

Healthy eating: how and why?

Age-group: 12 to 15 years old

Number of hours: 8 to 10 hours

Short description of activity: (max. 4 sentences)

In these activities students will have the opportunity to explore content related to healthy eating and risks associated to eating foods rich in Salt and Sugar. The aim is for students to reflect on their daily diet and develop proposals for improvement for the various meals and, at the same time, to share them with the school community in order to instill necessary changes. Given the diversity of activities to be carried out, students are expected to mobilize CT competencies as the follows:

- ☐ Data collection
- ☐ Data analysis
- ☐ Data representation
- ☐ Algorithms & procedures
- ☐ Automation

Goals

(summary of the most obvious goals in a clear language)

Natural Sciences

- Discuss the importance of science and technology in the evolution of foods, linking it to the knowledge from other subject matters;
- Develop some balanced menus and discuss the risks and benefits of foods for human health;
- Identify risks and benefits of food additives;

Math

- Collect, organize and represent data using absolute and relative frequency tables, stem and sheet diagrams as well as bar, line and circular charts, and interpret the represented information.
- Communicate reasoning, procedures and conclusions, using the language of statistics, based on the collected and processed data.

Technologies

- Develop algorithms to find solutions to simple problems (real or simulated), by using digital applications, such as: programming environments, mind (idea) maps, murals, notebooks, diagrams and online brainstorming;
- Generate and prioritize ideas, developing work plans collaboratively, selecting and using autonomously and responsibly, the most appropriate and effective digital technologies for the accomplishment of the designed projects;
- Use different means and applications that allow communication and collaboration in closed digital environments;

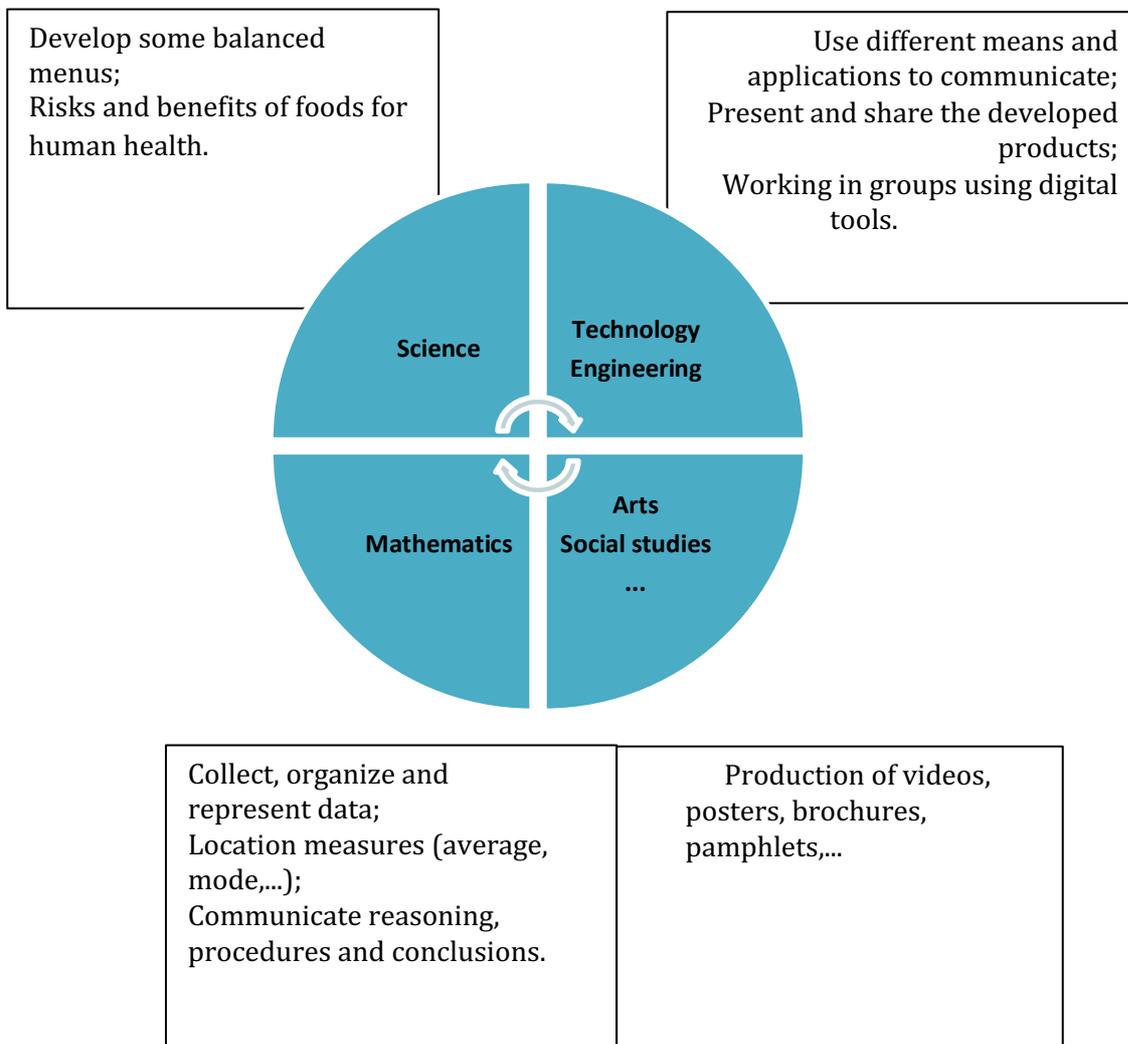
- Present and share the developed products, using digital means of communication and collaboration in closed digital environments.

