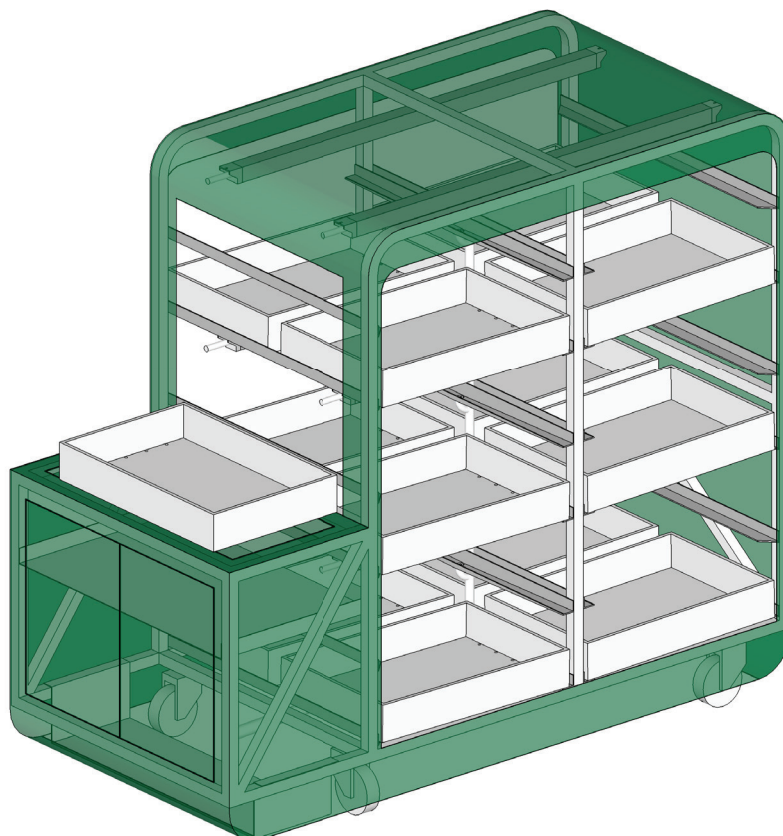
A mobile solution to growing sprouts in multiple layers. For educational use at Arden School



1

The Sprout Wagon

Version A



In both versions, all metal should be done in stainless steel.

The Sprout Wagon has been developed in two versions. Version A is more aesthetically developed, which results in a more expensive construction. Additionally, version A has a watering system, where the inner tracks are used as drainage for the trays. From the tracks to the water tank on the bottom tray, pipes should be installed. This, however, turned out to complicate and increase the price of the construction. A more simple version was developed which does not contain a watering system, and where the construction is simplified to reduce the price.

Version B has fewer tracks for the trays, which means that the trays have to be stacked on top of each other, if they are all in use. Version B is furthermore adapted to fit specifically to the narrowest door at Arden School. Version A is wider, and if this version is produced, you should therefore be aware of the widths of the doors in the building you will use it in. The shelves in Version B are designed to make it possible to install a water tank in the bottom, making it possible to later install a watering system which is not directly integrated into the design of the wagon.

The Sprout Wagon

Version A

The light fixtures are attached right under the trays

A tray can be placed at a suitable height so pupils can pick sprouts or herbs in a dining situation in the cafeteria.

Can be opened from above to access the lighting system (timers, etc.)

Shelf for electronics.

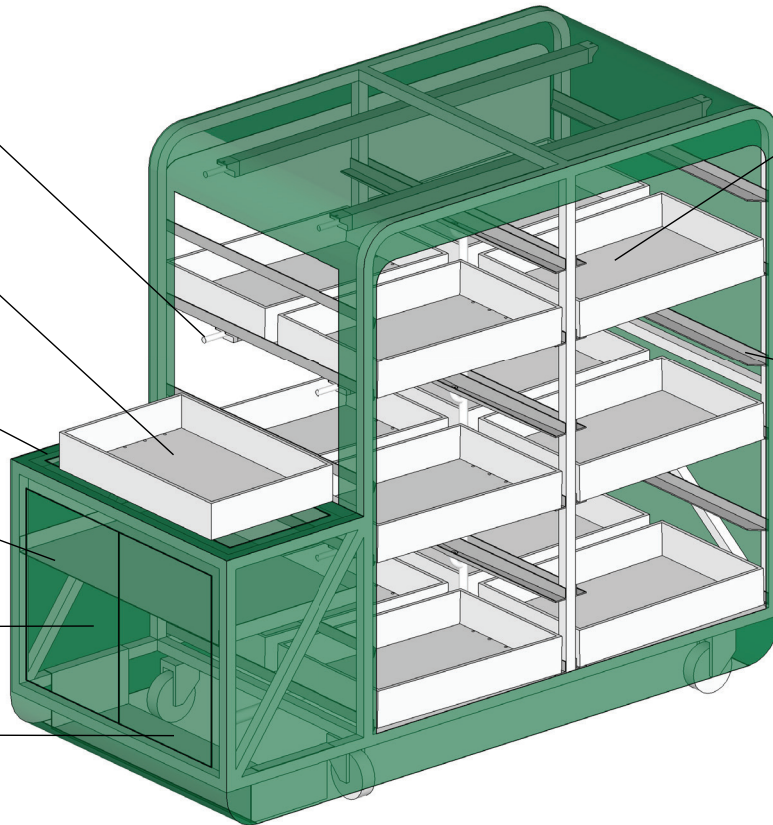
Can be opened at the front to access the water tank and watering system.

Water tank.

The trays are 40 cm x 60 cm. The size makes it possible for even the youngest pupils to handle them. If sprouts are to be grown, 24 trays can fit into the wagon, approx. one per pupil in a class.

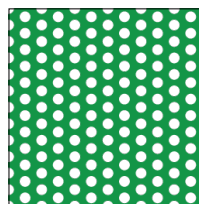
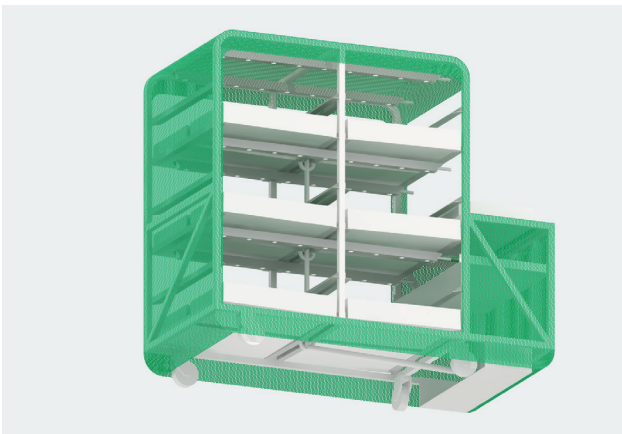
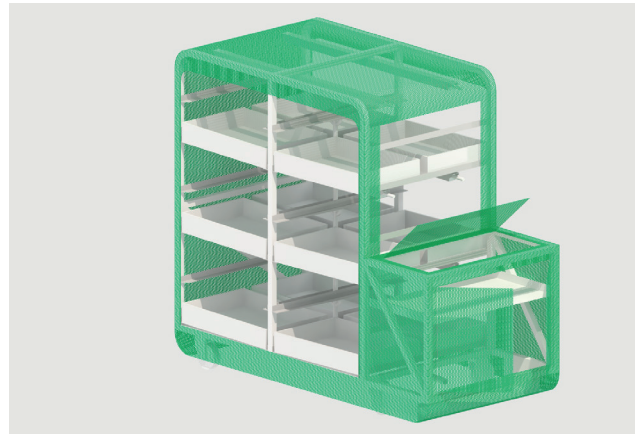
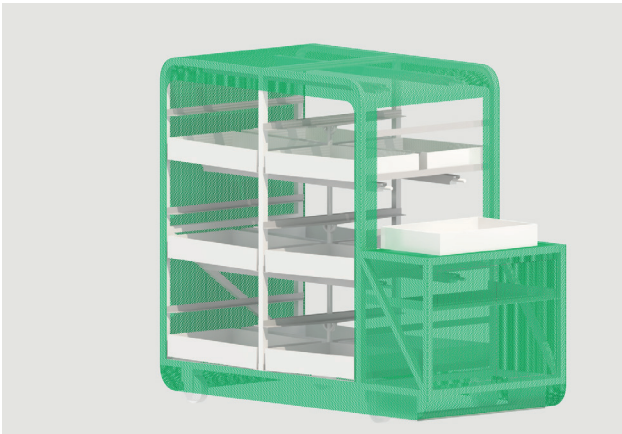
The water is pumped into each tray through smaller pipes. The construction under the trays makes the trays incline towards the middle of the wagon, where the water is therefore accumulated and transferred back into the water tank.

The trays are accessed from both sides of the wagon, and are easily removed and placed back. Additionally, there is a clear view of the plants/sprouts.

