

**HEALTHY EATING AND CHILDHOOD OBESITY:
CHALLENGES AND SOLUTIONS
LEARNING ACTIVITIES and LEARNING OBJECTS**



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Project title: Partnerships for Science Education

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Healthy Eating and Obesity: Challenges and Solutions

Learning activities and Learning objects

Subject: Biology (possible contribution of Computer Science, Home Economics, Art, English teachers, etc.)

Grade: 8th grade (+/- 13-14 years old students)

Estimated duration for scenario implementation:

- 4 periods of 40-45 minutes to promote conceptual and epistemological understanding related to the PAFSE topic: looking after myself and others- Healthy Eating.
- 4 periods of 40-45 minutes to conduct the research project entitled: Childhood Obesity: Challenges and Solutions.
- Open Schooling Event.

Classroom organisation:

Lessons 1-4: Students are organised in groups of 4-5 students. Use of individual and cooperative learning, discussion, and reflection in the whole class.

Lessons 5-8: Organising students into groups of 4-5 students. Use of cooperative and individualized learning and use of the jigsaw technique. Discussion and reflection in the whole class.

0. Introduction: Healthy Eating and Obesity: Challenges and Solutions

(Lessons 1 & 2)

01. Socio-scientific issue

Watch a multimedia – show related to healthy and unhealthy eating, and then try to do the posed activities.

Obesity is one of the most serious global public health challenges of the 21st century, affecting every country in the world. In addition, it is not only a chronic disease in itself, but also a major risk factor for the world's leading causes of poor health and early death including cardiovascular disease, several common cancers and diabetes.

Although health has generally improved over the last several decades, obesity is increasing globally. Different researchers relate obesity to our lifestyle and to our eating habits.



Many young people try to prevent and manage obesity changing their eating habits: Georgia, Vasiliki, Anastasia and George are 13-15 years old, lower secondary school students. They, often, share their opinions, habits and experiences on health and nutrition issues on a google blog, which is often visited by their friends and classmates. Last week these students posted various statements related to health and nutrition issues. Specifically, in their posts they wrote the following:

Georgia: For the last three years, I have made tremendous efforts to lose weight, but I have not succeeded. Now I have decided to go vegan, hoping to succeed.

Vasiliki: I don't want to gain extra kilos, so I decided to avoid different types of food and to eat more frequent meals.

Anastasia, reading the posts of her classmates, wrote the following on the blog: *I think the issue of healthy eating and obesity is much more complicated. During a visit to my paediatrician, I heard that television advertising of unhealthy food is an important cause for childhood obesity.*

George also reacted to his classmates' posts by blogging the following: *On a scientific website on healthy eating, I read that the main causes of obesity are related to individual's personal dietary choices and lifestyle, but also to socio-economic and political conditions of the area where he/she lives.*

02. Students' Mission

Your mission is to investigate the following primary research questions:

1. What are the potential causes, health risks and solutions related to childhood obesity?
2. What are individuals' and governments' responsibility to reduce childhood obesity?
3. What are the perceptions and knowledge about childhood obesity among people in the local community where you live?

To answer the above primary questions of this socio-scientific issue, you are asked to formulate specific questions and hypotheses, to collect data from a variety of inquiry-based sources (e.g., such as texts, articles, pictures and videos, tables and diagrams and scientific measurements, questionnaires, interviews, etc.), analyse, make inferences, synthesize, and draw conclusions. You will also experience how scientists usually work, as scientific work does not only include conducting experiments but also includes searching for data, evaluating sources and making scientific models.

During this process, you will obtain a basic epistemological and conceptual understanding of, organic and inorganic nutrients essential to human functioning, of food pyramid, Mediterranean diet, healthy and unhealthy eating. Yet, you will identify the relationship between healthy eating and the concept obesity. Additionally, you will learn about the possible causes, health risks and solutions related to childhood obesity, and will can explain individuals' and governments' responsibility for reducing childhood obesity.

Finally, through these procedures, you will be able to create a poster and a brochure and hold a public event (open schooling event) for discussion and debate entitled *Healthy Eating and Childhood Obesity: Challenges and Solution*. The public event will be organised and coordinated by you, in cooperation with your teachers and the principal of your school.

03. Prior knowledge: Answer the following questions.

01.1. Why do we need food?

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01.2. Which of the above foods are healthy and which are unhealthy? Explain your reasoning.



A.



B.



C.



D.



E.



F.

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01.3. Would it be healthy if we just used to eat fruits and vegetables? Explain your reasoning.

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01.4. Why is it important to learn about food and healthy eating?

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01.5. Try to explain what a socio-scientific issue is defined, and why obesity is defined as a socio-scientific issue?

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It does not matter if you do not know exactly the answers of these questions. The main objective of doing this activity is reorganizing your initial ideas about Healthy Eating and Obesity until now.

In the next activities you will learn more about Healthy Eating and Obesity.

Activity 1: Food and living organisms: Why do we eat?

1.1. Watch the video entitled *Living organisms and their food* at <https://www.pbslearningmedia.org/resource/tdc02.sci.life.colt.eat/what-do-animals-eat/> and then answer, in writing, the following question: Do you find that all living organisms need the same kind of food? Why? Explain your reasoning.

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1.2. Watch the video entitled *Nutrition in Living Organism* at <https://youtu.be/511BW2x7zOg> and then answer, in writing, the posed questions.

1.2.1. Why do all living organisms necessarily need food? Give four (4) reasons.

- i.
- ii.
- iii.
- iv.

1.2.2. Hippocrates (400 BC), the Greek founder of western medicine, said about food and health: *Let the food be your medicine and medicine be your food.* What do you think about the meaning of Hippocrates' this popular statement? Explain your reasoning.