Realistic STEAM-context

(short description including problem(s) to be tackled

Getting students to reflect on their eating habits and investigate those of other colleagues, aims at creating a context for simulating reality, discussing real health related problems and healthy eating. Students will be able to explore the content mentioned over a set of previous 2 or 3 sessions that will culminate in the creation of proposals for improving daily feeding. This will be disseminated by the school community according to different media such as videos, brochures and others.

(short justification of STEAM-integration)



Based on learning by doing (with different levels: from imitation to creation)

Part	Description	Timing
1	<p>Pre-session activity</p> <p>Sending a questionnaire (see materials - https://forms.gle/KDbCqHksrFsHMvNv8) to students in the class, by platform, to answer before this session. The questionnaire can be adapted according to the context of each school.</p> <p>Goals:</p> <ul style="list-style-type: none"> • make students aware of the importance of the quality of food in our lives; • collect, analyze and discuss information about students' daily meals during the school period, in order to raise awareness of the need to choose healthy foods, under the risk of contributing to overweight (obesity). <p><u>Starting question:</u> Do you consider that there are high levels of obesity or overweight in our country?</p> <p>Discuss with students their views on the issue.</p> <p>Present a video (see support materials) with information on the obesity rate, namely children, at national level (adapt to the national context of each country)</p> <p>Asking questions like:</p> <ul style="list-style-type: none"> - What did the guest suggest / what measures should be taken to reduce obesity levels in Portugal? - According to her, who can help fight obesity levels? - What are the values presented for - What can the school do / what are the actions to be taken to combat the level of obesity? -... <p>Present a news item (see support materials) with information on the obesity rate, namely children, at national level (adapt to the national context of each country)</p> <p>Possible issues:</p> <ul style="list-style-type: none"> - What factors can contribute to an increase in the number of obese people in Portugal? - What % of people are obese or pre-obese in Portugal? What to do to lower these numbers? -... <p>After viewing the video and exploring the news and recalling the starting question, "Do you consider that the problem of obesity / overweight is identified in our</p>	<p>100 min</p> <p>Maths</p> <p>OR CN</p>