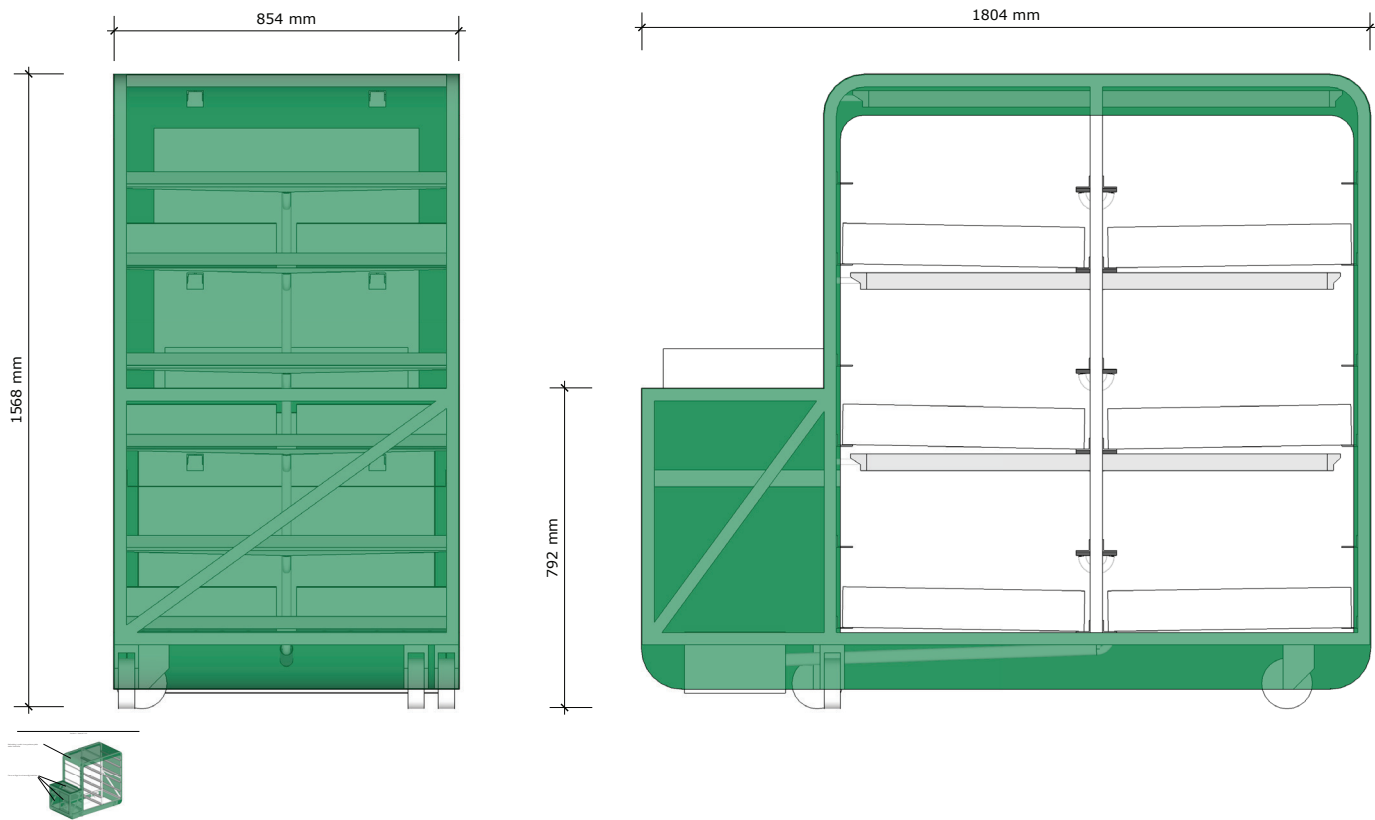


Visualizations

Version A

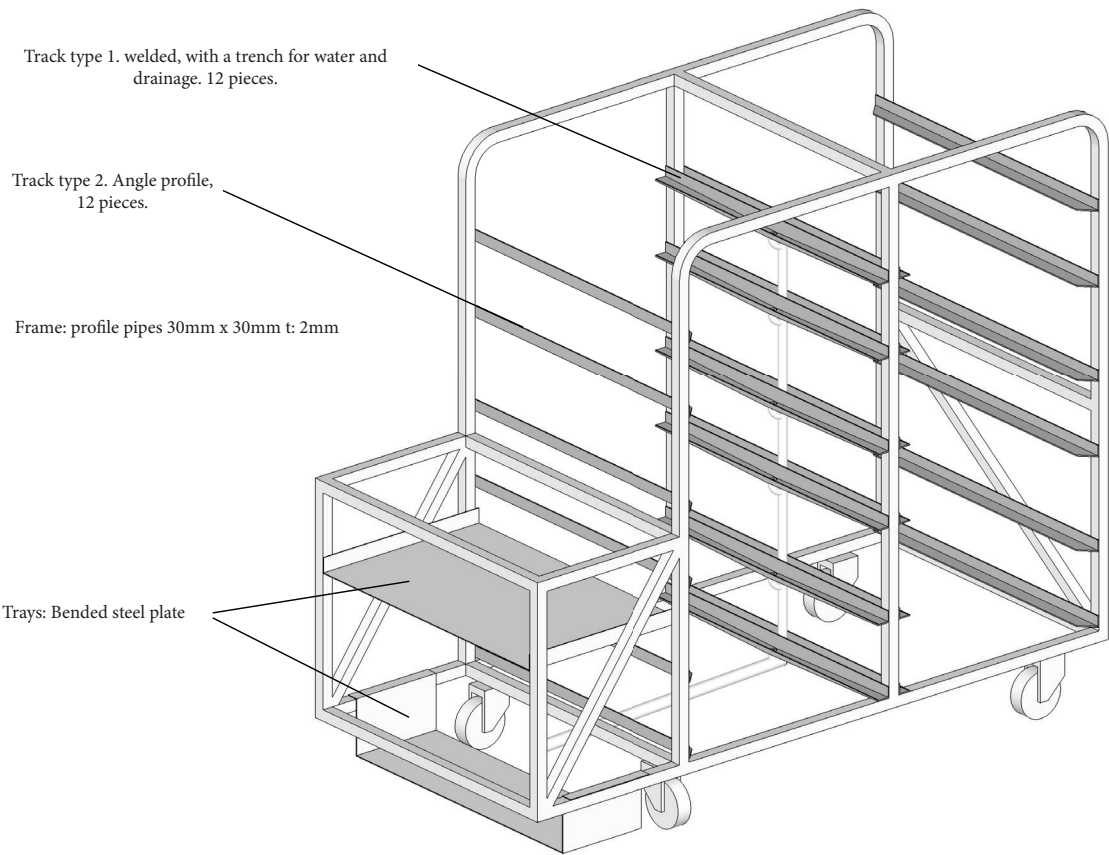


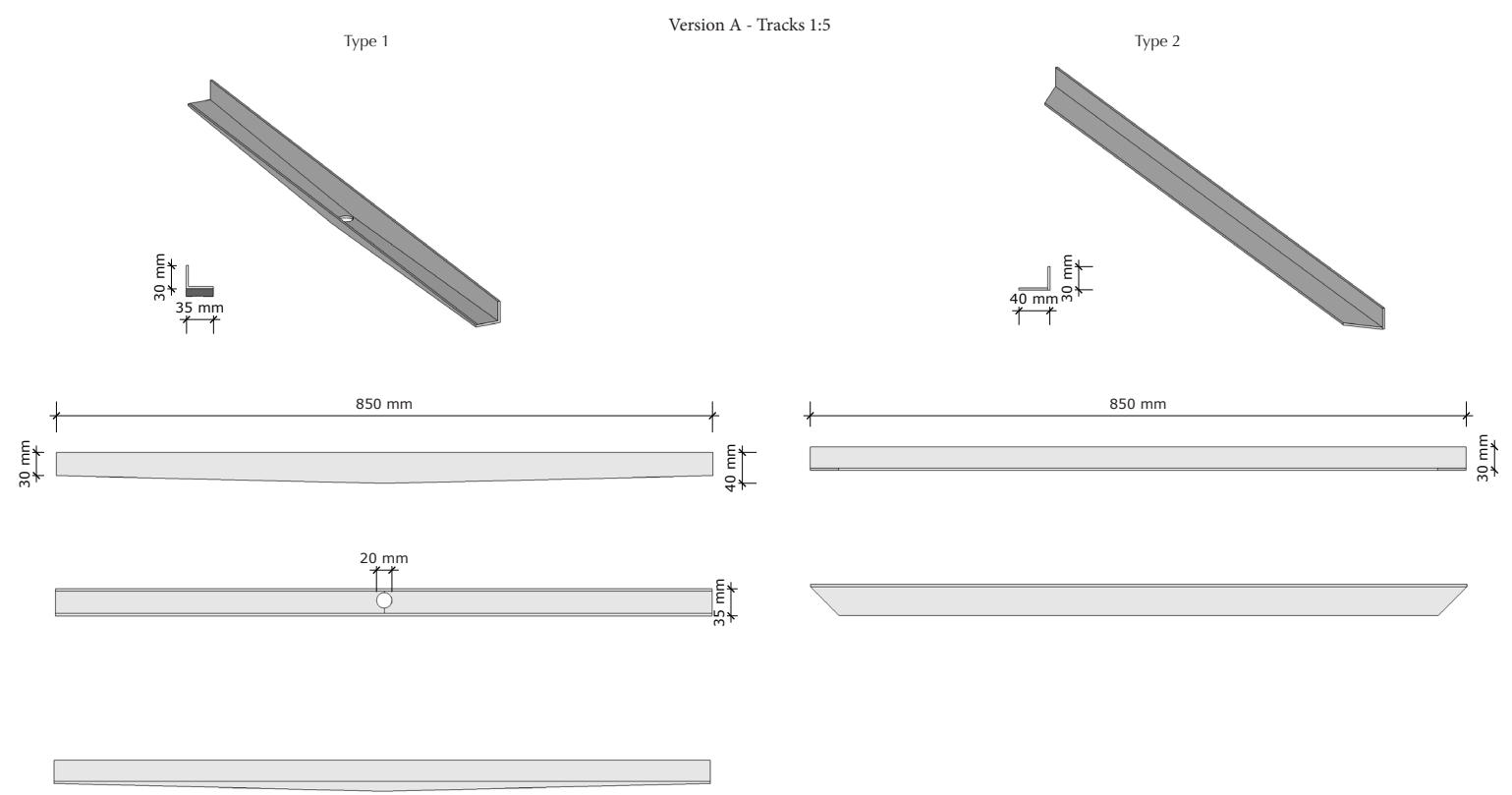
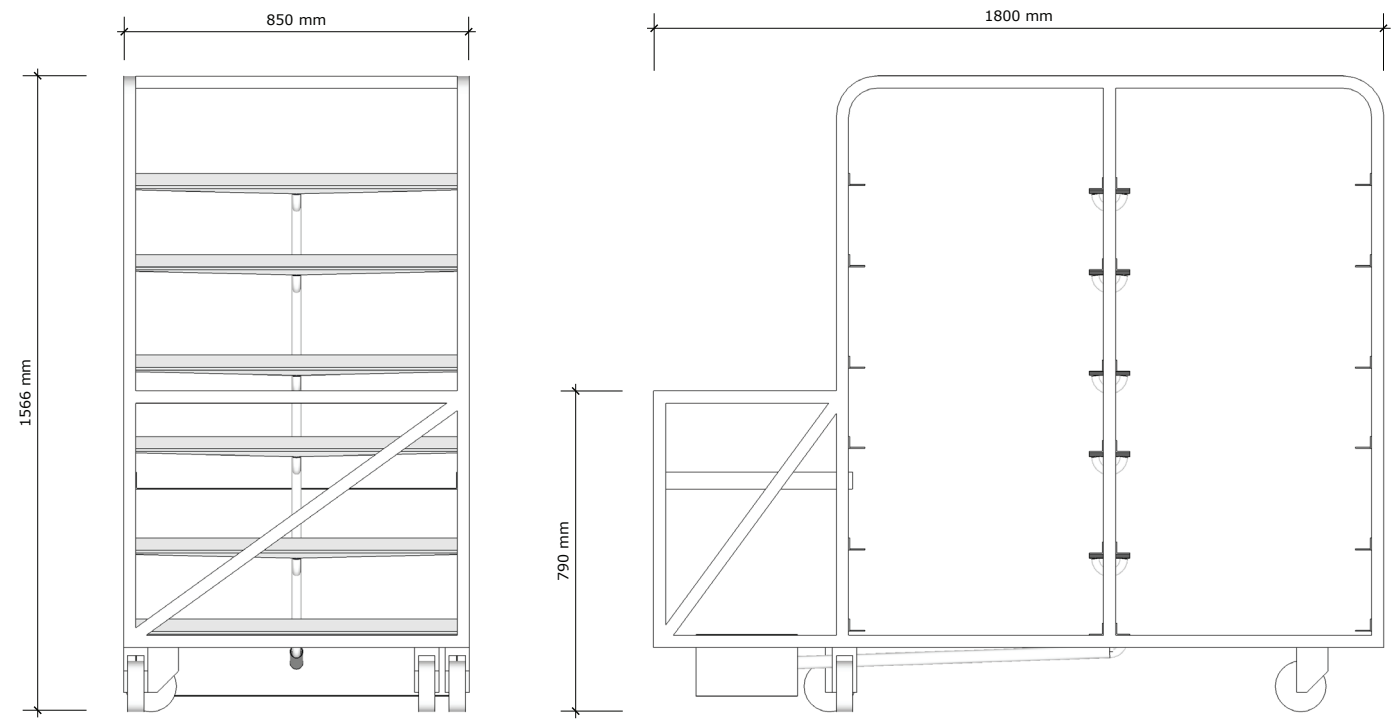
The wagon is covered in perforated metal plates.

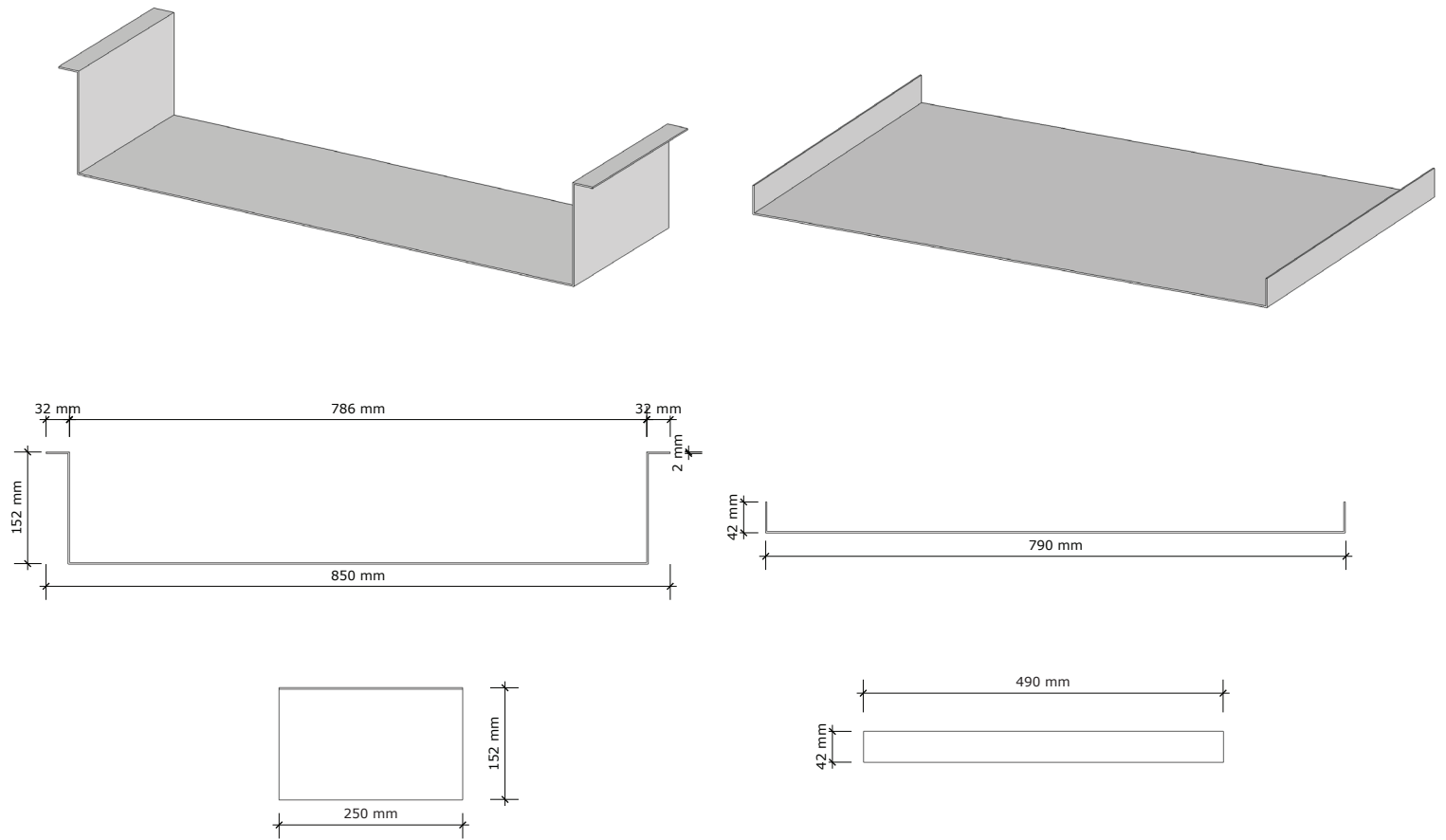


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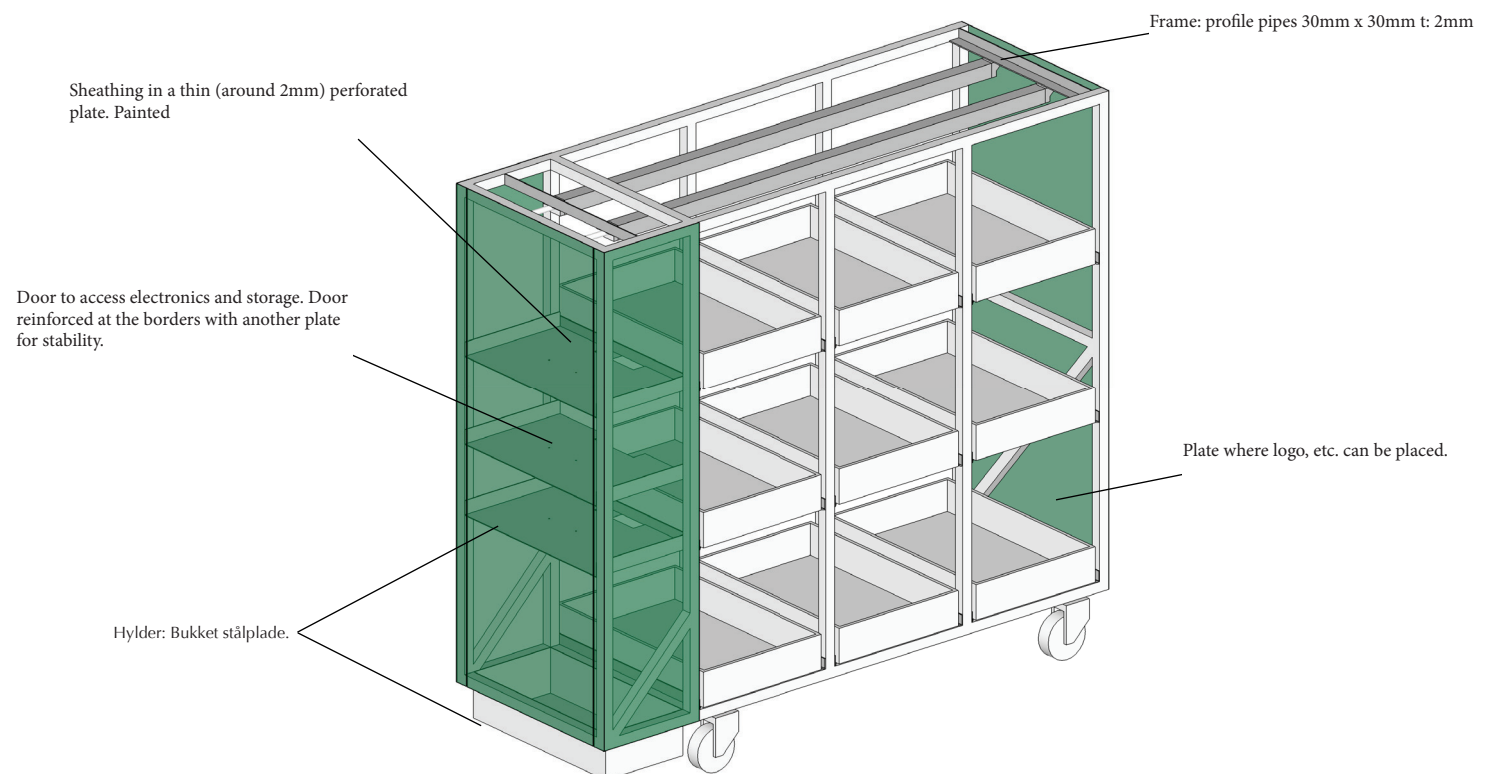
Version A - Isometri 1:10 - without covering.