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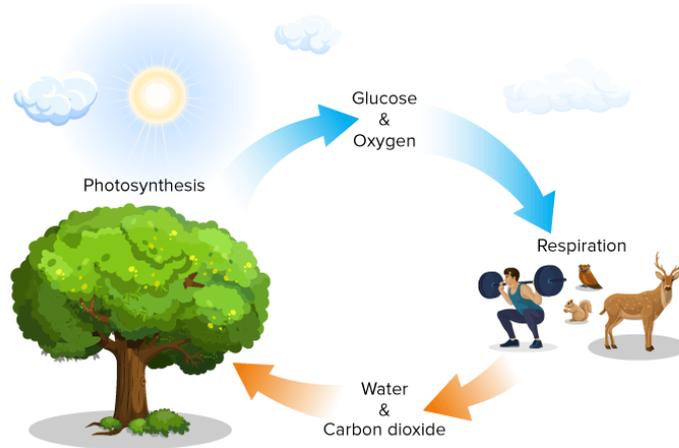
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1.2.3. Observe the following picture and try to explain the energy cycle in plants and animals.



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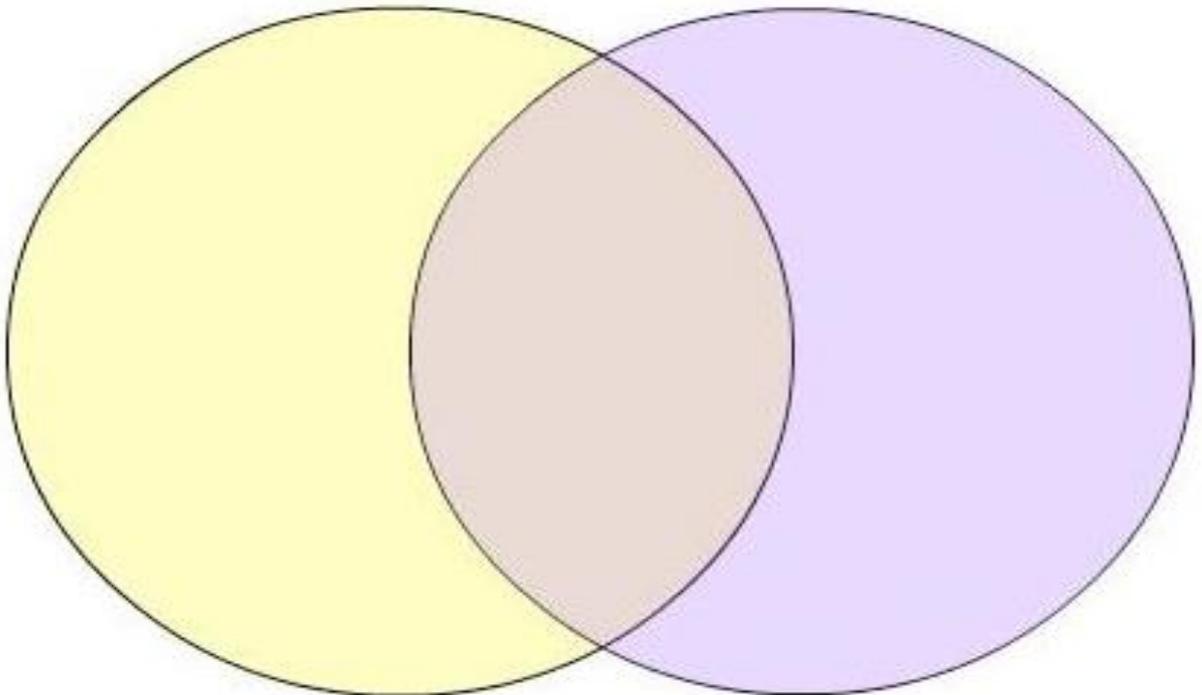
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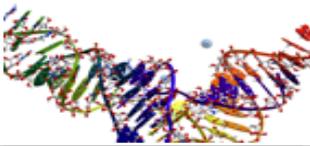
1.2.4. Complete the Venn diagram below to show the similarities and differences between animal nutrition and plant nutrition.

Animal Nutrition

Plant Nutrition



1.3. What is in the food we eat which makes the food so necessary for life? In order to learn more about the importance of food for life, watch the video at <https://youtu.be/1C57cJzM8OA>, read the information on the table below concerning components of food, and then answer the posed questions (Baytelman et al., 2018). https://archeia.moec.gov.cy/sm/40/viologia_b_gymn.pdf

	Nutrients of Food	Function
O R G A N I C N U T R I E N T S		Carbohydrates: serve energetic and structural purposes of the body. They come mainly from plant foods. They are the most important source of energy for the cell (fuel of choice). They are also energy storage substances for plant organisms. Each 1g of carbohydrate provides 4 Kcal or 17 KJ of energy.
		Lipids (Fats and Oils): serve energetic and structural purposes of the body. They come either from plant foods (e.g. oils) or from animal foods (e.g. animal fats). They are an important source of energy They are important energy-saving substances as well as thermal insulator for animal organisms. Each 1g of lipid provides 9 Kcal or 39 KJ of energy.
		Proteins: serve structural, rather than energetic purpose. They perform a large number of functions in the body (e.g. transport of substances, defence of the body, acceleration of chemical reactions, etc.). They come mainly from animal foods. Each 1g of protein provides 4 Kcal or 17 KJ of energy.
		Nucleic acids serve mainly structural needs (construction of genetic material) and determine and control the production of proteins. Through proteins, they control all the functions and hereditary characteristics of organisms.
		Vitamins are organic complementary substances that our body cannot synthesize or synthesize them in amounts less than necessary. They are taken up through animal and plant foods and are necessary for the functioning of the body.
I N O R G A N I C N U T R I E N T S		Salts are inorganic complementary substances derived from plant and animal foods, as well as from water. They are basic building blocks of many biological structures (bones, teeth) and are involved in important functions in the body. There are macronutrients (e.g., calcium, magnesium salts), and trace elements (e.g., iodine salts, iron salts).
		Water belongs to the inorganic complementary substances. More than two thirds of the body of most organisms is made up of water. The water plays a very important role in the body: e.g. (i) many chemical substances can be dissolved in water and thus easily come into contact and react with each other, (ii) water is also essential for the transport of substances to all parts of the body, (iii) it helps organisms to keep stable their body temperature.