	<p>school environment?", Present and analyze the results of the questionnaire sent prior to the session and discussed them.</p> <p>Possible issues:</p> <ul style="list-style-type: none"> • What can you conclude about feeding more often pointed out as an answer? • What is the mode / modal value of the results obtained in question X? • What are the consequences of eating this food? •... <p>To systematize the issues in the session, in pairs, ask them to reflect on the video, news and results obtained in the questionnaire. Suggest that they register possible important data observed / analyzed to mobilize in the debate around the question presented that will take place in the next session.</p>	
1.1	<p>Recall the issues explored in the previous session, in particular, those related to the video and news presented in the previous session.</p> <p>Supported by the records made in pairs in the previous class, start the debate starting from the question formulated in the previous session: <i>Does food at school contribute to high levels of obesity / overweight?</i></p> <p>Possible questions to ask during the moderation of the debate:</p> <ul style="list-style-type: none"> • Are there any known obesity / overweight situations in the school community? • If so, what are the causes that contribute to this result? • Do you think that the food provided by the school can contribute to weight gain? • If so, could one of the possible causes be the products available at the bar and / or on the cafeteria menu? • Give examples of products that you consider to contribute to weight gain. Because? • Do you consider that each person's physical activity is sufficient to prevent being overweight? • Could the school promote more physical activities as a means of prevention? •... <p>During the moderation of the debate, the teacher should also refer to the causes and risks inherent to the high number of obesity cases mentioned in the news and video analyzed in the previous session.</p> <p>Present an action plan with measures to combat obesity, presenting information based on national data and the results obtained in the questionnaire. Request that they carry out the work in groups of 3 students.</p>	<p>50 min Maths</p> <p>OR CN Cidada nia</p>
2	<p>Goal</p> <p>In this session it is intended that students are aware of the different energy needs and what are the functions of each nutrient that makes up their daily diet.</p>	<p>150 min</p> <p>Maths</p>

Begin by asking students about the meals they had, for example, the day before:

- What did you eat for breakfast yesterday? How about lunch? AND...?
- Is the amount of food we eat the same in different daily meals? Because?
- As a rule, who eats more (quantity) between you and your father / mother / brother ... in different meals? Because?

Then, question whether a highly competitive athlete, for example, Cristiano Ronaldo eats the same amount of food as the different students in the class and why.

The example presented will serve to introduce the concept of energy requirement / energy value. (can consult the following source: <http://www.fao.org/3/y5686e/y5686e04.htm> for clarification of concepts)

Discuss with the students the reference values for energy and nutritional needs for different age groups. The discussion should focus on the units of measurement (kcal, grams, ...) and the concept of reference values in the food intake of students aged 12 to 15 years.

Age group (years)	Energy value for lunch
3-6	420 kcal
6-10	492 kcal
10-15	621 kcal

For example, for children aged 6 to 10 years old the reference values for "lunch" are typically lower compared to children aged 10 to 15 years old. Reflect on this with students about why.

Present the table above and ask if, as a rule, the students' "Lunch" is healthy, asking them to justify their answers.

Possible questions to ask:

- If you had to divide the dish into parts, by categories, how many would it be?
- What nutrients should make up the "Lunch" dish?
- Of the total nutrients that should make up the "Lunch" dish, how would you divide the percentage of nutrients? 20% / 30% / ...% proteins / hydrates / ...?
- -...

Record student responses on the board and then present the "Dish: Healthy Eating" (<https://www.hsph.harvard.edu/nutritionsource/healthy-eating-plate/>). Discussion about its importance and its constitution for the creation of healthy meals.

In groups (3 or 4 elements), do research on the Internet on the constituent groups of the healthy dish, namely, what is the function and what they represent for the organism.