The Sprout Wagon



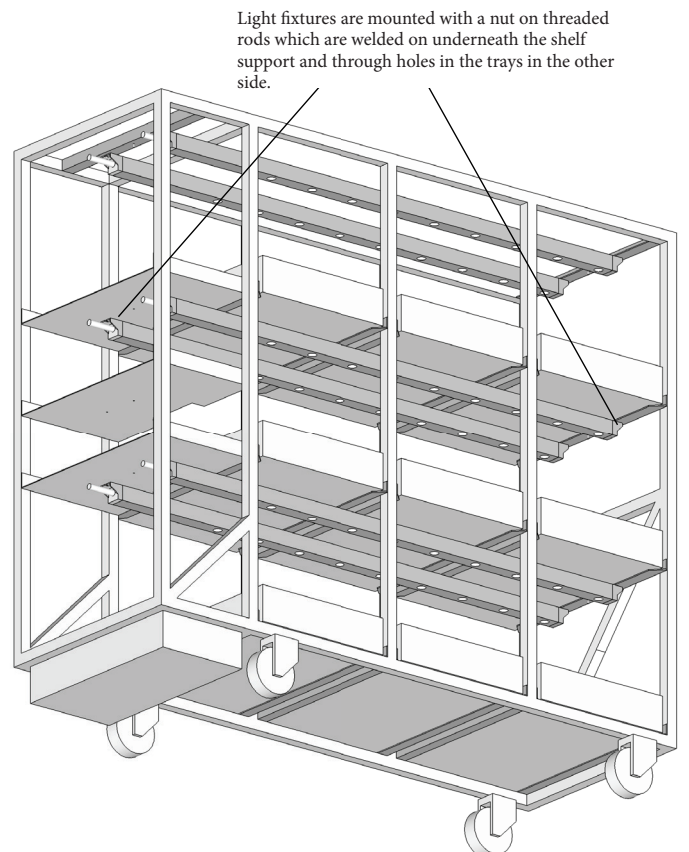
The Sprout Wagon

Version B - Isometri 1:10

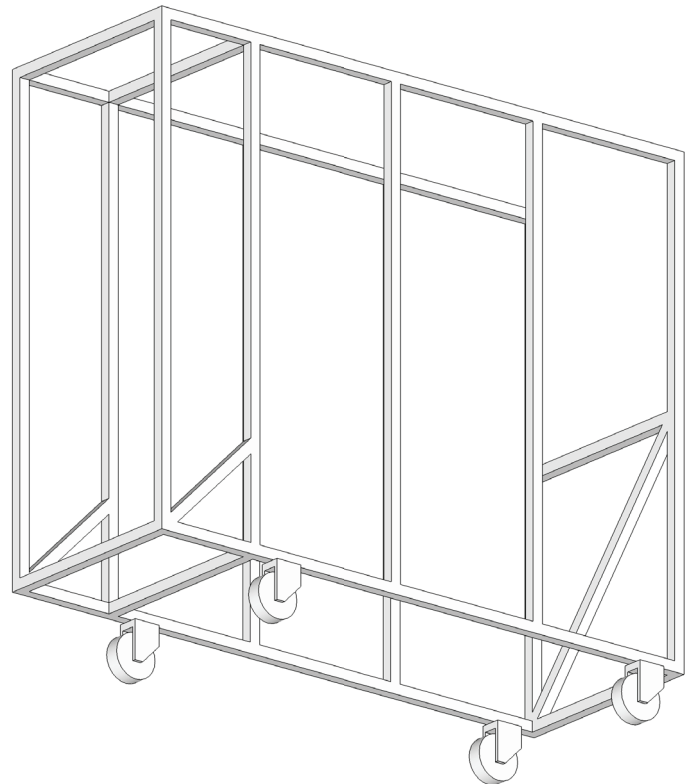
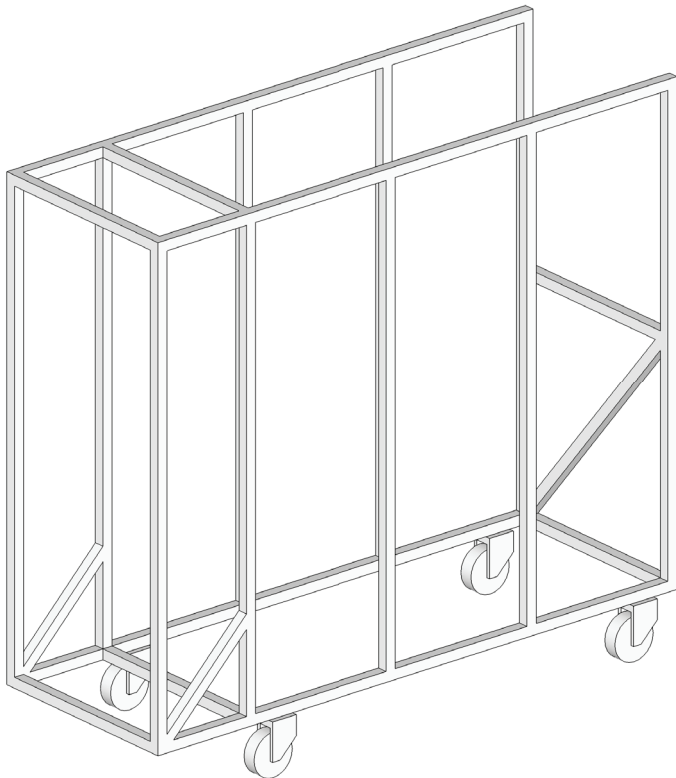
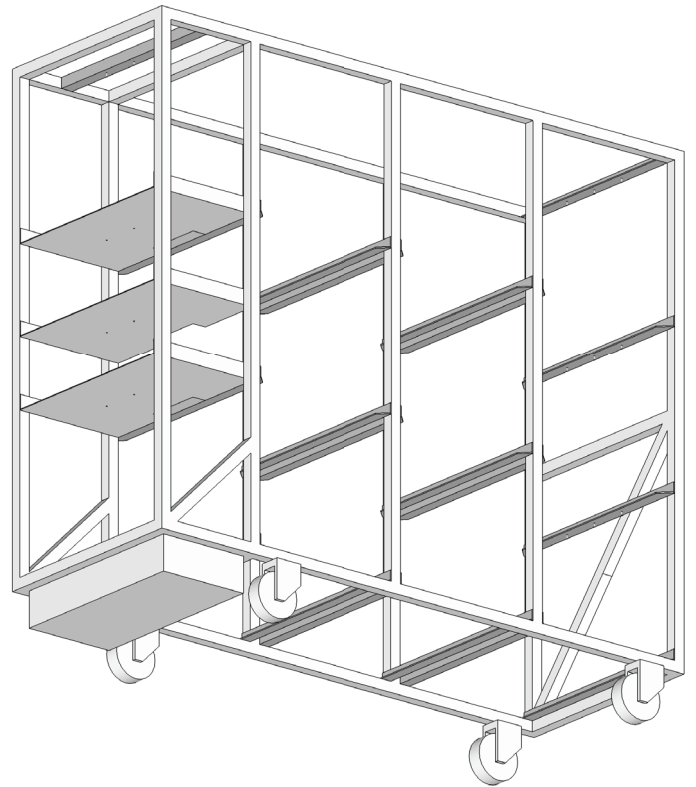
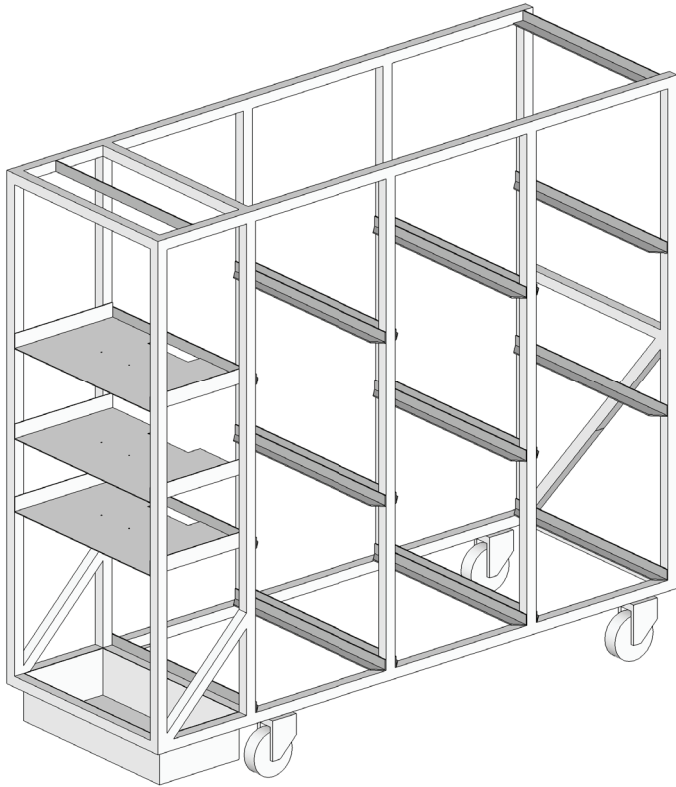


12

Version B - Isometri 1:10 - without sheathing



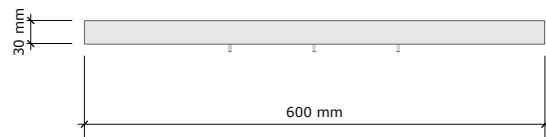
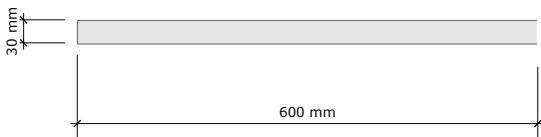
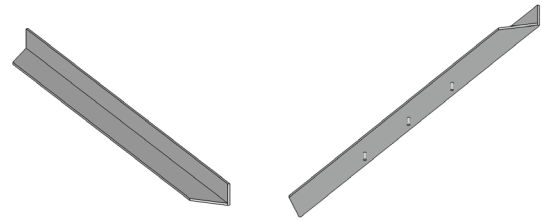
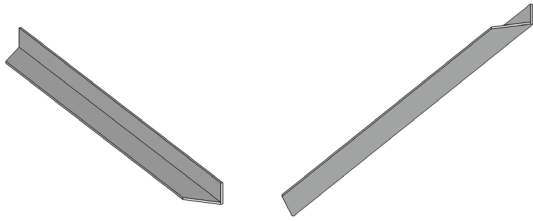
13



Version B - Shelf supports 1:5

Type 1 - 16 pcs.

Type 2 - 2 pcs.

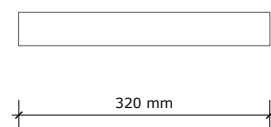
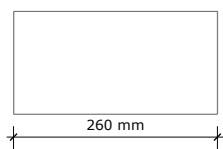
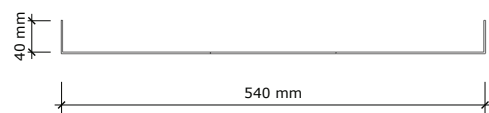
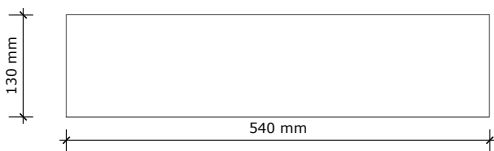
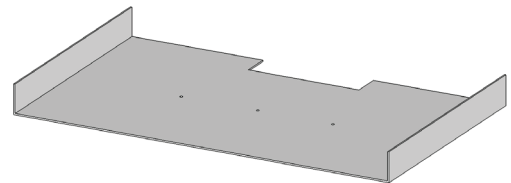
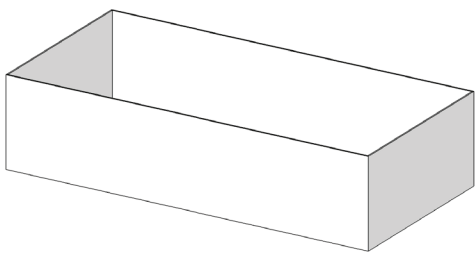


16

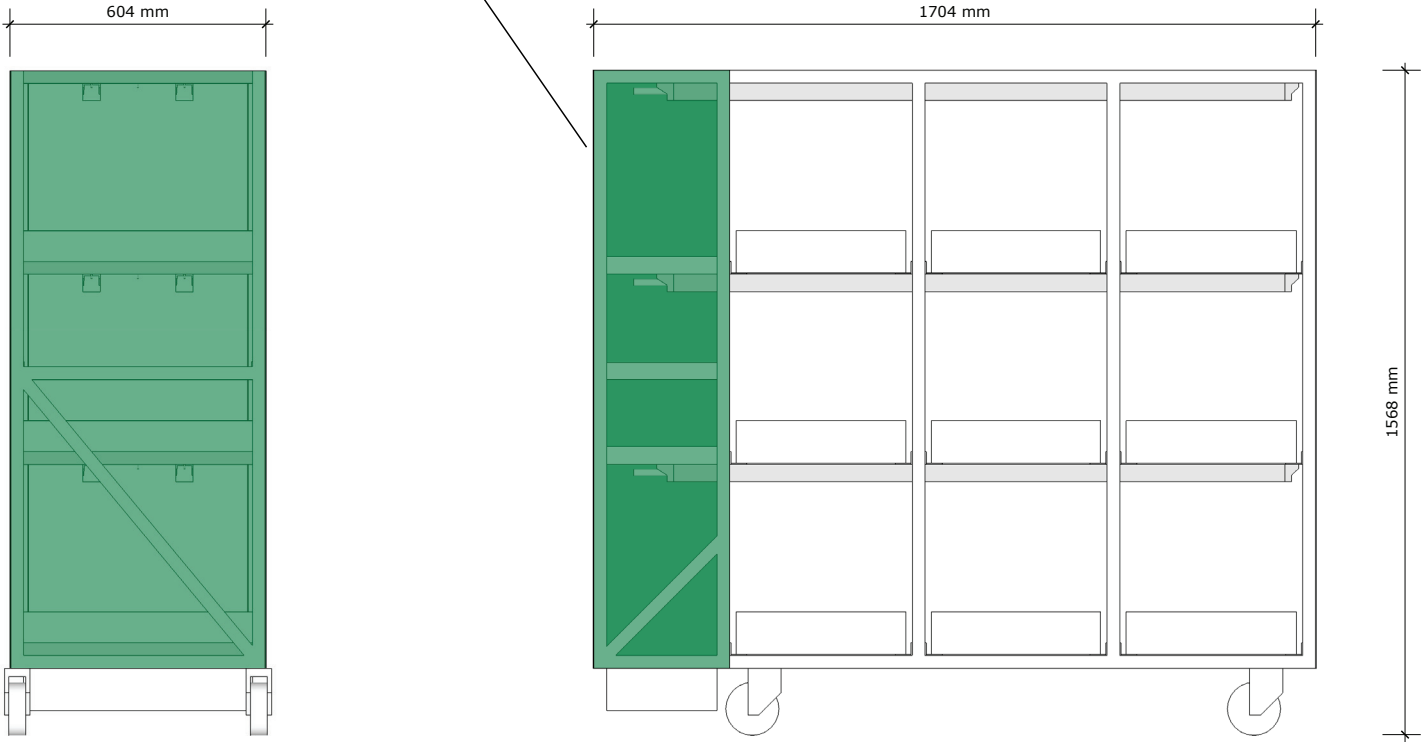
Version B - Trays 1:5

1 pc.

3 pcs.



Posterior with door to access trays.



18

Three suggestions for use



Sprout

E.g broccoli, cress, peas, arugula. Most sprouts will grow in 310 days.



Small plants

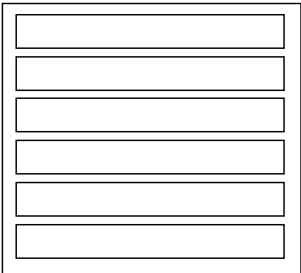
Basil, chives, mint. 1-2 months.



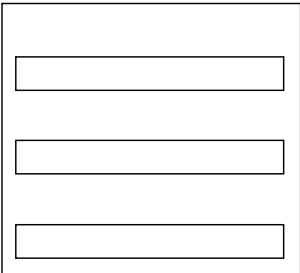
Larger plants

Tomatos, chili, etc. Can take longer to grow.

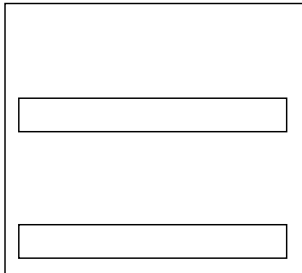
A cover is put on the trays to sustain a humid environment for sprouting,



Installation with 6 layers for maximum yield, as the sprouts do not need space exceeding the height of the trays.



Layout with 3 layers of trays to give the plants space and achieve the right distance to the light sources.



Layout with 1 or 2 layers of trays to make space for the plants. You can experiment with the distance to the light sources.

Light sources

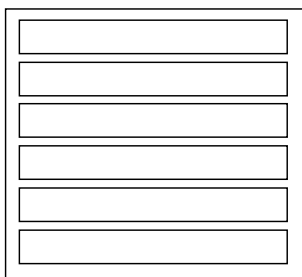
The light fixtures can be placed different places in the wagon depending on the type of crop growing. Experiments can be done by placing the lights at different distances, or by omitting it.

The chosen light source is a mixture of "Deep Red", "Low Blue" and "White". the red part is the most effective spectrum for photosynthesis, vegetative reproduction and development of sprouts. The blue light has a positive effect on the density and hardening of the plants. The white light (fortsættes næste note)

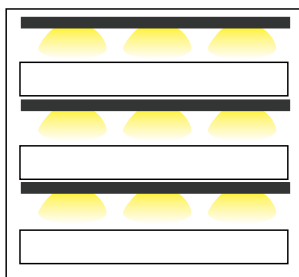
is a 'working light' and is mixed in to make the light more comfortable for the eyes.