1.3.1. Observe the following picture concerning the 7 nutrients of food and try to explain the main structural difference between organic and inorganic nutrients.

The collage illustrates the chemical structures of seven nutrients:

- Glucose / Carbohydrate:** A cyclic structure of a six-carbon sugar with hydroxyl groups.
- Protein:** A central carbon atom bonded to a hydrogen atom, an amino group (NH₂), a carboxyl group (COOH), and an R-group.
- Vitamine C:** A complex cyclic structure with multiple hydroxyl groups.
- Water:** A bent molecular structure with one oxygen atom and two hydrogen atoms.
- Salt:** A diagram showing the ionic bond between sodium (Na⁺) and chloride (Cl⁻) ions.
- Lipids:** A diagram of a phospholipid with a hydrophilic head (containing choline, phosphate, and glycerol) and a hydrophobic tail (fatty acids with a double bond).
- Nucleic acids:** A diagram of a nitrogenous base (adenine) with a central carbon atom bonded to nitrogen and hydrogen atoms.

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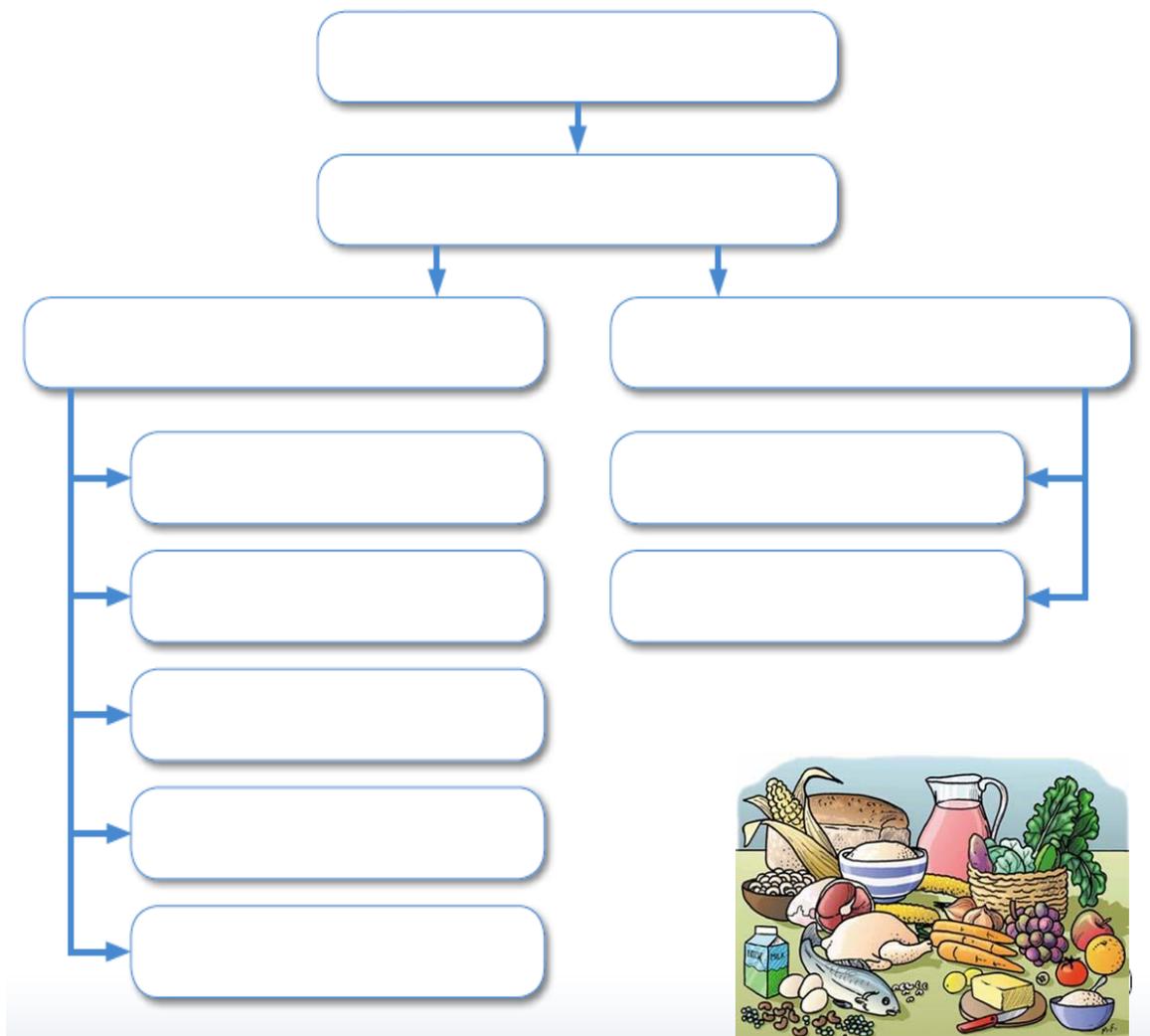
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1.3.2. The concept map below is related to the nutrients of food. Complete the map, using the following terms (given in alphabetical order): Carbohydrates, Foods, Inorganic Nutrients, Lipids, Minerals, Nucleic acids, Nutrients, Organic Nutrients, Proteins, Vitamins, Water. (Baytelman et al., 2018). https://archeia.moec.gov.cy/sm/40/viologia_b_gymn.pdf