	Present the conclusions to the large group.	
3	<p>Objective - It is intended that students analyze eating habits of students in the school context where they are inserted. At the same time, placing students in the real context, in the school cafeteria, analyzing the meal of a given day from a caloric point of view (whether or not it is in accordance with the references).</p> <p>Organize the class into groups of 4 students (or pairs) and distribute the various tasks to the groups, taking into account the autonomy, skills, as well as manual dexterity of the students. If a class has 24 students, a division is suggested as follows:</p> <p>a) 2 groups of 4 - will work on food related to the breakfast b) 2 groups of 4 - will work on food related to the afternoon snack c) 2 groups of 4 - will work on food related to the lunch</p> <p>Groups a) and b) - will have to perform the following tasks:</p> <ul style="list-style-type: none"> - Build a questionnaire (as base support / teacher aid, the following google form is presented https://forms.gle/r3sLzRZV7bwnvLZH6) that allows to collect clear, objective and precise information about the food intake of colleagues at breakfast and afternoon snack; - Disseminate the questionnaire online for schoolmates of the same grade (8th or 9th grade students), for example, via the online platform that the school has adopted (e.g. google classroom) or by email; <p>Group c) – the two small groups will have to go to the school cafeteria before lunchtime and perform the following tasks:</p> <ul style="list-style-type: none"> - Weigh the food one by one regarding the lunch plate of that day; - Note down the different values in a pre-designed Excel sheet (to build the Excel grid, see the one in the Annex); - Photograph the "final" dish in the school canteen (try to shoot over the course of a week to compare with the preparation of the healthy dish). <p>In order to carry out the group work c) it is essential that the school cafeteria staff are previously asked to cook a meal (of the day) 1 hour (or as possible) in advance so that the students can weigh the prepared food using a plate and a scale. In the classroom, build tables and graphs that allow reading and comparing of the information collected with the DGS' referential and the energy needs (excel sheet Food, Nutrients, Kcal,...) (See Part 2 and Part 3 in Supporting materials).</p>	<p>150 min + 50 min</p> <p>Maths + Science + ICT</p>
4	<p>Objective - To challenge students to create action plans taking into account the analysis of the data collected by each group in the previous activity.</p> <p>After the data collection carried out in the previous activity, each group must proceed with the analysis of them with a view to elaborating instruments that contribute to an improvement in the quality of food in / at the school.</p>	<p>50 min Maths</p>

	<p>Groups a) and b): Treatment of the applied questionnaire data and elaboration of a plan (brochure, pamphlet, poster, video,...) to raise awareness / action to spend in a space for students to socialize..., for example, to elaborate a list of foods available in the bar and to advise certain products , informing you of its advantages.</p> <p>Group c): Analyze and interpret the data obtained from different points of view (caloric, variety of foods, whether or not according to the “Dish: Healthy eating”).</p> <p>Highlight strengths and weaknesses, i.e., identify whether the products/meals available are in accordance with the referential (See Part 2 and Part 3 in Supporting materials).</p> <ul style="list-style-type: none"> • Present a proposal, of a balanced menu, for a school day (vocational courses cooking / bar and waiting)), based on the “Dish: Healthy Eating”. <p>Collect testimonies about the presented proposals (creating short videos) of students, staff, management, teachers...)</p> <p>To elaborate, as a synthesis of a large group, a plan with guidelines to improve school meals.</p>	
5	<p>Objective - Build a resource that allows informing all students about the daily “lunch” food in the school cafeteria (kcal, nutrients,...). (Draw some healthy food related pictures on the cafeteria wall. Alternatively, build some posters with theme related images. Create a Google Sheets (see example: https://bemstar.globo.com/index.php?modulo=tab_nutri&id_tipo=100) and put information related to the kcal of the lunch of each day of the week. On each day of the week, students must provide nutritional information for each component of the lunch.</p> <p>Put shareable Google Sheets (attention, allow only reading and not editing!) And copy the Link. Subsequently, create a QRcode (for example, qr-code-generator.com) and place the Google Sheets link.</p> <p>Print the QR code (see example in support / support materials - part 5) and post, for example, at the entrance to the canteen, so that all students have access to its information.</p> <p>Create a website using Telegra.ph (see example, https://telegra.ph/Lunch-12-13) to disseminate information about lunch in the school cafeteria. To achieve this, students must use the QRcode created and add information about the importance and functions of the different nutrients. They should update the information according to the meal planned for each day of the week.</p> <p>Send via email, put on the school page or online platform for large-scale access by students the link to the page created so that everyone can consult the information</p>	150 min

Organization

Materials:

- PC;
- Mobile phone/smartphone(photo);
- Cardboard;
- Spreadsheet (Excel)
- News/text
- Questionnaire to be applied
- Scale
- ...