The optimal distance from the lights to the plants is around 30-40 cm. At this distance, the light can be distributed evenly, but as the plants grow, the distance is reduced and local differences will be noticeable. The plants can not be too close to the lights (even if they touch them),

as is an LED light source, which does not have any notable heat generation. Furthermore, LED has a very low power consumption. The chosen fixture from Philips has been developed specifically for commercial crop growing in many layers, and is very robust and water proof. It is easy to connect and has a lifespan of over 25.000 hours.



In connection with growing sprouts, grow lights are not necessary, although there is space for the fixtures even with all the trays in place.



In connection with growing smaller plants, the fixtures should be placed evenly above the plants, with two fixtures in each of the three layers of trays.



In connection with growing larger plants, three fixtures can be attached in each of the two layers.

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Products



Wheels

Example: Tente Rustfri 44950534 mobile, with brakes, load capacity 150 kg.

Link: <https://www.carl-ras.dk/e-shop/beslag/moebelbeslag/moebelhjulruller/transporthjulrustfri/>



Growth material (if applicable)

Example: Grodan

Link: <http://www.grodan.com/>



Equipment for hydroponics

Gridded pots and mounting for these. Must fit the trays.

Link: evt. : <http://www.grobutikken.dk/49--hydroponics-og-tilbehor>



Trays (24 pcs.)

Link: <https://www.hwl.dk/da/product/plastvarer/dejbakke-uden-laag-8e6410>

Lids: <https://www.hwl.dk/da/product/plastvarer/laag-til-dejbakke-600x400-cm>

Prodcus - lights and electronics



Light source:
Philips GreenPower LED production DR/W 150
LB 30W
Provider: Horticoop

Link: http://www.horticoop.dk/datablade/Lys/GreenPower_LED_Production-module.pdf



Power timer with earth terminal, for outdoor use:

Link: <https://www.bauhaus.dk/el-belysning/elinstallation/lysstyring/dognur-udendørs-med-jord.html#full-description>



Sockets (child proof, with earth terminal, for mounting)

Link: <https://www.av-cables.dk/stikdaase-3-med-jord/stikdaase-9-udtag-m-jord-sort-3-m.html>



Socket with three outlets, with earth terminal, 15m, green/red

Link: <https://www.av-cables.dk/stikdaase-3-udtag-m-ledning/stikdaase-prof-3-udtag-m-jord-15-m-groen-roed.html>



Heating mat - can accelerate growth (has to be aligned to the measurements of the trays)

Link: https://www.hokuskrokus.dk/saa-spire/nelson-garden-varmematte-mini-drivhus-spirekasse-723?gclid=EAlaIQobChMIroGJguvh1wIVlIkYCh3q4QIXEA-QYASABEgI0vD_BwE
eller
<http://www.grobutikken.dk/varmematter/381-varmematte-40-watt-40-x-60-cm-.html>

Links (in Danish)

Hydroponic growing:

- <https://www.dhkh.dk/shop/profile.html>
- http://www.hydroponics.dk/hash_dyrkning/dryppesystem/c-24/c-126
- <https://www.dansk-hobby-hydro.dk/>

Sprouting

- <https://www.foedevarestyrelsen.dk/Selvbetjening/Guides/Sider/Sadan-goer-du-naar-du-selv-laver-spirer.aspx>



Teenagers eating culture Instructions

Funded by the
Erasmus+ Programme
of the European Union



Equipment: mobile phone;

Age group: 14-16 years old students, but it is up to you to choose a different age group. Consider whether children of the chosen age will be able to perform the task.

Size of the group: It depend on the topic. You can choose groups of classes, all class, a few classes, groups form different classes, groups from different schools.

Days of the week: we recommend from Monday to Thursday. Another option – Weekend.

What should be recorded? Each time student eats, drinks or has a snack within 24 hours (there will be a few videos per day). You can make an assignment more ambitious and record all week.

How to collect videos? Videos could be collected and sent using googledrive, onedrive, dropbox or wetransfer.com - in the way that is most convenient for you and students.

This questionnaire is created to evaluate your eating habits and eating culture. We highly believe that not only healthy eating but eating culture as well is important. You have to pay attention where, with whom, what and when you eat. There are no good or bad answers just your answer. The information will be taken from different countries, different ages and summarised. You will find the results on <http://learn4health.eu/> as well as recommendations for healthy eating habits.

Thank you!

Project Learn4Health team

LT LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

LT KARMEĻAVA BALYS BURACAS GYMNASIUM

Before you start:

1. Choose one day from Monday to Thursday;
2. Use your mobile phone to make a video;
3. Record each time you eat, drink or have a snack within **24 hours**;
4. Use video instructions for each video;
5. Send all videos to responsible teacher.

Instructions

Boy/Girl (mark) Age:

If possible, try to show or say in your video:	You can start with these examples:	Describe here, if it can't be clearly seen or said
1. Day of the week;	<i>Today is... (Monday, etc.)</i>	
2. Time you are eating, snacking or drinking;	<i>Now is ... (6 o'clock)</i>	
3. When are you eating this food?	<i>It is ...</i>	
4. The environment (room at home, school (home, which room, place at school, cafe, restaurant etc...))	<i>I am in /at ... (kitchen, canteen ... etc.)</i>	
5. People you are eating with (family members, friends etc...)? I am with ... (alone, with friends, mother ... etc.)	<i>I am alone/with ... (friends, mother ... etc.)</i>	
6. Have you prepared, bought the food yourself?	<i>I have ... (made, bought ... etc.)</i>	
7. How do you call this food?	<i>It is ...</i>	
8. What main ingredients of this dish?	<i>This dish is made of ... (chicken, tomato, bread ... etc.)</i>	

This questionnaire is created to evaluate your eating habits and eating culture. We highly believe that not only healthy eating but eating culture as well is important. You have to pay attention where, with whom, what and when you eat. There are no good or bad answers just your answer. The information will be taken from different countries, different ages and summarised. You will find the results on <http://learn4health.eu/> as well as recommendations for healthy eating habits.

Thank you

Project Learn4Health LT team

Boy/Girl (mark)

AGE:

Name:

1. Do you have a dining table at home where all the family sit together for dinner?

- Yes, very often we eat together;
- Yes, but rarely we eat together;
- No.

2. Who cooks in your family?

- Mum;
- Dad;
- Both, mum and dad;
- You cook;
- Somebody else does.

3. Do you grow vegetables, fruit, and berries in your own garden?

- Yes, we have a garden where we live;
- Yes, but not in the place we live;
- Our grandparents or relatives grow and share with us;
- No, we do not grow.

4. How often do you go out for a meal?

- Never;
- Once/Twice a month;
- 1-2 times a week;
- 3-4 times a week ;
- 5-6 times a week;
- Every day

5. In this chart you will find statements about eating habits in your family. Please mark the most suitable answer for you. You have to mark the most suitable answer for your family. (mark, please, ☒ in every line).

Statements	Totally agree	Agree	Partly agree	Don't agree	Totally disagree
In my family...					
a. ... it is important to have dinner (or other the most important meal in family) all together;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. ... there are rules which we follow while eating together;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. ... we chat and discuss family questions while eating;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. ... it's impossible to find time and have meal all together;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. ... breakfast or dinner is not only time to eat, but spend time all together as well;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. ... polite behaviour rules are necessary;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. ... I often do not have time to join my family for a meal together;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. ... it is a rule to eat everything what is on the plate;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. ... I can choose what I want to eat;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. ... we like eating a wide variety of food and trying new recipes as well;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. ... kids get sweets, ice-creams, chocolate etc. as a prize for a good behaviour;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. ... I prefer eating alone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Some more questions about you and your friends. Please, tick the most suitable answer. (mark, please, ☒ in every line)

Questions	Never	Very rarely	Sometimes	Often	Always
a. Does your family often have together:					
• Breakfast?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Lunch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Dinner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. When you eat does anybody from your family join you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Is your TV on while you are eating together with your family?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Is the food in your family often cooked at home?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Do you help your family to buy food?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. How often do you help your family to cook?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Do you always have fresh fruit at home?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. How often do you have fresh vegetables for dinner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. How often do you eat unhealthy food?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Do your parents talk to you about the importance of healthy food?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Do you have breakfast/lunch/dinner together at weekends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. How often do you prepare meals together with your friends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Do you talk about healthy eating with your friends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Do you often go out for a meal with your friends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Do you often talk about food, share new recipes with your friends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. While eating do you:					
• watch TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Play computer games, use mobile phone, text etc...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. How often do you:

	Often	Sometimes	Never
Make a sandwich	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boil or fry an egg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepare fruit /vegetable salad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cook and try a new recipe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

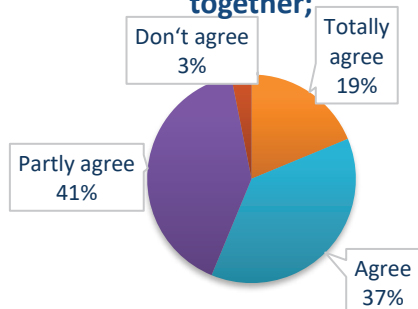
8. What dishes you can cook yourself? (describe, please)

9. What dishes are mostly cooked in your family? (describe, please)

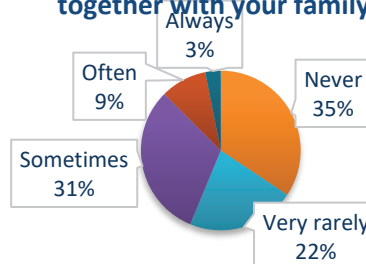
10. Do you have any food/meal traditions in your family? (describe, please)

Your family ...

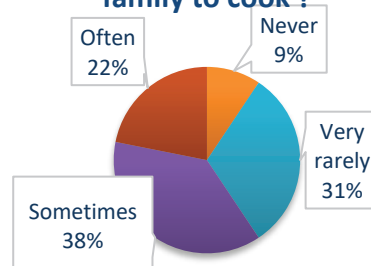
a. ... it is important to have dinner all together;



c. Is your TV on while you are eating together with your family?

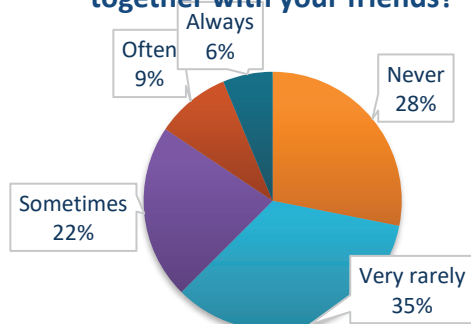


f. How often do you help your family to cook ?

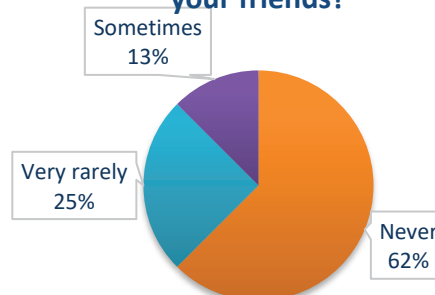


You and your friends ...

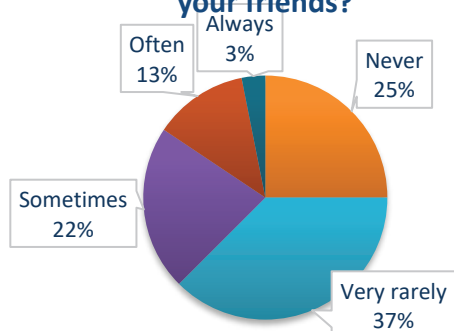
l. How often do you prepare meals together with your friends?



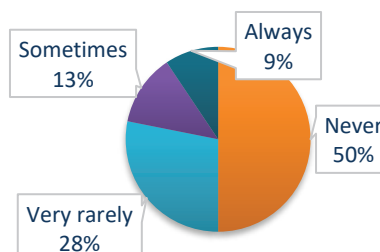
m. Do you talk about healthy eating with your friends?



n. Do you often go out for a meal with your friends?

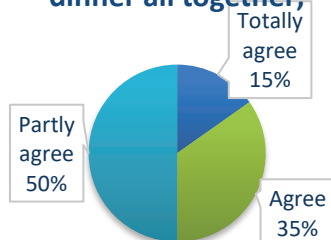


o. Do you often talk about food, share new recipes with your friends?



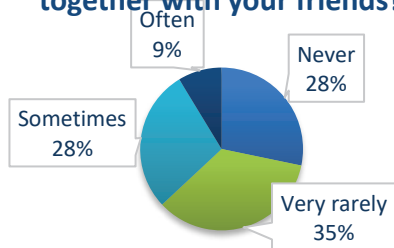
Your family ...

- a. ... it is important to have dinner all together;

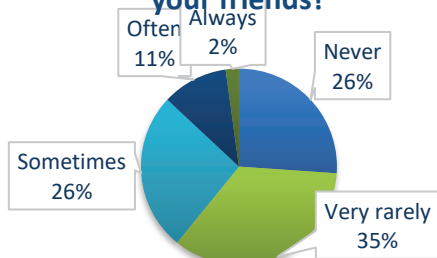


You and your friends ...

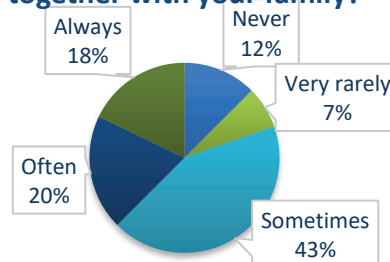
- l. How often do you prepare meals together with your friends?



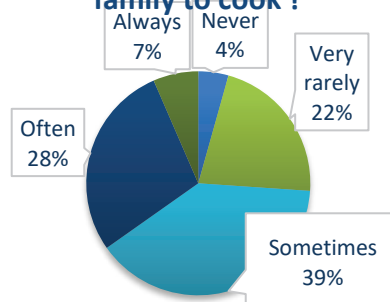
- n. Do you often go out for a meal with your friends?



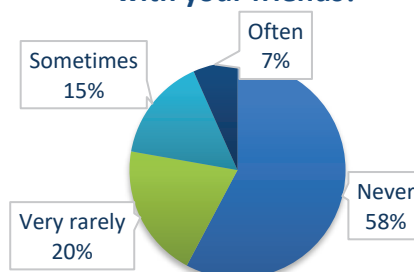
- c. Is your TV on while you are eating together with your family?



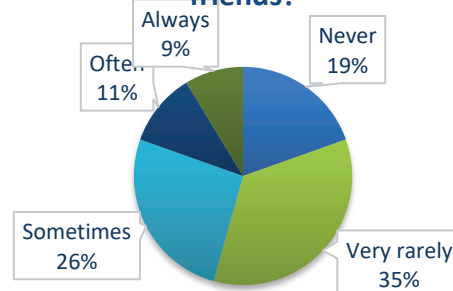
- f. How often do you help your family to cook?



- m. Do you talk about healthy eating with your friends?



- o. Do you often talk about food, share new recipes with your friends?



Half of Lithuanian and Slovenian children answered that family dinner time family was important to them. However, many Lithuanian children indicated that they sometimes, often or always watch TV while eating dinner with a family. Lithuanian children were more likely to help parents to prepare a meal. Together with friends, food was often or at least sometimes produced by a similar amount of Lithuanian and Slovenian children - about 40%. Most of the respondents rarely or never talked about a healthy diet with their friends, but a little bit more Lithuanian children were often sharing recipes with their friends.

There is little differences in eating culture between the two countries. Taking into account the results of the survey, the eating culture of these children can be rated as positive and it favors the development of proper eating habits. However, more attention could be given to friends-related eating culture.

Recommendations for families

Basic insights during project

One of the most favourite children's dishes is pancakes. We would recommend to improve recipes by adding whole grain flour or flour made from other grains, like oats. The recipes could be improved by adding bananas or other fruits, reducing the amount of sugar and fat.

Pasta is one of the main dishes mentioned by the children. Children often were able to make it by themselves, and it was often made by other family members; we recommend replacing pasta with other valuable grains, or, at least, use pasta made from whole grain flour.