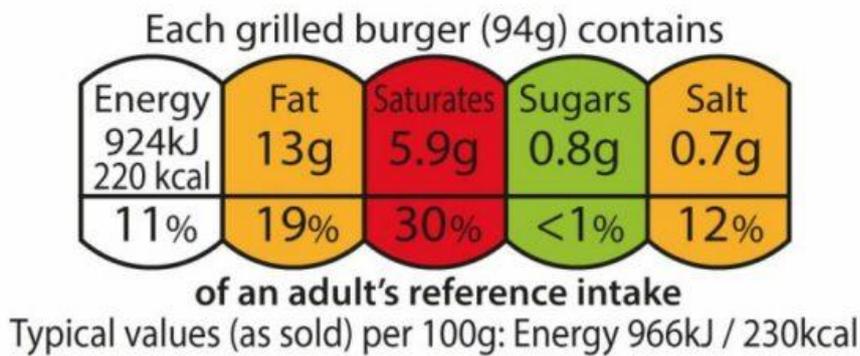
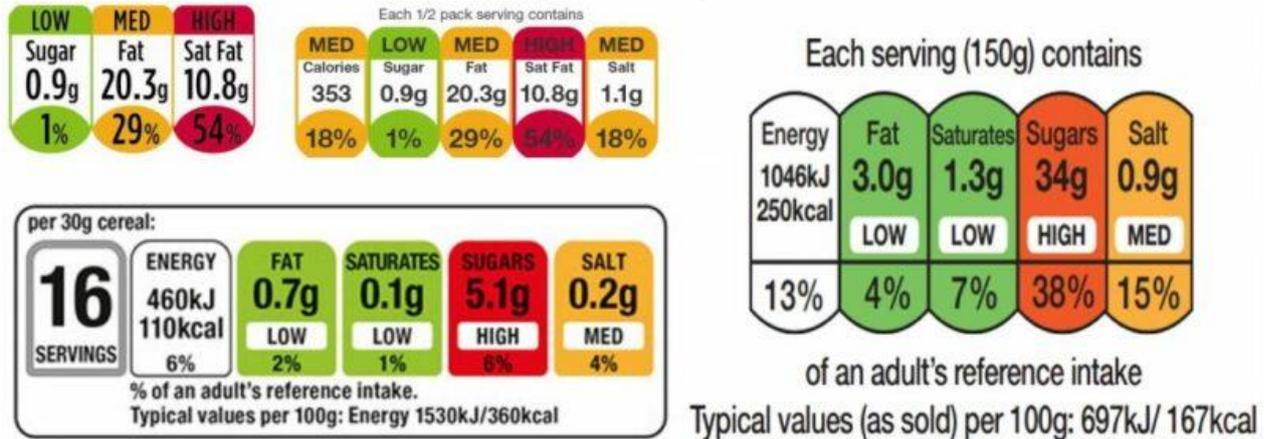


1.3.3. Match the nutrients of food of column 1 and the sentences of column 2 to understand better the function of the different nutrients of food.

No	Nutrients of food	Function	No
1.	Carbohydrates	1g contains 9 Kcal or 39 KJ energy	A
2.	Lipids	Important for the defence of the body	B
3.	Proteins	Organic complementary substances	C
4.	Vitamins	Essential component of the organism for the transport of substances to all parts of the body	D
5.	Minerals	They play an important role for bones and teeth	E
6.	Water	Most important source of energy for the cell (fuel of choice) and energy-saving substances for plant organisms	F

1.4. Watch the video related to energy in food at <https://youtu.be/bLKOAsikD-Q> and then try to do the posed activities.

The European Union governments require all pre-packed food to list nutritional information per 100g or 100ml on the packaging. Many companies are using traffic light notices on the front of packaging to highlight the nutritional facts about their product. Observe the food labels below and try to explain why is important to know how much energy people get from consuming food or drink. Discuss with your group and explain how we read food labels.



1.4.1. Use the words in the list below (given in alphabetical order) to complete the sentences concerning energy in food:

Carbohydrates, Energy, Energy-dense foods, Fats, Kilojoules (KJ), kilocalories (Kcal), Proteins.

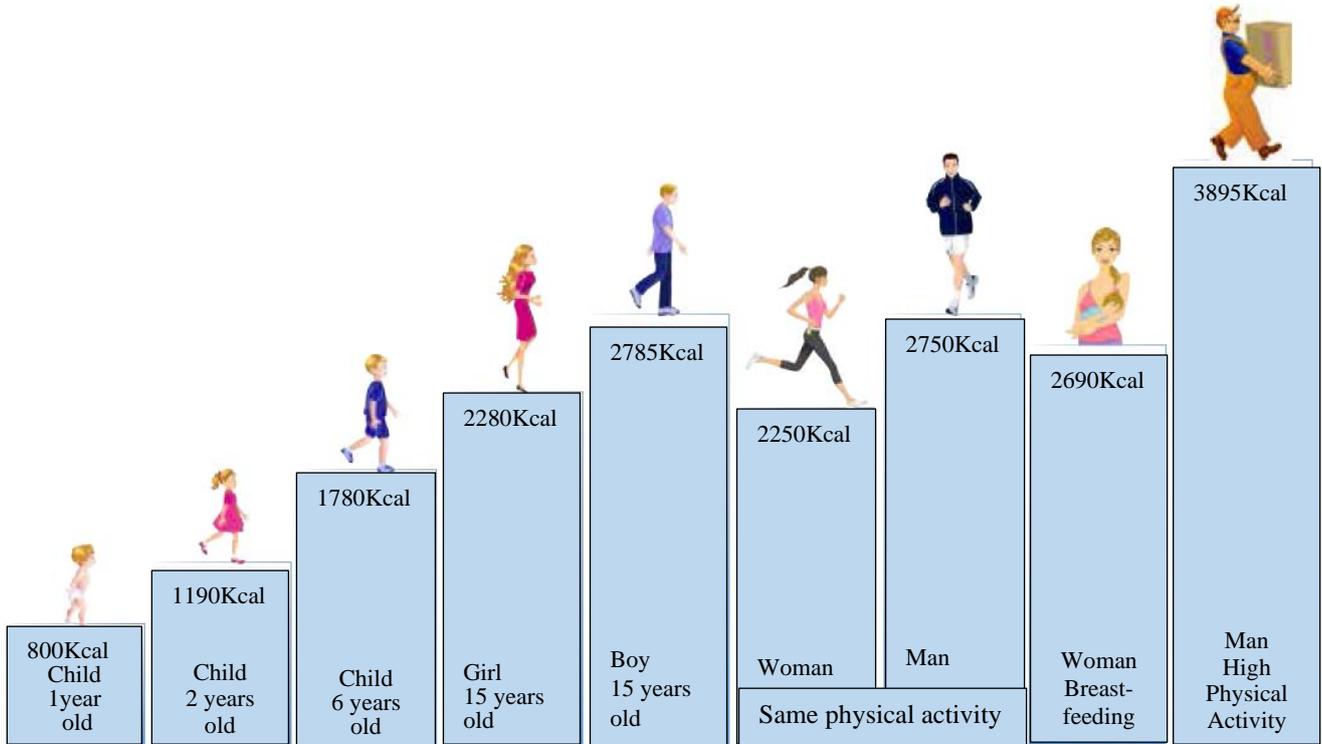
i. The food and drinks we eat provide, which is measured in or How much energy they provide depends on the amount of (sugars/starch),, the food or drink contains, as well as the portion size.