Use of ICT: (only mention when relevant)

Opening of classroom: (only mention when relevant)

Coaching

Useful questions:

- Part 1 of methodology
 - The...
- Part 2 of methodology
 - The...
- Part 3 of methodology
 - The...
- Part 4 of methodology
 - The...
- Part 5 of methodology
 - The...

Stimulation of self-management: (concrete opportunities/remarks adapted to the project)

Stimulation of cooperation: (concrete opportunities/remarks adapted to the project)

Teamwork:

- Groups consist of ... students.
 - Creating groups of up to 4 students to work through the different sessions
- Competences needed in a group:
 - Shared discussion of the problem;
 - Division of tasks;
 - Negotiated interactions (discussed) and targeted at enabling the sharing of resources (cooperation) with a view to achieving a common objective;
 - Confronting ideas and opinions for the building of knowledge;
 - Reflection upon and discussion regarding the defined objectives and/or results

Formative assessment: (concrete description/summary adapted to the project)

Observation of the students' performance in the carrying out of the activity "Healthy eating: How and Why?".

8

STEAM-CT

It will be necessary to build observation grids focused on the learnings defined for each station, as well as the defined skills.

Adaptations

- General ideas:
- Ideas with younger/older children: (3-6 <-> 6-9 / 9-12 <-> 12-15)

Tips & tricks

(only mention when relevant, e.g. background information, ...)

Support/support materials

Part 1

- **Questionnaire***

<https://forms.gle/KDbCqHksrFsHMvNv8>

NOTE: This questionnaire serves only as a base / reference for teachers in each country to design a similar one, depending on the respective food.

- **News - Obesity**

In addition to people having “less money”, which “requires less healthy eating”, confinement also means that “many people do not exercise at all”. “Obesity will increase, but other diseases that will appear with obesity will also increase” and that “will spend money on the State because they are all reimbursed”, he warned.

[...]

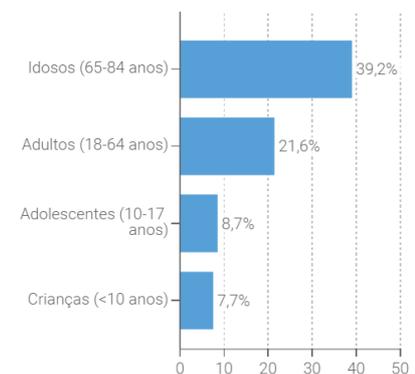
According to the expert, the fact that there is “an aggravation of economic difficulties” following the pandemic causes people to end up buying foods “cheaper, but which are very rich in fat, salt and sugar in detriment of a more correct, more varied diet, with horticultural products, meat, fish”. Everyone must “look at obesity” as a disease that also “is a risk factor for more than 200 associated pathologies”, which is why “it is very important to treat the cause from the beginning and not just the consequences”.

Since the prevalence of obesity has increased in recent years, the scientific community, health professionals, but also civil society, must unite in an “enormous struggle” to stop its increase “and preferably try to regress the numbers” of this disease in Portugal, where about 60% of people are obese or pre-obese.

[...]

OBESIDADE

Prevalência de obesidade a nível nacional por grupo etário*, em percentagem



ver menos ^

Fonte: Inquérito Alimentar Nacional e de Atividade Física 2015-2016 a 04/03/2020 [Notas](#) [Sugestões?](#)

Experts and patients also remember that obesity is a disease that represents a risk factor for the development of complications in the context of Covid-19 infection.

Studies show that patients with obesity, especially with morbid obesity, have an increased risk of complications when infected”, because many have associated diseases, such as diabetes, sleep apnea, breathing problems, cardiovascular diseases, which can cause “have worse outcomes,” said Paula Freitas.

[...]

If each child on average consumes about 200-300 extra calories a day without having increased their energy expenditure with exercise by the same proportion, they may have experienced a weight gain of at least two kilos in the last two months, estimates APCOI.

News taken from: <https://observador.pt/2020/05/21/estao-reunidas-todas-as-condicoes-para-aumento-da-obesidade-em-portugal/>

NOTE: It is suggested that each teacher in each country should carry out a research on news related to obesity, as current as possible, and that it addresses the risks and, age groups and different data.