Some children like products of processed meat such as sausages. We would recommend using unprocessed meat or replace it with other protein sources such as tofu, beans or legumes.

Children love cocoa drink, especially during breakfast. Most of the time various unhealthy additives and sugar are included in cocoa drinks. We recommend to drink water (or other drinks without additional accessories, like tea or water with some berries or fruits);

In the evening children love to have ice cream or cookies. We would recommend to eat food high in protein and less in carbohydrate in evening.

Children can prepare a non-home-made food. We would suggest cooking at home. Home-made food can also be heated by the children. Additionally, we recommend to eat freshly prepared home-made food that all family members could make all together. Children are often eating alone. Then parents have less chance of monitoring and guiding what their child eat and how much they eat.

Recommendations on eating culture

Cook and eat at home more frequently;

Involve all members of the family in meal cooking;

Use local fruits and vegetables and/or grow them in your garden. Choose carefully the products you buy, read labels, choose less processed food and food with fewer additives;

Involve children in food shopping, teach them how to choose, introduce them with high quality products;

Help children to arrange meetings and throw parties where they can learn how to cook healthy food all together;

We encourage the family to eat together as often as possible at the dining table. During family meals do not watch TV, use mobile telephone, computer or other devices. Time should be given and attention should be paid to food and family members;

Children at school or other gathering places, cafes should encourage each other to choose healthier products and communicate while eating rather than use their phones.

Create traditions with family, friends, or school members. Find out about your country's traditions, perhaps you will also find healthy traditions that you can adapt to your family.

Cooking and eating together is not only a necessity, but a part of a healthy and happy life.



Online course: Coursera “Child Nutrition and Cooking” taught by: Maya Adam, MD, Lecturer, Stanford School of Medicine;

Book: Maya Adam “Food, Love, Family: A Practical Guide to Child Nutrition”. Cognella Press; First Edition edition (January 11, 2016);

EAT Project: link <http://www.sphresearch.umn.edu/epi/project-eat/>;

Canada's food guide: link <https://food-guide.canada.ca/en/>

The EAT–Lancet Commission on healthy diets from sustainable food systems: link <https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report/>

In 2016 with the help of national project „VMG school“ the biggest and the most modern classroom for Home Economics lessons was opened in Karmelava Balys Buracas gymnasium. This was the 5th classroom in Lithuania and the only one in Kaunas region. The spacious room with the necessary modern is available for 32 students working at a time. It is open for different project concerning healthy lifestyle for the whole school community as well.

In 2018 the school canteen was reorganised to a self-catering canteen. For healthy lunch students can choose vegetables, soup and the main dish themselves. The canteen menu provides a healthy lunch choice for teachers as well. Drinking water is free and available any time for students. The unhealthy food –fizzy drinks, crisps, biscuits, sweets -is forbidden to sell. According to the new Law in Lithuania, the use of sugar and fat is restricted and new requirements concerning school canteen menu have been introduced.

Here is the example of one of the researches done at our gymnasium.

Research object:

12-13 year old pupils' eating habits

40 respondents .

Research characteristics:

Questionnaire online.

Tasks:

- 1 Point out the variety and possibilities of eating places
- 2 Prepare the questionnaire.
- 3 Graph the results of the survey.

Supply and opportunities

School canteen.

Fast food bars.

Food shops.

Cafes.

Lunch boxes from home.

The students were asked to answer the questions about what food they eat for breakfast, lunch and dinner. The aim was to find out about their eating habits and their choice of healthy meals.

CONCLUSIONS

1. about 50% of respondents know what is healthy eating and try to follow the healthy meals rules.
2. about 50% like fast food and do not pay attention to healthy meals.
- 3 about 30% have their meals at school canteen, where there is a wide choice of healthy meals.
- 4 Popular choice of buns, crisps, cereals, sandwiches instead of healthy lunch meal at school canteen.
- 5 Healthy lifestyle is included into school subjects (school curriculum) and students can and want to find more about it.

Healthy life projects at Karmelava Balys Buracas gymnasium in 2016-2018:

„ Choosing the healthiest meal for school canteen“

13 year old students cooked meals in Home Economics lessons where the healthiest ones had been chosen and the recipes were given to the school canteen.

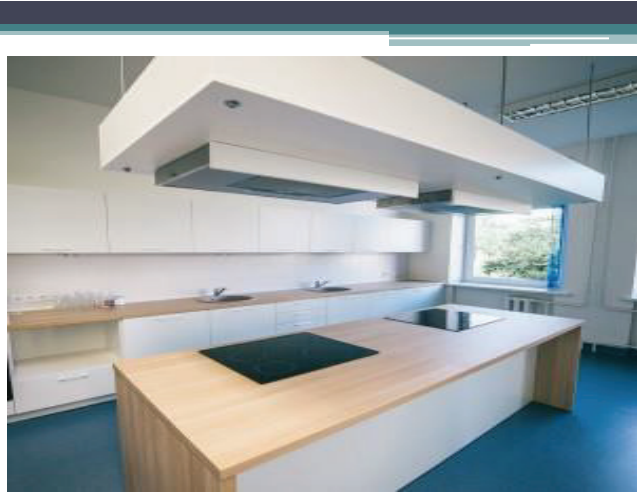
„Breakfast-healthy and tasty“

14 year old students participated in the competition organized during Home Economics lessons. They not only brought the recipes for healthy breakfast, but made a survey what are the breakfast habits. The presentation was made and healthy breakfast conclusions were drawn.

Culinary fight „ Pumpkin spree“

12 year old students together with their parents/grandparents come to school and during Home Economics lessons prepare food from pumpkin. The winners are awarded.

Modern classroom for Home Economics lessons





1. When did you give the Taste Mission Fruit?

- ☐ January
- ☐ February
- ☐ March
- ☐ April
- ☐ May
- ☐ June
- ☐ July
- ☐ August
- ☐ September
- ☐ October
- ☐ November
- ☐ December

2. What is the age of the children who did the Taste Mission Fruit?

.....

3. In which way did you give the Taste Mission Fruit?

- ☐ I gave all the lessons in a row
- ☐ As a project, spread over a number of days
- ☐ As a project, spread over a couple of weeks
- ☐ Combined with a standard course or method, namely
- ☐ Other, namely

4. Which lessons of the Taste Mission Fruit did you give?

- ☐ 1: What do I know about fruit already?
- ☐ 2: What's on the menu?
- ☐ 3: Field trip
- ☐ 4: Homework assignment: to the fruit shop
- ☐ 5: A perfect menu
- ☐ 6: Fruit chefs

5. In case you skipped a lesson, what is the reason for skipping it?

.....

.....

6. Indicate to what extent you agree with the following statements.

The Taste Mission Fruit is practically feasible.

Totally disagree	Disagree	Neutral	Agree	Completely agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Explanation (optional):.....

The teaching materials of the Taste Mission Fruit looks attractive and neat.

Totally disagree	Disagree	Neutral	Agree	Completely agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Explanation (optional):.....

The time investment for the Taste Mission Fruit is acceptable

Totally disagree	Disagree	Neutral	Agree	Completely agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Explanation (optional):.....

The online teaching manual of the Taste Mission Fruit is clear and easy to use.

Totally disagree	Disagree	Neutral	Agree	Completely agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Explanation (optional):.....

Taste Mission Fruit fits well with the knowledge level and the experience of the pupils.

Totally disagree	Disagree	Neutral	Agree	Completely agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Explanation (optional):.....

As a teacher I have the right and sufficient knowledge and skills to teach the Taste Mission Fruit.

Totally disagree	Disagree	Neutral	Agree	Completely agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Explanation (optional):.....

7. Did you use the interactive whiteboard module?

- ☐ Yes
- ☐ No

8. Can you indicate to what extent you find the following elements of added value for the Taste Mission?

	No added value	Neutral	Of added value
The main character who introduces the mission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lessons in the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excursion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Final cooking assignment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Homework assignment in the store	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feedback moments with the score poster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interactive whiteboard module	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worksheets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Did you ask parents (or other people) to assist in the Taste Mission Fruit?

- ☐ Yes, if yes in which lesson(s) of the Taste Mission Fruit?
.....
- ☐ No

10. If you should name one positive point of the Taste Mission Fruit, what would it be?

.....
.....

11. If you should name one negative point of the Taste Mission Fruit, what would it be?

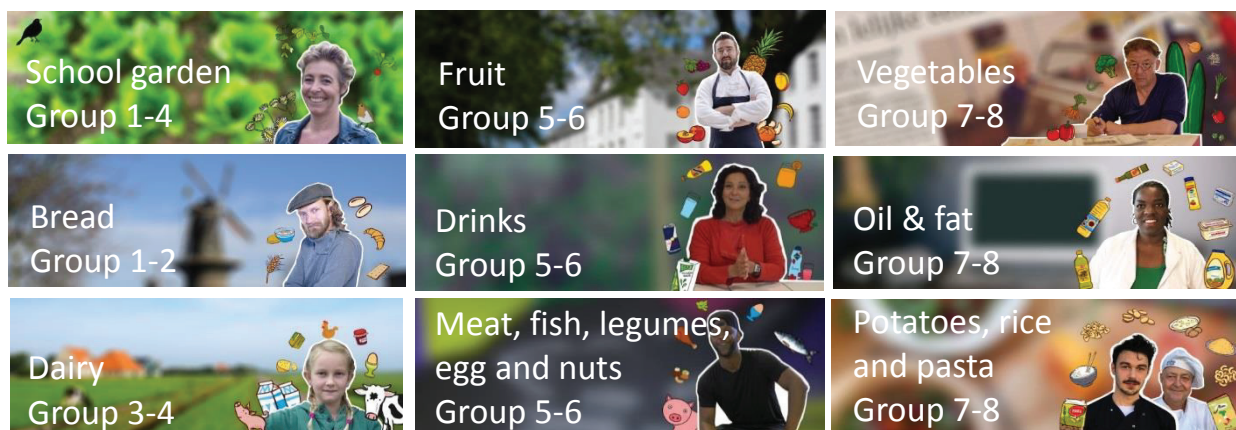
.....
.....

12. Would you recommend the Taste Mission to other teachers?

- ☐ Yes, because
- ☐ No, because

13. What grade would you give the Taste Mission Fruit? (1 as very bad and 10 as very good)

1 2 3 4 5 6 7 8 9 10



13. Would you like the other Taste Missions to be translated in English as well?

- ☐ Yes, I prefer Taste Mission to be translated next
- ☐ No

14. Other comments or suggestions

.....

.....

.....

.....



1. If you should name one positive point of the Taste Mission Fruit, what would it be?

.....

.....

2. If you should name one negative point of the Taste Mission Fruit, what would it be?

.....

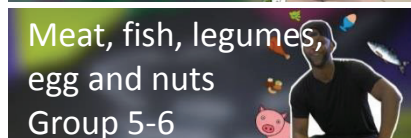
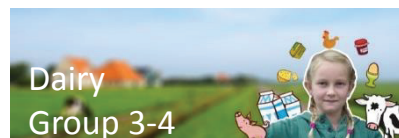
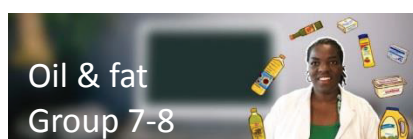
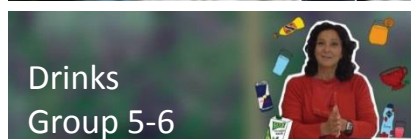
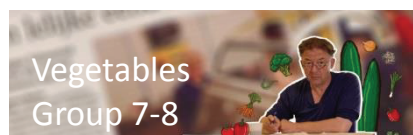
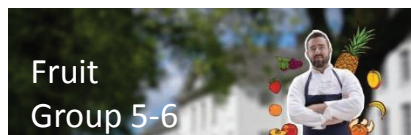
.....

3. What grade would you give the Taste Mission Fruit?
(1 as very bad and 10 as very good)

1 2 3 4 5 6 7 8 9 10

4. Would you like to do another Taste Mission in the near future?

- ☐ Yes, I prefer to do Taste Mission next
- ☐ No





Taste Mission Fruit

Target group

Students from 9-10 years old.

Description

Prue Leith and a Dutch chef needs help! There are not enough fruits in his week's menu; can the students help him? Go on a real Taste Mission!

In this Taste Mission students will discover all sorts of fruit facts by exploring inside and outside the classroom. The Taste Mission Fruit consists of 6 lessons with interactive whiteboard activities.

Read how the Taste Mission works and let's start!

Each mission consists of several parts:

- Introduction
- Classroom lessons
- Field trip
- Homework assignment in the supermarket
- Food preparation assignment

The teaching module takes 5 hours, apart from the excursion.

The lessons may be taught as a separate project or linked to existing teaching tools or programmes.

Online teaching guide

You can find the online teacher's manual, work sheets and interactive whiteboard manuals for the United Kingdom at:

www.smaakmissies.nl/en/missie/fruit-en/

and for Denmark at:

www.smaakmissies.nl/dk/missie/fruit-dk/

In this online teaching guide, you will find the 6 lessons for this mission.

- Lesson 1. What do I know about fruit already? (30 min)
- Lesson 2. What's on the menu? (60 min)
- Lesson 3. Field trip (25 min + duration field trip)
- Lesson 4. Homework assignment: to the fruit shop (25 min)
- Lesson 5. A perfect menu (40 min)
- Lesson 6. Fruit chefs (60 min)

You will find three buttons on top of the page (see three yellow circles).



- Print
To produce a copy of this teaching guide.
- Downloads
To download all worksheet of this Taste Mission.
- "Digibord" = Interactive whiteboard
To find all digital slides of the total Taste Mission

Per lesson you will find it's learning objectives and materials and resources needed. The "Digibord" button in each lesson, will give you only the interactive whiteboard slides which are used in this lesson. The Download button will give you all worksheets for this lesson. Some lessons have a Fruit Facts button with information about different fruits for students to read and use during the Taste Mission.

Lesson structure. Here you will find the different lesson components. Each has its own heading, which fold out with information about the component. Just click at the heading.

Interactive whiteboard

The same components headings (as in the lesson structure) are used as well in the interactive whiteboard. On starting the whiteboard, the way to navigate becomes clear. The text at the bottom left gives the lesson component you are currently in and the number of slides for this part.

The interactive whiteboard also has film clips. Click on the 'Play' button. All movies are translated and have English subtitles. When the subtitles are not showed, activate them by clicking on the subtitle button (see yellow arrow):



To return to the interactive whiteboard, click on the 'X'.

By clicking on Next, you will navigate through the slides, by clicking on Previous you can navigate to a previous slide. You can also navigate with the arrow keys on the keyboard.

Questions

If you have any questions, please let me know!

smaaklessen@wur.nl



What works well?

Guidance for National Government on Food Policy in Schools

Health Education Trust (2019)

Amanda Pearson, Marjon Willers, Chandra Pankhania

Funded by the
Erasmus+ Programme
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www.learn4health.eu
KA203-2016-008

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Introduction – why is school food important for national governments?

In Europe one in three 11-year-olds is overweight or obese.¹ Obesity increases a person's chances of suffering from serious health conditions like heart disease, Type 2 diabetes and certain cancers as well as affecting an individual's quality of life and ability to earn.

It is estimated that obesity is already responsible for 2–8% of health costs and 10–13% of deaths in different parts of the European Region² with the numbers of those affected continuing to rise at an alarming rate such that obesity presents one of the greatest public health challenges of the 21st century.

Not only are many young people consuming too much energy and becoming overweight or obese, some are also malnourished as a result of eating the wrong kind of food.