ii. Different ingredients in food and how they are prepared mean some have more than others. Larger serving sizes also mean more

iii. We know drinks contain energy, but because liquid is not as filling as solid food, we, often, don't realise how many we are consuming from drinks. Some drinks are surprisingly high in Foods that are high in fats, added sugars or alcohol are by far the most (highest in kJ or Kcal).

1.4.2. Observe the diagram below and find four (4) factors influencing daily energy requirements.

(Baytelman et al., 2018). https://archeia.moec.gov.cy/sm/40/viologia_b_gymn.pdf



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1.4.3. Men, generally, have higher energy requirements than women. Why?

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1.4.4. Children and adolescents need more energy in comparison to adults. Why?

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1.4.5. What do you think it happens when we consume too much energy, and burn too little?

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Activity 2: Eating habits, lifestyle and health (Lessons 3&4)

Over the last few years, researchers looked at factors that may increase our chances of a longer life. Through data collected from men and women who were followed for up to 34 years, researchers examined different low-risk lifestyle factors: healthy diet, regular exercise (at least 30 minutes daily of moderate to vigorous activity), healthy weight, no smoking, and moderate alcohol intake (up to 1 drink daily for women, and up to 2 daily for men).

According to the above investigation, healthy diet is one important factor for increasing chances of a longer life. Mediterranean diet is considered as healthy one. Watch the video entitled *Fit Facts: Benefits of a Mediterranean Diet* at https://youtu.be/jYZ_yf2LBu4, then read the text below, discuss with your group why Mediterranean diet is considered as healthy one, and then answer the posed questions.

During this research, it was found that the men of rural Crete consumed significant amounts of olive oil, olives, fruits, nuts and vegetables, especially wild greens. They consumed moderate amounts of fish, cheese and red wine. Very small amounts of eggs, meat and milk were consumed. The essence of their diet was abundant amounts of antioxidants, fibre, omega-3 fatty acids, vitamins E and C, phytochemicals, and selenium. What was surprising to the researchers was that the Cretans had one of the highest fat diets with approximately 37% of their calories coming from fats. Most of this fat came from olive oil. They also consumed high amounts of omega-3 fatty acids from fish and large amounts of wild plants, snails, nuts, legumes and figs that were all high in ALA (Alpha-linolenic acid). The protein that was consumed from sources other than fish and legumes were from free range chicken, eggs and some meat.

2.1. What is the Mediterranean Diet?

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2.2. Why is Mediterranean diet considered as healthy one?

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2.3. Describe a daily menu based on the Mediterranean diet.

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2.4. Some people eating a plant-based diet may choose not to eat meat and animal products for various reasons. A vegan diet excludes all meat and animal products (meat, poultry, fish, seafood, dairy and eggs), whereas a vegetarian diet excludes meat, poultry, fish and seafood. What's the difference between a vegan and vegetarian diet?

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2.5. Existing research on dietary patterns clearly shows that a high intake of vegetables and fruit is associated with a lower risk of heart disease and early death. Should we switch to a vegan diet?

First, read the text with the title *What the Heart Foundation recommends*, then discuss the text with your group, and then answer the above question.

There are plenty of ways to eat for a healthy heart and a range of diets can be heart healthy – those with small amounts of meat, poultry, fish, seafood, eggs and dairy, and those without.

Whatever diet you choose, we recommend loading up your plate with plant foods like vegetables, fruit, whole grains, legumes, nuts and seeds and making them the “hero” of your meals and snacks.

What's most important is the quality of your overall diet and getting the fundamentals of eating a healthy diet right. Most of us would benefit from eating more plant foods and less processed foods without having to avoid animal products altogether. A 'flexitarian' approach may be the most realistic and sustainable way for many of us to adopt a plant-based diet.

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2.6. Eating a variety of foods keeps our meals interesting and flavourful. It's also the key to a **balanced diet**. Observe the following picture and try to explain, in writing, why.