- **Video**

<https://tvi24.iol.pt/sociedade/ocde/portugal-tem-uma-taxa-significativa-de-obesidade-muito-grave>

NOTE: put Captions

Part 2

Dish: Healthy

eating

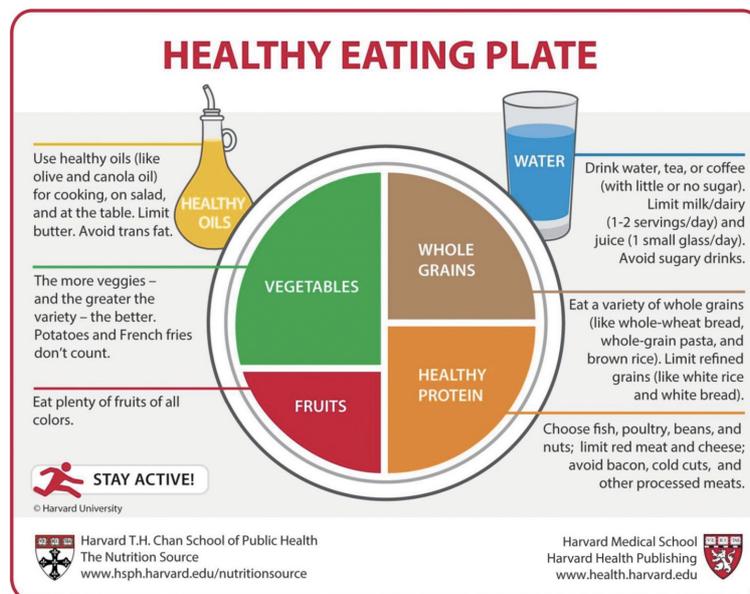


Table 1 with energy needs by age group

Percentage distribution of macronutrients for lunch, by age group

Age group (years)	Energy value for lunch	Macronutrients					
		Energetic value					
		Carbohydrates		Lipids		Proteins	
		55	75	15	30	10	15
3 - 6	420	231	315	63	126	42	63
6 - 10	492	271	369	74	148	49	74
10 - 15	621	342	466	93	186	62	93 kcal
15 -18	714 kcal	393 kcal	536 kcal	107 kcal	214 kcal	71 kcal	107 kcal

Table 2 with quantities of macronutrients by age group

Percentage distribution of energy needs by macronutrient and respective amount of macronutrients for lunch, by age group

Age group (years)	Energy value for lunch	Macronutrients					
		Energetic value					
		Carbohydrates		Lipids		Proteins	
		55	75	15	30	10	15
3 - 6	420	231	315	63	126	42	63
6 - 10	492	271	369	74	148	49	74
10 - 15	621	342	466	93	186	62	93 kcal
15 -18	714 kcal	393 kcal	536 kcal	107 kcal	214 kcal	71 kcal	107 kcal



Evaluation (under development)

A. Registration grid for groups and CTcompetencies

Group1

Competence	Descriptors	Evidence
Data collection	Collect relevant data through experiments or investigation to solve the problem.	Fill in the excel sheet
Data analysis	Analyse and understand data to find patterns and draw conclusions.	
Date representation	Transform the analyzed data to be readable or interpretative through graph, chart, writing or drawing.	

Group2

...

B. Group work

Dimensions	Descriptors	Evidence	Check
	Students share tasks		
	Students discuss the different solutions found		

C. STEAM Knowledge

Knowledge	Evidence	Check	

References:

- World Obesity Day 2019
<https://www.dgs.pt/em-destaque/11-de-outubro-dia-mundial-do-combate-a-obesidade-2019.aspx>
- Young people's food habits
<https://www.sns.gov.pt/noticias/2019/04/09/habitos-alimentares-dos-adolescentes/>
- National program for the promotion of healthy eating

<https://www.dgs.pt/portal-da-estatistica-da-saude/diretorio-de-informacao/diretorio-de-informacao/por-serie-1111302-pdf.aspx?v=%3d%3dDwAAAB%2bLCAAAAAAABAArySzItzVUy81MsTU1MDAFAHzFEfkPAAAA>