There is mounting evidence to suggest that obese individuals have high rates of micronutrient deficiencies and that, in particular iron deficiency and obesity may not merely represent the coincidence of two frequent conditions but are molecularly linked and mutually affect each other.³

Shortages of nutrients such as iron and iodine can impair cognitive and motor development, and these effects are often irreversible. Many other micro nutrients—choline, folic acid, and zinc, to name just a few—have been linked specifically to early brain functioning.^{4,5}

In addition, the excessive consumption of sugar is the primary cause of dental caries (tooth decay). Childhood tooth decay, is the most common chronic childhood illness in the world, affecting 60-90% of pupils in most industrialized nations.⁶ If left untreated tooth decay has consequences that reach far beyond cosmetic problems. Extensive tooth decay can deteriorate a child's quality of life, slow their social development, and lead to problems like malnutrition, infection, and problems eating and speaking.

Pupils, and staff, in schools, will eat possibly one, or more, of their daily meals within the school and the school year is half of the year. The taught curriculum provides an opportunity to teach the knowledge and theory behind the practice of healthy food provision. Therefore, the school setting provides an ideal opportunity to support the development of knowledge and practice of healthy eating, food choices, food culture and ethos and thereby address the growing problem of unhealthy diets and the related issues.

Furthermore, the evidence linking poor nutrition with behavioural problems is strong. The seminal study by Bernard Gesch at HM Young Offenders Institute in Aylesbury, Bucks UK in 1996-97, for instance, found up to 37% reduction in the rate of serious behavioural offences committed among the group receiving nutritional supplements.⁷

Several studies have since shown that hungry pupils behave worst in school, fights and absences are reduced when meals are provided and pupils given nutritional supplements showed less aggression when placed under stress.⁸

Research also shows that pupils are three times more likely to concentrate and be alert in the classroom when changes are made to the food they eat and the dining room they sit in. One particular study⁹ demonstrated significant improvements for those taking nutritional supplements in terms of learning, behaviour and working memory, with reading improving at three times the normal rate and spelling improving at twice the normal rate.

Whilst another exploring the impact of breakfast on a selection of educational outcomes, including improvements in problem solving, attention, episodic memory and complex visual display tests demonstrated results were better amongst pupils aged 7-11 one year after introducing breakfast clubs, than in a comparable school without a breakfast club.¹⁰

Poor pupils tend to have the most limited access to healthy food, and benefit the most from school food interventions. Without good food, poor school performance may contribute to a life-cycle of under achievement for these pupils.

Engaging with the school food agenda can also have a positive impact on other areas of government concern such as reducing carbon emissions and protecting jobs. A procurement strategy that prioritises buying directly from local suppliers and requiring at least some of that food to be organic can support green growth and create green jobs.

In short there are health, behaviour, education, economic and environmental reasons for prioritising school food.

If the affordability, availability and accessibility of healthy food in schools is to be improved, then schools will require national guidance and support from their respective governments.

The following report outlines a review of food policy and practice in Europe with a view to informing best practice.

What are government's already doing– a comparison of European countries

The most recent mapping exercise of national school food policies (SFP's) in the European Union took place in 2014.¹¹ All 28 EU Member States as well as Norway and Switzerland acknowledge the important contribution of school food to pupil health and development by providing either voluntary guidelines or mandatory regulations of what foods and drinks may/should be served in the school setting.

Despite differences in history and the extent of providing food at school most member states describe their policy aims as being to improve pupil nutrition (97%), to teach healthy diet and lifestyle habits (94%) and to reduce or prevent childhood obesity (88%). Lunch and snacks are the most common focus.

The vast majority (>90%) employ food-based standards to ensure balanced menus with energy and fat intake being the most commonly referred to items in standards for lunch. 65-82% of the policies set restrictions on beverages available or recommended to pupils. The

majority support free access to fresh drinking water and specifically limiting or banning (sugar-sweetened) soft drinks.

Sweet treats and savoury snacks are restricted in 59-79% of national policies, with approaches ranging from occasional allowance to complete bans.

Vending machine offers are restricted in 53% of SFP's, with a range of measures from recommended healthful options to vending machines being banned on school premises.

Food marketing limitations apply in 76% of SFP's, with four restricting the marketing of food and drinks high in sugar, fat or salt; 17 specifying generic marketing restrictions and five SFPs setting restrictions for both.

What should governments consider including?

In this section we explore food throughout the school day and initiatives taken in different countries to improve food in school.

Food and drink during the school day

Breakfast

The benefits of breakfast as part of a healthy and balanced lifestyle are widely known and understood from a nutritional, psychological and societal point of view. Studies show breakfast consumption is associated with a number of critical health factors which include healthy body weight, especially among pupils and adolescents¹² but also lower Body Mass Index and a lower likelihood of being overweight more generally.¹³

In 2017, a review of the ways governments communicate around, and promote consumption of, breakfast was conducted.¹⁴

It involved the examination of 16 European countries' policies on healthy lifestyles and diet, using four criteria – references to the importance of breakfast in official documentation, the monitoring and measuring of breakfast consumption data, the provision of clear and user-friendly information and the organisation or supporting of ongoing campaigns.

The final report found that while half of all countries met all four measures (Belgium, Denmark, Italy, the Netherlands, Portugal, Slovenia, Spain and the UK), Germany and the Republic of Ireland only met three, Austria, France and Greece met two, the Czech Republic only one, while Poland and Romania met none of the four.

It found that while health and lifestyle implications of regular breakfast consumption are largely understood, many European governments still do not devote sufficient effort to encouraging people to have breakfast. It is also established that there are currently no EU level campaigns dedicated to promoting breakfast consumption.

A gender gap that is increasingly visible with age was also identified, with older adolescent boys more likely to have breakfast every school day than their female counterparts. As breakfast skipping has been associated with other health compromising behaviours in pupils and adolescents – including physical inactivity¹⁵ and low fruit and vegetable intake¹⁶ – it seems clear that promoting positive behaviours, such as breakfast consumption, could be a beneficial health initiative.

There is also a need to cut the free sugar load in the typical pupil's breakfast. Across Europe pupils are choosing options high in sugar for this meal, resulting in them quickly exceeding the recommended daily free sugar intake for pupils of 24g. The consequences of this can be low blood sugar and poor concentration by mid-morning.

As one of the countries that fulfils all 4 criteria mentioned above, there has been a trend over the last 10 years in the UK for schools to introduce breakfast clubs, especially those for pupils aged 7-11 years. This has mainly been driven by concerns that a substantial proportion of pupils are not eating breakfast and arriving at school hungry which may impact on learning and behaviour.

The role of a breakfast club is wider than the provision of food; they also provide a calm and safe environment before school, help develop social skills and provide the opportunity for additional learning through play activities, or provide time to complete homework. Attending a breakfast club may also assist pupils to arrive at school on time (or even encourage them to attend at all), and be ready to learn when classes begin.

Case study: Universal breakfast club

The Forest Academy, Great Britain, is a school for pupils aged 3-11 in Barnsley, North Yorkshire, UK. It started a breakfast club for the first time in September 2014. A personal invitation was sent to every family, encouraging them to bring in all pupils for breakfast, so that the whole school could experience a warmer, more welcoming start to the day. An incredible 170 out of 220 pupils attended breakfast in the first week. Numbers settled to 140 pupils, a participation level that was sustained throughout the rest of the year.

Initially, pupils were invited to one of two sittings, either 08:00 or 08:30. Gradually, the provision evolved into a natural flow of pupils, with no formal sittings needed.

Doors open at 08:00 and for the next 40 minutes there's a steady flow of pupils arriving and eating. When pupils finish their breakfast, they can move on to a range of well stocked tables including craft activities, construction toys and table football (around which there is always a crowd!).

Pupils can select from the full range of healthy breakfast items, with 'Friday Feast Specials.' Breakfast is managed by a team of 3 staff, plus 3 parent volunteers a day (on a rota system). The Head testifies that breakfast has had a major impact on school across a range of areas.

* Lateness – a BIG impact on lateness. Since starting breakfast, late arrivals have reduced by over 100!

* No pupils crying in the morning.

* Behavioural incidents decreased significantly.

* Attainment – pupil progress has improved dramatically over the first year, and the small group work that is happening at breakfast is a vital contributor to that.

- * Improved relationships – all kinds of relationships! Staff, pupils, parent volunteers all have better relationships, within and between those groups!
- * Classes settled and ready to learn – pupils are happy and keen to come to school!

Lunch

For many pupils their school lunch can be the main meal of the day. Apart from preventing hunger, it provides an opportunity to ensure they receive something that is nutritious and will help them to grow, learn and lead healthy lives. It can also expose pupils to new foods and taste experiences.

Across Europe making a hot and healthy meal the norm for pupils in school is already a priority. This is reflected in school food policies that have food /nutrition-based standards at their core. Some spread their requirements across a menu cycle rather than over a 24-hour period. A few provide detail on portion sizes. It is commonly suggested that pupils should gain about a third of their daily energy needs through lunch.

However, such strategies will only be successful if pupils like and choose to eat these meals – this is an aspect that has been largely neglected in the development of school meals until now.¹⁷ Research for the UK's School Food Plan established that schools with higher take up consistently have a head teacher taking an active interest in school food and either eating the lunch themselves, encouraging other staff to do so – or inviting parents to join in. Adults acting as a role model for pupils send a clear message that if this food is good enough for me – it is good enough for you. Initiatives that engage pupils and parents in menu planning and taste testing show promise too.

The document's central premise is that driving uptake also helps to make school meal services more viable, creating a virtuous circle. An additional building block is offering universal free school meals for primary pupils; making meals free makes them an easy choice and starts a potentially ongoing school career habit. Sweden and Finland offer free school meals for pupils aged 7-16.

Where pupils have a choice of food to purchase, caterers and contract monitors need to ensure that the healthy choice is the cheaper choice. Pupils are very discerning customers and are unlikely to choose the healthier options with their limited money if it is more costly. Therefore, fresh fruit should be cheaper than desserts and any special offers or meal deals should include the options with fruit and vegetables and those that are lower in sugar, salt and fat.

Dining room environment

Making changes to the dining environment can increase uptake and improve food choices, reduce queuing times, and support social interaction. Germany for example recommends that the dining room is brightly coloured and has appropriate lighting, is attractively decorated (e.g. plants, pictures, table decoration), has easy to clean floors and furniture and ideally offers 1.4-

1.7 metre sq. of space per customer. Similarly, Malta suggests bright murals with a food theme, new tables and chairs, menu boards with clear information and prices and background music.

Essentially making the school meal experience more like eating in a restaurant can attract pupils to try lunches and encourage healthier eating.

Case study: Lunchtime – framework that has an impact on pupils’ development

Fundació Escoles Garbí, Spain, seeks to create a context that offers students an opportunity to learn and enrich themselves at different levels, providing added value in all areas. Teachers continuously review and research evidence from different fields of science and pedagogy, which help them update and improve the project itself. Thus, VALUES, ATTITUDES AND ACTIONS are influencing the integral training of each student and that of the community.

DINING ROOM: An education environment

Lunch at Fundació Escoles Garbí is not the simple act of eating but it is part of Social Life and the most important social event of the day. The whole school, all pupils and teachers, eat together in the dining hall.

Students and teachers practise the rules they have learned throughout their schooling:

- Before serving lunch, everything that is important for the community is shared. The menu is read out.
- Pupils are involved in laying the table, cutlery and napkins have to be used appropriately and fruit peeled properly.
- Having lunch is a social event that follows a set of established rules, which gives it a special significance. That is why the school takes great care over the process of lunchtime.
- Lunch involves a pleasant conversation between students and a more relaxed meeting place with the teachers.

Know how to be

- To achieve the habits of autonomy and hygiene, health and socialisation
- Learn how to live with others.
- Boost the teacher-pupil link.
- Promote the effort: to know how to wait and act with respect, eat everything and finish it all.
- Value others’ work: lunchtime, kitchen and cleaning staff.
- Enjoy the tranquillity of this time.

Packed Lunches

In most countries (except in Finland) schools allow pupils to bring their own packed lunches. However, the vast majority of such meals fail to provide the nutrient balance that a school meal can offer.

Governments may consider banning packed lunches – or at least supporting schools to support parents to make packed lunches as healthy as possible. Government guidelines for packed lunches, providing recipes and menus to help create nutritious, affordable packed lunches and encouraging schools to monitor packed lunch content and reward the best examples and support others to improve content can help support public health policy that is fair, practical and accessible for everyone.

Snacks

Snack bars and vending machines in many schools have historically offered an abundance of chocolate, sugar-filled drinks, and other low-nutrient, high-calorie items rather than healthy snacks.

A recent Public Health England¹⁸ study found that on average, British pupils are consuming at least three unhealthy snacks and sugary drinks a day, with around a third consuming four or more. The overall result is that pupils consume three times more sugar than is recommended.

Fruit tuck shops and governments sponsored free fruit or vegetable schemes are common initiatives that help pupils to learn healthy snacking habits by making the healthy choice the easy choice.

The environment in which pupils make their food choices can be influenced further by imposing a policy that requires them to remain on site during the school day, thereby limiting access to local businesses that sell inappropriate foods.

Some local authorities have gone one step further by consulting on banning mobile takeaway and ice cream van trucks near schools, or restricting trading hours for businesses that sell 'less healthy' foods such as chips on the school fringe.¹⁹

Procurement

Greater focus and attention could also be given to food procurement in the public sector generally and school meals in particular. Currently 15-21% of national policies take into account the local agriculture or economy. Public procurement has the potential to make a huge contribution to healthy and sustainable communities by providing a lead in purchasing and catering healthy and sustainable food. For example, in Sweden where the law states that all school lunches should be nutritious and fully financed through local taxes the city of Malmö has dramatically increased its purchasing of organic food since 1997 such that by the end of 2012 about 40% of the food budget was spent on organic food; about nine million Euros is spent on organic food every year.²⁰ Such strategies can influence food offered not just at lunch time but throughout the school day.

Case study: Free school meals

Finland was the first country in the world to serve free school meals. Nineteen forty eight is seen as being the year when free school catering really started, though catering activities on a smaller scale had been around since the beginning of the 20th century.

Section 31 of Finland's Basic Education Act states that pupils attending school must be provided with a properly organised and supervised, balanced meal free of charge every school day.

The National Nutrition Council in Finland prepares dietary guidelines for schools. The objective is to maintain and improve pupils' health and well-being and to give them energy for their school work.

School meals are considered to be a pedagogical tool to teach good nutrition and eating habits as well as to increase consumption of vegetables, fruits and berries, full corn bread and skimmed or low-fat milk.

The municipalities are responsible for monitoring and evaluating school meals in Finland. As part of the curriculum every municipality is obliged to draw up a plan for pupil welfare. The plan provides the key principles for arranging school meals and sets out the objectives for health and nutritional education and for teaching good manners.

The school menu contains all the components of a well-balanced meal, which are:

- fresh and cooked vegetables covering half of the plate
- potatoes, rice, or pasta covering one quarter of the plate
- fish, at least once, preferably twice a week, or meat (or beans and sprouts as part of a vegetarian diet) covering the remaining quarter of the plate
- skimmed or semi-skimmed milk, fermented milk
- water to quench the thirst
- bread with vegetable margarine or butter margarine blend
- berries or fruits for dessert

Drink during the school day

The high sugar content of soft drinks has been identified as one of the factors involved in childhood obesity. These drinks are also nutritionally poor and can reduce a pupil's appetite so they miss valuable nutrients at mealtimes too.

In addition, sugar is the primary cause of tooth decay. Replacing soft drinks in the diet with water (which has no calories) can help with weight control and also support good dental health.

Pupils are at greater risk of dehydration than adults as they have higher water requirements in relation to their body weight. Furthermore, pupils usually have to ask to be provided with water; often relying on their caregivers to provide drinks.

In addition, pupils don't always recognise the early stages of thirst, which can then make them particularly vulnerable to becoming dehydrated. Mild dehydration (1% body loss) can lead to reductions in concentration and mental performance in pupils.²¹

While the amount of water a pupil needs depends on many different factors including their age, gender, the weather and how much physical activity they undertake the European Food Safety Authority recommends the following water intake

Gender	Age group	Amount of fluid from drinks and food (litres/day)	Amount of fluid from drinks only (litres/day)
Boys and girls	4 to 8 years	1.6	1.1 – 1.3
Girls	9 to 13 years	1.9	1.3 – 1.5
Boys	9 to 13 years	2.1	1.5 – 1.7

Recent data indicate that one third or more of European pupils and adolescents do not meet these recommendations.²²

Encouraging pupils to quench their thirst with water will help them develop a taste for it and embed a lifelong healthy habit.