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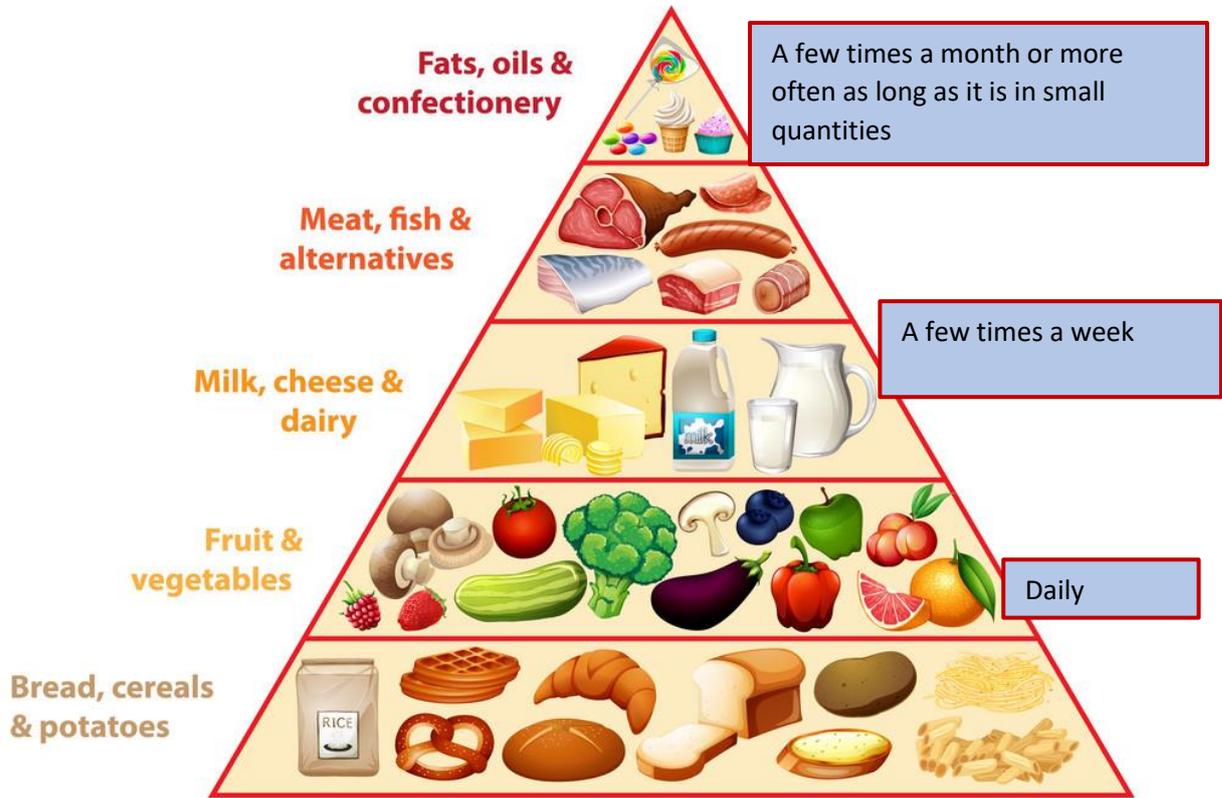
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2.7. The following picture shows a model of food pyramid, which represents the principles of healthy nutrition. Using the 3D model of food pyramid and the above picture, explain the four (4) main principles of healthy nutrition.



Healthy Food Pyramid

2.7.1 Four (4) main principles of healthy nutrition:

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2.7.2. Explain the relationships between Food pyramid and Mediterranean diet.

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2.7.3. Explain the relationships between Food pyramid, Mediterranean diet and healthy eating.

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2.7.4. *Eat more fibre....* You've probably heard it before. But do you know what is dietary fibre and why fibre is so good for your health? Read the following text and answer the posed questions.

Dietary fibre is a group of compounds (Carbohydrates) found mainly in fruits, vegetables, whole grains, and legumes that cannot be fully digested in our intestine. Dietary fibre is probably best known for its ability to prevent or relieve constipation. But foods containing fibre can provide other health benefits as well, such as helping to maintain a healthy weight and lowering your risk of diabetes, heart disease and some types of cancer.

2.7.4.1. Explain the relationship between dietary fibres and Mediterranean diet.

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2.7.4.2. Propose five (5) tips to increase your daily fibre intake.

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WHAT DOES SCIENCE TELL US?

Dietary fibre is mainly derived from the cell walls of plant cells. Their role in nutrition and health maintenance is very important. According to current scientific knowledge, fibre is divided into **soluble** and **insoluble fibres**. Insoluble fibre is not degraded in the colon, but passes through and excreted in the faeces. They are important for the good functioning of the digestive system, for the protection against colon cancer and constipation and for the increase of the feeling of satiety. The soluble fibre is degraded by the microbial flora (bacteria) of colon.

2.7.4.3. Based on the above statement concerning dietary fibre, write your opinion on how scientific knowledge is developed.

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HEALTHY EATING PLATE

HEALTHY OILS
Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

WATER
Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

VEGETABLES
The more veggies – and the greater the variety – the better. Potatoes and French fries don't count.

WHOLE GRAINS
Eat a variety of whole grains (like whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (like white rice and white bread).

FRUITS
Eat plenty of fruits of all colors.

HEALTHY PROTEIN
Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.

STAY ACTIVE!
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Harvard T.H. Chan School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu

Activity 3: Research project: Childhood Obesity-Challenges and Solutions (Lessons 5-8)

3.1. To investigate the socio-scientific issue concerning childhood obesity, first is very useful to prepare a research plan, which will be your research project in miniature.

Use the information below to prepare your research plan to investigate the socio-scientific issue concerning childhood obesity. It is proposed to use the jigsaw technique.