School food policies most frequently either ban soft drinks (e.g. sugar sweetened, artificially sweetened, squash) completely (Hungary, Romania) or allow them occasionally (e.g. Wallonia, Switzerland).

In turn, recommended or allowed beverages commonly comprise water, unsweetened tea, (low fat) milk and (diluted) fruit juice.

The next step to improving the drinking of water in schools is to look at improving availability and accessibility (i.e. the environment) and including lessons on drinking water in the curriculum.

Case study: water in schools

Muckelbauer et al. (2009) found significant improvements in water and soft drinks/juices consumption in Germany after an intervention that included the installation of water fountains, giving each pupil a water bottle, and delivering classroom lessons to promote water consumption. 2,950 second and third graders of 32 elementary schools in socially deprived neighbourhoods of two German cities participated in a randomized controlled intervention trial (August 2006–June 2007).

Recommendations for food and drink during the day

- 1.1 Set up breakfast clubs that can be used by pupils who may otherwise go without breakfast, without stigma attached to them.**
- 1.2 Create statutory requirements for food served across the school day, including breakfast, snacks, vending and after school club, with food-based standards setting out foods that must be provided, should not be provided and can be provided no more than a certain number of times across the week.**
- 1.3 Consider nutrient based standards with appropriate support for schools to implement nutrient analysis, for example a government supported database with nutrient analysed recipes.**
- 1.4 Provide free or subsidised fruit/veg at break times.**
- 1.5 Encourage pupil/parent consultation around school meals service**
- 1.6 Consider universal free school meals.**
- 1.7 Support schools to help parents provide nutritious packed lunches.**

- 1.8 Provide guidance about marketing school food and enhancing the dining room environment.**
- 1.9 Ensure your schools inspection system considers the behaviour and culture in the dining hall and the way a school promotes healthy lifestyles.**
- 1.10 Encourage school governors and parents to carry out simple checks on whether their school menu complies with the school food standards.**
- 1.11 Support local and regional governments to regulate sale of less healthy foods on school fringes.**
- 1.12 Develop procurement policies that influence food purchasing for school dinners taking into consideration health and the environment.**
- 1.13 Ensure free fresh, palatable drinking water is available throughout the school day.**
- 1.14 Provide water coolers/fountains away that are plumbed into mains water and a distance from toilet areas and science labs.**
- 1.15 Encourage use of clear water bottles to drink from and allow pupils to drink water during lessons, keeping their bottles of water on the table (where safe to do so).**
- 1.16 Include lessons to promote water consumption.**

The food curriculum

Pupils' diets are predominantly determined by family, social, economic, ethical, climatic and geographical factors, religion and customs rather than health. Any attempts to change pupils' diets to become healthier must take into account the country's cultural diversity and that food and eating are powerful expressions of cultural and social identity. It also needs to consider that many families do not have enough money to provide a healthy diet for their pupils.

Therefore, for food education to be effective, it needs to be:

- Personally relevant;
- Clearly understandable;
- Food related rather than based on nutrients;
- Consistent in its dietary messages in line with government advice and other messages given by school; and
- Clear in the benefits and addressing any barriers to change.

Young people are interested in wider issues associate with food, such as animal welfare, the environment, equality, and the politics of food distribution and production and pupils need to be given the opportunities to engage in these issues.²³

The curriculum should aim for pupils to broaden their tastes and accept more food and to become nutritionally literate consumers, able to make healthy food choices, good for themselves, their families, society locally and internationally as well as the environment.

The food curriculum should be, like in other topics, be a spiral curriculum, where topics are repeated and build upon from one age phase to the next. It can be taught as a discrete topic, as part of other topics or thematic. Pupils should be taught in lessons but will also learn from the school environment such as lunchtime and events and occasions when food is used in the school environment.

Like other topics, pupils should be able to access the food curriculum without needing to pay for resources, such as ingredients. Therefore schools need to plan the curriculum and related costs for the year and this needs to be included in the school's budget.

Throughout their school education, pupils should learn about

- food and emotional development. This should include sensory perception and enjoyment of food, including the use of all our senses to encourage curiosity and confidence to try new foods.²⁴ The SAPERE method is teaches pupils about food based on sensory practice and supports pupils, development of their own experiences of food. SAPERE method was developed in France and since then is used in a number of European countries including Belgium, Finland, The Netherlands (see case study), and Britain.²⁴ Food and emotional development should also include body image; self-esteem; social significance of eating; the eating environment; being aware of their responsibility of food choices and being able to combat social pressures and implications of their food choices.
- eating habits and sociocultural influences. This should include being aware of the differences in their eating habits and that of others; having an understanding of the significance of food used for celebrations; the difference between meals and snacks, every day foods and special foods.
- understanding their daily requirements for nutrition and personal health. This should include the link between eating and personal health and the functions of nutrients in the body and which foods provide sources of these nutrients; recognising the importance of a balanced diet and planning a menu using all the food groups; the role of the different parts of the digestive system in digesting food; the causes of dental caries; the importance of breakfast as a good start of the day; the variation of energy requirement for different age groups and different energy levels.
- food production, processing and distribution, sustainability and ecology. This should include understanding that food originates from plants and animals; food production techniques; impact of food production and distribution in their country and across the world; the link between politics and economics of global trade; environmental aspects of food production and distribution. Pupils should have the opportunity to grow their own food and visit a farm, food producer and shop to see first-hand about food production and the food chain.
- consumer awareness and rights and become media literate. This should include understanding different types of food shops; shopping and buying skills so that pupils are able to handle a shopping assignment, including preparing a shopping list, being able to compare prices and assess quality, dealing with money and buying the correct product. Pupils should also be able to translate the information on a food label so that they can make considered choices about which product to buy.
- food preparation, preservation and storage techniques including basic food preparation and cooking skills so that pupils learn how to cook for themselves and others. This should include food safety and hygiene; food storage; setting the table; different food preparation techniques; following recipes; use kitchen equipment safely.
- life skills to enable pupils to make informed decisions, solve problems and think critically and creatively, being able to communicate effectively specific about nutrition and food. This should include skills in communication, advocacy, decision making, critical thinking and refusal to resist social or peer pressure.^{23, 25, 26}

Case Study: Discrete food education

Taste Mission from the Netherlands

Taste Mission is a multi-component discrete food education programme for primary schools, developed by Wageningen University & Research and the Netherlands Nutrition Centre in 2006. Taste Lessons contain practical lessons based on five subjects; taste, nutrition and health, food production, consumer skills and cooking. Pupils perform experiments by using all their senses (taste, smell, touch, sight, sound) and become aware of their taste preferences and factors that influence preferences. This is based on the SAPERE method. In addition, pupils discover new food products (including their flavours), learn about food production systems, health effects of food, aspects that are linked to food, like the composition of food, and ways food can be produced and prepared.

The aim of the programme is to increase pupils's knowledge and interest (food=fun!) in food and to teach them different food skills. This will help pupils to become capable of making healthy and sustainable food choices.

Research

Taste Lessons increased pupils' knowledge about healthy and sustainable eating behaviour, which was sustained over six months. Additionally, pupils' willingness to taste new food increased. It was found that when Taste Lessons was linked to hand-on-food-activities (gardening, cooking class, school trips) it was even more effective, which is the basis of Taste Missions.

Taste Missions

Taste Missions are an innovative way to connect hands-on activities to a broader food education programme by making use of principles of gamification. It aims to deepen pupils's understanding of the lessons by involving pupils in each step of the food chain with various hands-on-activities.

A Taste Mission is a learning module using the food groups. In total there are nine Taste Missions developed for pupils aged between 4 and 12 years old.

The focus is on discovering the origin of food.

A Taste Mission consists of lessons and hands-on activities, e.g. growing your own vegetables, an excursion to a fruit or vegetable grower or a food factory, a cooking lesson and a visit to a supermarket.

Every Taste Mission is introduced by a main character who challenges the students to learn more about their food. During the lessons, the main character gives the pupils feedback via the interactive whiteboard.

A Taste Mission always consists of

- Introduction of the mission
- Lessons inside the classroom
- School trip
- Cooking assignment
- Visit to the supermarket or other food shop

All the teaching materials are available free of charge for download:

- All materials: www.smaaklessen.nl/lesmateriaal
- Fruit Taste Mission for Britain: www.smaakmissies.nl/missie/fruit-en
- Fruit Taste Mission for Denmark: www.smaakmissies.nl/missie/fruit-dk

Case study: Food education as part of science subject

Arden School, Denmark, developed a pedagogical programme that links the classroom to the natural surroundings of the school; by using food growing to teach science.

Therefore, it had to meet the following scientific curriculum competences:

- Research competence
- Modelling competence
- Communicative competence
- Transferring competence

As well as subject specific goals such as health, sustainability, photosynthesis, the cycle of water, carbon and nitrogen, different kinds of nutrition (NPK), measuring both analog and digital, and more.

The task is for pupils to use the scientific work method to test out their hypothesis on how best to grow the most grammes of courgette within the limitation of using 1 m³ only.

To achieve this, pupils have to research how to grow courgettes optimally based on the plant's requirements. They have to come up with a hypothesis suggesting how they can achieve the highest weight of courgette from a set number of seeds. The pupils note down their pre-experiment research and hypothesis. The pupils also sketch out the construction and materials that they think will give them the best results, focusing on a max area or 1 m³.

At harvesting time, pupils record the weight of the courgettes.

Throughout the process, pupils note down their hypothesis, construction sketch, graphs, data charts, pictures, notes in a logbook. Measurements could include air and soil temperature, wind, sunshine hours, rainfall, growth of the plant, number of male and female flowers, grammes of courgette harvested. At the end by looking at the data as well as the grammes of harvested courgette, the pupils can determine whether the hypothesis was successful or not (the more grammes of courgette, the better the hypothesis).

Case study: The school garden as a teaching tool throughout the school

Haworth primary school, Great Britain, uses the garden throughout the school day.

The educational benefits of the school garden are numerous and far reaching. Haworth school is convinced the harvest goes well beyond daily lessons as the garden is an integral part of school.

Food grown in the garden is taken straight to the kitchens where it becomes part of school lunch. Pupils see the whole process from seed, to plant, to harvest and then school lunch. The garden has helped to make healthy eating and re-cycling a part of everyday life.

All pupils benefit from the garden: from shy, quiet pupils who need to develop self-confidence, to pupils with behavioural problems who need active, physical involvement in their learning, working with the soil, seeing the plants grow. It is a form of therapy, and invaluable personal experience.

Pupils assert that the most interesting lessons they have are when they use the school garden and that they are the most memorable. Pupils say that they understand their lessons a lot more without it being taught.

The garden is ideal for cross curricular teaching, as a living, growing, changing and changeable resource for every lesson. Autumn poetry become unforgettable if you are asked to describe a 35kg pumpkin, which you planted and looked after – the colour, smell, shape and feel of it. There is a constant supply of mathematical opportunities in the garden, such as weighing and measuring, additions and subtractions, divisions and multiplications and much more. Environmental education, climate change, pollution, all start in the garden, even learning to read maps is fun if you turn left at the turnips and walk through the willow tunnel! The possibilities of art and design and technology are endless in the garden from bird boxes to designing seed packets.

There is always a variety of fresh ingredients to use for the cooking lessons. The curriculum cooking teacher has planned the school's cooking curriculum to suit the harvesting in the garden. She also makes sure that pupils have the opportunity to reproduce the recipes at home. As a result families have started growing and cooking more at home.

A sensory garden can also provide a place for reflection, contemplation and remembrance.

And all of that is even before you consider the pleasure and excitement of seeing the vegetables growing in the school garden for pupils, teachers, parents and visitors.

Recommendations for the food curriculum

To be able to teach food and nutrition, schools require

- 2.1 A broad spiral food curriculum should be taught across the whole school to support pupils to become concerned consumers, who have the knowledge and skills to provide for themselves and others realising the impact of their food choices on the environment and society.**
- 2.2 Adequate resources such as educational materials, access to curriculum kitchen and school garden and the finances to buy the required materials such as ingredients for all pupils to take part in food growing and food preparation.**
- 2.3 Trained staff who have the knowledge, confidence and competence to teach about food, food growing and food preparation. It can also contribute to enhance teachers' own lifestyle choices.²⁷**
- 2.4 All pupils should have a minimum number of hours per year on food education, including a set number of hours of practical food education.²⁸**
- 2.5 Any out of school hour provision such as after school cooking club should teach the same messages and provide opportunities for pupils to develop their cooking skills to support them to make healthy food.**
- 2.6 Food curriculum should be monitored locally or nationally and evaluated for its impact on pupils' knowledge and skills.**

2.7 Food educational materials should be evaluated by experts from both a scientific and ethical point of view and based on the principles of a healthy diet as recommended by the national government and refer to the national curriculum, they must be sensitive to the needs of all social groups and recognise the complexity of the social and cultural messages attached to foods and take into account the effect of certain messages on the most vulnerable pupils. Ideally, food education materials are not sponsored by food manufacturers but if they are, logos, trade names and illustrations should not be used at all or at most be limited and used in a relevant context.²⁵

The Whole School Approach

Evidence suggests no one action will inspire pupils and young people to adopt a healthy diet, rather a multi component approach is required.²⁹

A health promoting school (Ottawa Charter for Health Promotion) needs to consider:

- The taught curriculum: what happens inside the classroom
- The whole school ethos (the hidden curriculum): what takes place within the rest of the school, the food provided, fundraising and sponsorship, celebrations and birthdays, rewards
- The parallel curriculum: family and community links, including out of school activities such as after school clubs

All of the initiatives outlined in this document can be underpinned by a whole school approach – where class room lessons about healthy eating are reflected and reinforced in the daily life of the school.

This means treating the dining hall as an integral part of the school, where pupils and teachers eat together; lunch as a focal point; valuing the cooks as important staff members and making food a vital element of school life, with everyone working together to create a great food culture.

To achieve this, it is imperative that head teachers lead the change and ensure a consistent approach throughout the school; taking into account policy, curriculum, the lunchtime experience itself – and links with the wider community.

It is important to be pupil-centred. They are the consumers and the learners so decisions have to be relevant to their concerns and using their opinions as the starting point. Organising a group to represent pupils' views on all areas of food in school is key, including food provision, the eating environment and the curriculum.

By focussing on providing good (local, seasonal, fresh) food at the right price in a nice environment where pupils can sit with their friends, schools can increase uptake of dinners. Branding can add to a sense of ownership and pride in a school meals service.

Parents, carers and grandparents can be engaged on the journey by inviting them into school to eat a school lunch or help with cooking or gardening clubs. Relationships can be developed with local food producers for mutual benefit.

By having a consistent approach, schools can also make sure that pupils are fed appropriately while at school and that no pupil is hungry while at school and that therefore poor nutrition does not negatively impact learning.

Further advice and guidance on developing a whole school approach to promoting health and well-being can be accessed via Schools for Health in Europe (<https://www.schoolsforhealth.org/concepts/whole-school-approach>).

Monitoring of a consistent approach can be achieved by using a school award system such as a Healthy Schools programme, which includes criteria such as food leadership and policy, consistent messages, food consumed on the premises, food provision, food quality and provenance, food education.

Case Study: Use of Food for Life to raise school meal take up

Food for Life is a demonstrably successful method of raising school meal uptake, improving pupil health and behaviour and fostering a school environment that promotes responsibility, fairness and high levels of attainment

CARSHALTON BOYS SPORTS COLLEGE

Carshalton Boys Sports College, Great Britain, is not blessed with a great location. A large aerial photo in the headmaster's office shows the academy as a tiny rectangle in the middle of a red brick estate that sprawls to the edge of the frame in every direction. It is one of the largest estates in Europe. A massive 40% of the school's pupils are eligible for free school meals.