No	Components of research plan	Explanations for components of research plan
1.	Theoretical Background	The background section is pretty straightforward. It consists of a few sentences on what the research is about and why it is happening. The background also includes a problem statement (the central questions you're trying to answer).
2.	Objectives	In this part you will explain the specific aims of your research and what you specifically want to find out through this research process based on your research questions.
3.	Participants	You have to define the type and number of participants you will rely on to get the insights and data you need.
4.	Methodology	In this section, talk briefly about the chosen data collection instruments and the reasons behind why that particular method was chosen (e.g. Interviews, Questionnaire, scientific texts, articles, pictures, videos, tables, diagrams, simulations and scientific measurements), as well as the method of data analysis.
5.	Results and Conclusions	In this section, write the results of your investigation and your conclusions concerning your primary research questions.
6.	Approximate Timeline	It is useful to place an approximate timeline in your research plan. (e.g., Research start date, Data Collection, Analysis, Conclusions, Date of Presentation-Open schooling event).
7	Form of actions	e.g., Organising a public event for discussion, reflection, presentation of research, exhibition of scientific poster. Promote a public debate, distribute an information brochure, etc.



Evaluate information and consider the source and author of the information used, the purpose of the publication, potential biases of the author or publisher, evidentiary support for the information, and possible missing information.

3.2. What are the potential causes, health risks and solutions related to childhood obesity?

To answer the question concerning the causes, health risks and solutions related to childhood obesity, you should first read the statements and the diagram below.

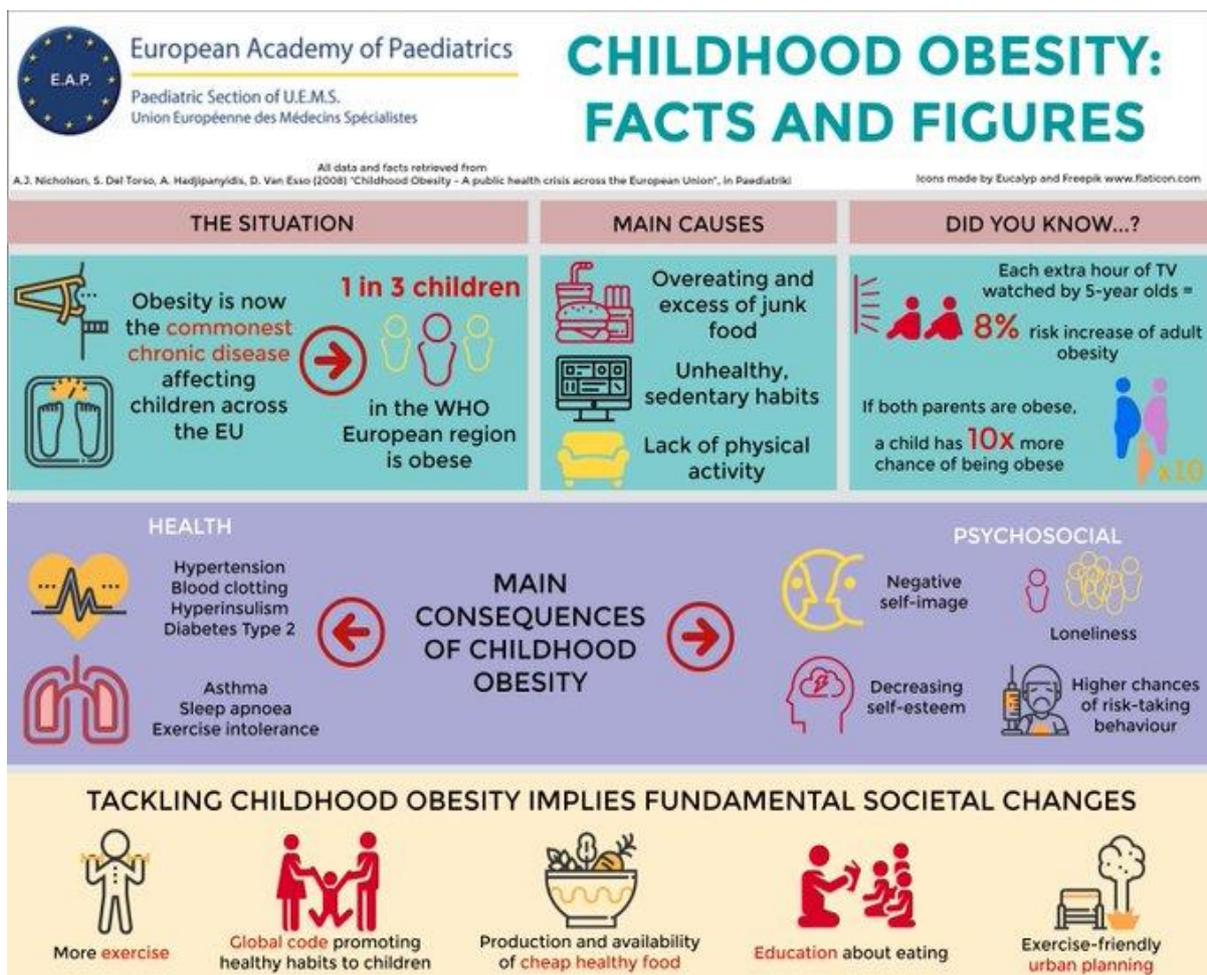
In the past 40 years, childhood obesity has become one of the world's most serious public health challenges, and a recognised problem in every country in Europe.