When the headteacher took over the school ten years ago, only 4% of pupils managed to meet the standard academic benchmark for the UK. The atmosphere and the discipline were terrible. School dinners weren't just bad: they were virtually non-existent. Pupils were actually locked out of the main school building for the duration of the lunch break, to give the teachers a break from the mayhem.

The Head's genius was to realise that the canteen ought to be the centre of school life. It was the one place where the whole school could meet in an informal setting: where teachers and pupils could sit down together to eat and talk, and in doing so cultivate a happier atmosphere. He understood the importance of table manners, not as a snobbish display of gentility, but as a means of teaching consideration, courtesy and social skills.

So, having driven pupils from the dining hall for so long, how did Carshalton woo them back? The answer was to hire an experienced restaurant chef and to compete directly with the local fast food outlets for the custom of older pupils, while introducing a stay-on-site policy for younger ones. The chef makes proper food taste so good that pupils have flocked back to the canteen. From a low of 20%, take-up is now at 80%.

But Carshalton hasn't stopped there. It also offers a £1 breakfast for boys turning up early and a free curry in the late afternoon for those staying late. In the classroom, cooking lessons are compulsory for all pupils up to the age of 14. They even run a 'lads and dads' course where the boys teach their fathers to cook, to tackle the broader problems of malnourishment in the local area. They have chickens laying eggs and a garden club growing vegetables, all of which got used in the school kitchen.

This is all part of the Head's mission to nurture the whole pupil: alongside its amazing food culture, the school excels in sport and drama as well as more academic subjects. Last year, 100% of its pupils reached the academic benchmark— putting Carshalton in the top 5% of most improved state secondary schools.

Simon is in no doubt about the connection between food and academic achievement. "For many of my boys, this lunch will be their main meal of the day. Good food makes them happy, but also helps them work better," he told us. "And the culture and behaviour that begin in the canteen are responsible for an atmosphere that supports attainment across the whole school."

Recommendation for the whole school approach

3.1 Support schools to adopt a whole school approach to ensure all messages across the formal, hidden and parallel curriculum are consistent.

3.2 Put cooking, growing and farm visits into a national curriculum.

Marketing and regulation

From sugary drink ads on vending machines to fast food logos on book covers and stadium scoreboards, marketing for unhealthy foods can be seen in some European schools. Research shows that, despite common misperceptions, these marketing relationships result in little to no revenue for schools. In addition, they encourage students and staff to make unhealthy food choices and compromise the educational mission of schools.

Food marketing includes oral, written, or graphic statements made for the purpose of promoting the sale of a food or beverage product. These statements are typically made by the producer, manufacturer, seller, or any other entity with a commercial interest in the product. Companies' marketing tactics affect pupils's food preferences, purchase requests, and eating patterns, which can shape lifelong health.

Limitations on food and beverage marketing in schools are critical because pupils are particularly susceptible to advertising. Young pupils do not have the cognitive ability to discern that advertising presents a biased point of view. Older pupils and adolescents understand the intent of advertising, but are often still too young to understand its long-term effects. Resisting advertising for the types of foods most commonly promoted requires the ability to "weigh long-term health consequences of consumption against short-term rewards" – an ability that people don't fully develop until their early 20s.³⁰

Pupils exposed to marketing for unhealthy products are more likely to consume those products, which can lead to increased consumption of foods with little, or no, nutritional value.³¹

The 63rd World Health Assembly adopted a resolution in 2010 that makes a set of recommendations on the marketing of foods and non-alcoholic beverages to pupils and specifies, schools as a setting that should be free from all forms of marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt.³²

Case Study: Japan

Schools are ad-free zones in Japan, there are no commercial promotions in schools. In public schools, no ads or coupons or commercial materials are distributed to teachers or kids or parents. There are no vending machines and students are not allowed to eat anything other than school lunch (including drinks and chewing gum) when they are in school and they are also not allowed to buy and eat foods on their way between school and home. The School Lunch Law in Japan sets a nutritional standard for school lunches. Each school follows this law and provides a well-balanced, low-fat, low-salt lunch of rice or bread, soup, 2-3 side dishes, milk and dessert. Calories from fat are set to be no more than 25-30% of the total calories of the meal. The menu is given out to pupils and parents every month, also providing details of the calories and nutritional breakdown. It is important to note that since Japanese schools are not a conducive place for advertising, marketing efforts in Japan are focused on TV commercials and magazines.

Recommendation on marketing and regulation

2.1 Implement WHO 2010 recommendations on the marketing of foods and non-alcoholic beverages to pupils.

Monitoring and evaluation

If we are to understand what difference national school food can make and whether it is having the desired effect, it is vital that progress is measured regularly using agreed criteria. What gets measured gets done! Before and after initiatives have been implemented, child health should be monitored to evaluate their success.

About three quarters (74%) of national school food policies currently specify one or more measures for outcome evaluation. Food provision in school is most frequently cited in slightly more than half of all policies, followed by measuring school food take up and the nutrition of pupils; the latter is assessed based on criteria such as total food consumption, nutrient intake, child growth, and obesity levels. Food consumption at school and the financial viability of services complete the top five mentions. Other outcome measures specified in two or more policies are: the engagement of local farmers (12%); a reduction in health inequalities (6%); and the support of local economy (6%). Some countries focus particularly on the social aspect of dining at school, ensuring that pupils have enough time to eat and can do so in a pleasant atmosphere with the support of teachers, trained kitchen staff and fellow students. Generic control of compliance with legal requirements and food hygiene is also explicitly mentioned by some countries.

At a local level, any intervention will need to be accompanied by specific indicators and methods for monitoring and feedback too. These may include but are not restricted to the use of satisfaction surveys, achieving a local or national school food award, school attendance, number of pupils able to cook a specific number of savoury dishes and/or family involvement.

Recommendation for monitoring and evaluation

5.1 Ensure national school food policy includes appropriate methods and tools for monitoring and evaluation.

Conclusion

The scientific evidence suggests that multicomponent interventions in school focussed on improving both diet (and physical activity) are likely to have the greatest impact on obesity and giving pupils life skills to look after themselves and their family.

A specialised curriculum, training for teachers, supportive school policies, healthy food and beverage options and a parental/family aspect are included in the most promising approaches. Also, of likely benefit are school garden programmes, including nutrition and gardening education and hands on gardening experiences, as well as fresh fruit and vegetable programmes that provide free fruits and vegetables to students during the school day. There is also evidence to suggest that dietary intakes in pupils can be improved by presenting the more desirable food choices at school in an attractive and accessible way.

Appendix 1: National guidance checklist

Recommendation	In place
1. Food during the school day	
1.1 Create statutory requirements for food served across the school day, including breakfast, snacks, vending and after school club, using food-based standards setting out foods that must be provided, should not be provided and can be provided no more than a certain number of times across the week.	
1.2 Consider nutrient based standards with appropriate support for schools to implement nutrient analysis, for example a government supported database with nutrient analysed recipes.	
1.3 Set up breakfast clubs that can be used by pupils who may otherwise go without breakfast, without stigma attached to them.	
1.4 Provide free or subsidised fruit/veg at break times.	
1.5 Encourage pupil/parent consultation around school meals service	
1.6 Consider universal free school meals.	
1.7 Support schools to help parents provide nutritious packed lunches.	
1.8 Provide guidance about marketing school food and enhancing the dining room environment.	
1.9 Ensure your schools inspection system consider the behaviour and culture in the dining hall and the way a school promotes healthy lifestyles.	
1.10 Encourage governors and parents to carry out simple checks on whether their school menu complies with the school food standards.	
1.11 Support local and regional governments to regulate sale of less healthy foods on school fringes.	
1.12 Develop procurement policies that influence food purchasing for school dinners taking into consideration health and the environment.	
1.13 Ensure free fresh, palatable drinking water is available throughout the school day	
1.14 Provide water coolers/fountains plumbed into mains water and a distance away from toilet areas and science labs	
1.15 Encourage use of clear water bottles to drink from and allow pupils to drink water during lessons, keeping their bottles of water on the table (where safe to do so).	
1.16 Include lessons to promote water consumption	
2. Recommendations for the food curriculum.	

2.1 A broad spiral food curriculum should be taught across the whole school to support pupils to become concerned consumers, who have the knowledge and skills to provide for themselves and others realising the impact of their food choices on the environment and society.	
2.2 Adequate resources such as educational materials, access to curriculum kitchen and school garden and the finances to buy the required materials such as ingredients for all pupils to take part in food growing and food preparation.	
2.3 Trained staff who have the knowledge, confidence and competence to teach about food, food growing and food preparation. It can also contribute to enhance teachers' own lifestyle choices.	
2.4 All pupils should have a minimum number of hours per year on food education, including a set number of hours of practical food education.	
2.5 Any out of school hour provision such as after school cooking club should teach the same messages and provide opportunities for pupils to develop their cooking skills to support them to make healthy food.	
2.6 Food curriculum should be monitored locally or nationally and evaluated for its impact on pupils, knowledge and skills.	
2.7 Food educational materials should be evaluated by experts from both a scientific and ethical point of view and based on the principles of a healthy diet as recommended by the national government and refer to the national curriculum, they must be sensitive to the needs of all social groups and recognise the complexity of the social and cultural messages attached to foods and take into account the effect of certain messages on the most vulnerable pupils. Ideally, food education materials are not sponsored by food manufacturers but if they are, logos, trade names and illustrations should not be used at all or at most be limited and used in a relevant context.	
3. The Whole School Approach	
3.1 Support schools to adopt a whole school approach to ensure all messages across the formal, hidden and parallel curriculum are consistent, led by Senior Leadership Team.	
4. Marketing/Regulation	
4.1 Implement WHO 2010 recommendations on the marketing of foods and non-alcoholic beverages to pupils.	
5. Monitoring and Evaluation	
5.1 Ensure national school food policy includes appropriate methods and tools for monitoring and evaluation.	

Appendix 2: School Nutrition Action Groups

How to set up and run a School Nutrition Action Group to transform food culture

Embracing a whole school approach to food ensures a movement of change that is the responsibility of everyone involved. The investment of time and planning change can establish healthy eating patterns that become the norm within a school ethos.

Who to have on your SNAG

Head Teacher or Deputy Head	School Catering Team
Pupils	Curriculum Lead
Governor	School Nurse
Community Member	Parent
Midday Supervisor	Care Taker/Gardener

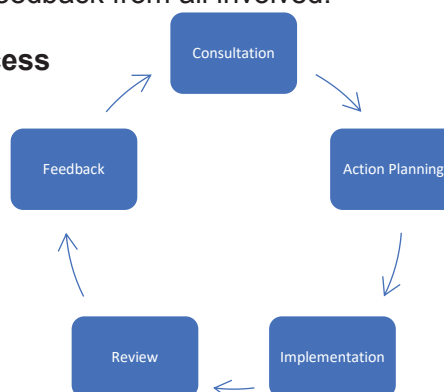
A School Nutrition Action Group (SNAG) is a way of working to consult the school community on food provision, and food education within the taught curriculum and the hidden curriculum. The SNAG will set out to develop an action plan based on what the vision is for the school food as well as a food policy. Refer to Appendix 3 and 4 for the whole school food policy for staff and a simple food policy to set out the school's vision for parents and pupils.

Any changes made to a food provision should be consulted on via the School Nutrition Action Group to ensure views are taken on board and addressed at the planning stages. Consultation is key to the change process and collective decision making helps put actions in place.

Ideally, the SNAG will meet each school term and share their action plan with the rest of the school community. This can be via a newsletter, school webpage, school council meeting and parent's evenings.

Once the group have agreed a set of actions and they have been implemented, the SNAG should invest time in reviewing and evaluating what worked well and where improvements can be made. This will inform future activities that are specific to your school community. Even at review point it is important to retrieve feedback from all involved.

School Nutrition Action Group (SNAG) Process



***Remember:** This is a meeting about food, so it is advisable to have a snack, which meets the school food standards, and water at each meeting.

Appendix 3: Whole School Food Policy Template

Mission Statement

Our whole school approach enables a food culture that is good for the health and wellbeing of the school community and for the planet. Healthy, hydrated pupils and staff can function and perform to their highest standards. Each eating opportunity the school creates will impact positively on a pupils' behaviour and readiness to learn.

Leadership

The School Nutrition Action Group is a multi-agency group driving forward our school principles of healthy eating and food education. Our group consists of Senior Management Leaders, school catering team, pupil, parents, governors and community members. The group endeavours to adopt a whole school approach to food ensuring a movement of change is mobilised and that it is the responsibility of everyone involved. The SNAG members' investment of time and planning change will establish healthy eating patterns that become the norm within our school ethos. Any changes made to a food provision will be consulted on via the School Nutrition Action Group to ensure views are taken on board and addressed at the planning stages.

Food and Drink served by the School

In addition to the midday provision you may also provide your pupils with wrap around care which would include breakfast and after school snacks.

The school will provide a breakfast club to all pupils ensuring they start the day well. Food served will be balanced, low sugar, provide at least one portion of fruit/veg and a carbohydrate item. The school will make allowances for free breakfast provision for families suffering hardship.

Snacks provided/sold by the school will be fruit/vegetables. Drinks will be water or milk based. The school will ensure parents are aware that high fat/high sugar/high salt ultra-processed foods do not provide nutritious calories for growing pupils.

Water will be available throughout the school day. A plumbed mains supply will be accessible for all pupils who are permitted to bring clear water bottles. The school will promote the importance of hydration in key curriculum time.

Our school will protect the lunch period to ensure all pupils and staff can have the time to eat an adequate 2 course lunch. Food offered will be procured locally with sustainability and environmental ethics. Food will be cooked from scratch meeting the statutory standards and the catering team will be trained appropriately and refreshed every 3 years. The dining environment will be pleasant, calm and inviting. Each class will be asked to contribute to a food display in the hall on rotation. The SNAG will review the dining environment each year and seek feedback from pupils throughout.

Food and Drink brought into school

Where pupils choose to bring a packed lunch parents/carers will be asked they meet the statutory standards in the same way school meals must. The school will work with parents to inform them of ideas/portion sizes and how to keep lunch boxes safe. The school will provide free drinking water to pupils on packed lunches and they will be allowed to sit with pupils taking a school meal option.

Snacks bought into school from home can only be fruit/vegetables and tooth friendly snacks.

Food within the curriculum

Our school is committed to use food in a range of topics through a creative curriculum. All pupils will be taught cooking skills and a range of savoury recipes. The school will provide a cooking club for pupils to join. The school will utilise its outdoor space to grow fruit, vegetables and herbs. A gardening group will take on the additional needs to keep the garden in good shape. Through their time at school all pupils will visit a farm. Staff leading in these curriculum areas will be trained to lead these areas.

Food Safety & Hygiene

All staff working with food and the catering team will all have training in basic food hygiene principles. All school food suppliers will be asked for their Food safety certificates at the point contracts are drawn up. Food served will meet and dietary, medical or cultural needs. Packed lunches will be stored in a cool place away from radiators.

Food and Drink as a reward or penalty

Food will not be used by staff to reward good behaviour or lunchtime/breaktime will not be taken away or cut short to reprimand a pupil for bad behaviour.

Monitoring and Evaluation

Best practice is for the school food policy to be looked at and refreshed every 2 years. The policy should be signed off by the School Leadership Team and shared on the school website.



The 'Good Food Deal'

Eating, cooking and growing food in school is very important.

The 'Good Food Deal' is a promise about food which everyone in school will work towards.

- 1** Staff listen to ideas about food in school from everyone: pupils, staff and parents
- 2** School dinners are healthy, tasty and good for the planet
- 3** Lunchtime is enjoyable and part of the learning at school
- 4** Food we bring into school is healthy
- 5** Water and milk is the only drink; we can drink whenever we want
- 6** We visit farms and learn where our food comes from
- 7** We learn about composting and how to grow food
- 8** We learn to cook wholesome and tasty food for ourselves and our family
- 9** We enjoy and have fun with food
- 10** We learn about healthy eating
- 11** Staff, parents and the local community can learn about growing and cooking food as well

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