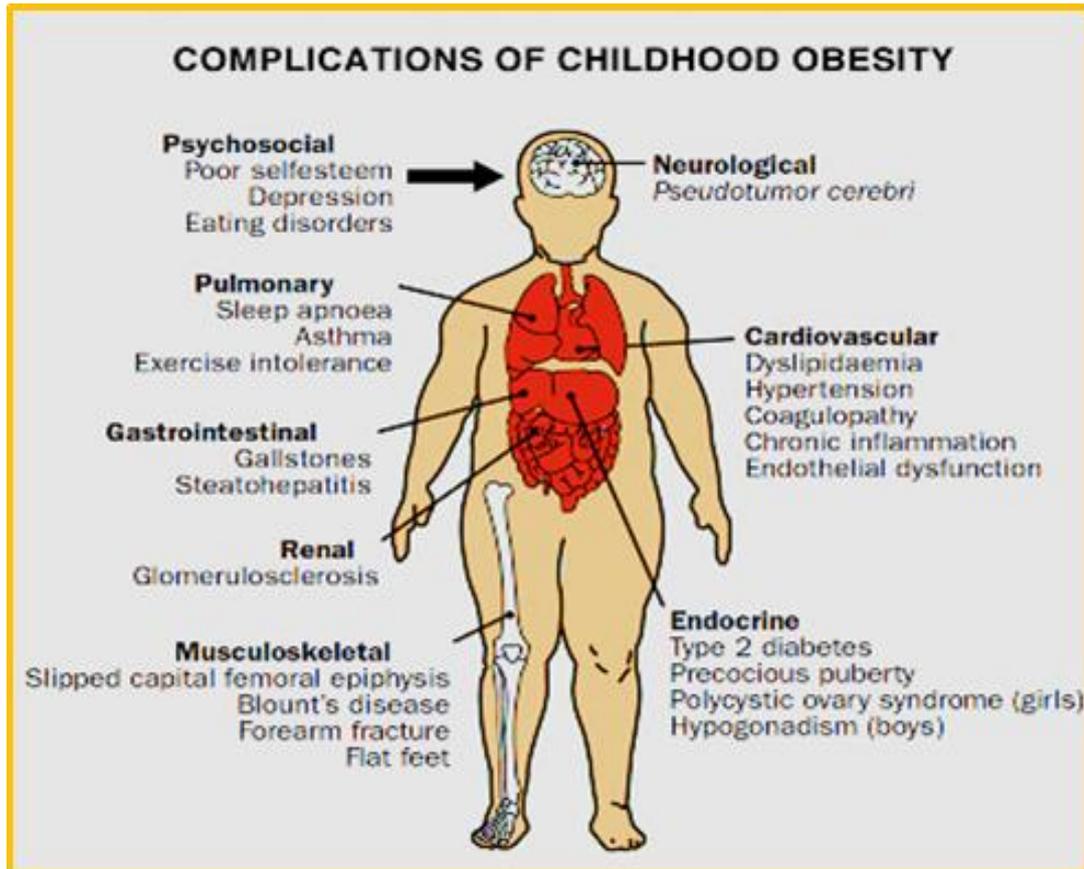
Since the 1970s, the number of obese school-age children and adolescents has increased by more than 10 times (1). In 2016, the World Health Organization (WHO) estimated that 124 million children were obese globally, and a further 216 million were overweight (1).

In Europe, obesity rates are as high as one in five for boys (20%) in some southern countries. Northern countries tend to fare better, but some still have high rates. In Sweden, for example, 10% of boys and 7% of girls are obese. (2)

Childhood obesity can deeply damage children's physical and mental health and can be associated with poor academic performance and a lower quality of life experienced by the child (3).

What's more, 60% of obese children are also obese as adults (4) and are more likely to develop a variety of health problems including cardiovascular disease, insulin resistance, musculoskeletal disorders and endometrial, breast and colon cancers.





OBESITY CAN BE COSTLY

Health costs related to obesity can add to the financial burden of individuals and families

 World Health Organization
Western Pacific Region

PEOPLE LIVING WITH OBESITY HAVE GREATER RISK OF:

-  Diabetes
-  Heart disease
-  Cancer
-  Severe COVID-19

 World Health Organization
Western Pacific Region

3.2.1. According to the above statements and diagrams what are the potential causes, health risks and solutions related to childhood obesity?

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3.2.2. Formulate some specific questions and hypotheses which should help you to answer the first main question of your investigation: *What are the potential causes, health risks and solutions related to childhood obesity?*

Question 1:

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Question 2:

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Question 3:

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Question 4:

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Hypothesis 1:

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Hypothesis 2:

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Hypothesis 3:

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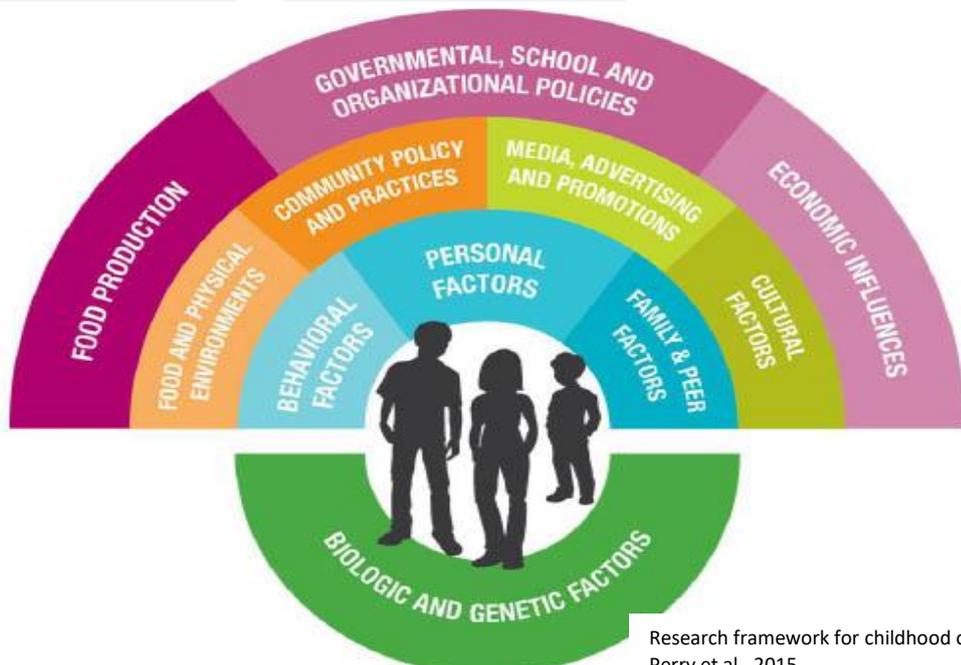
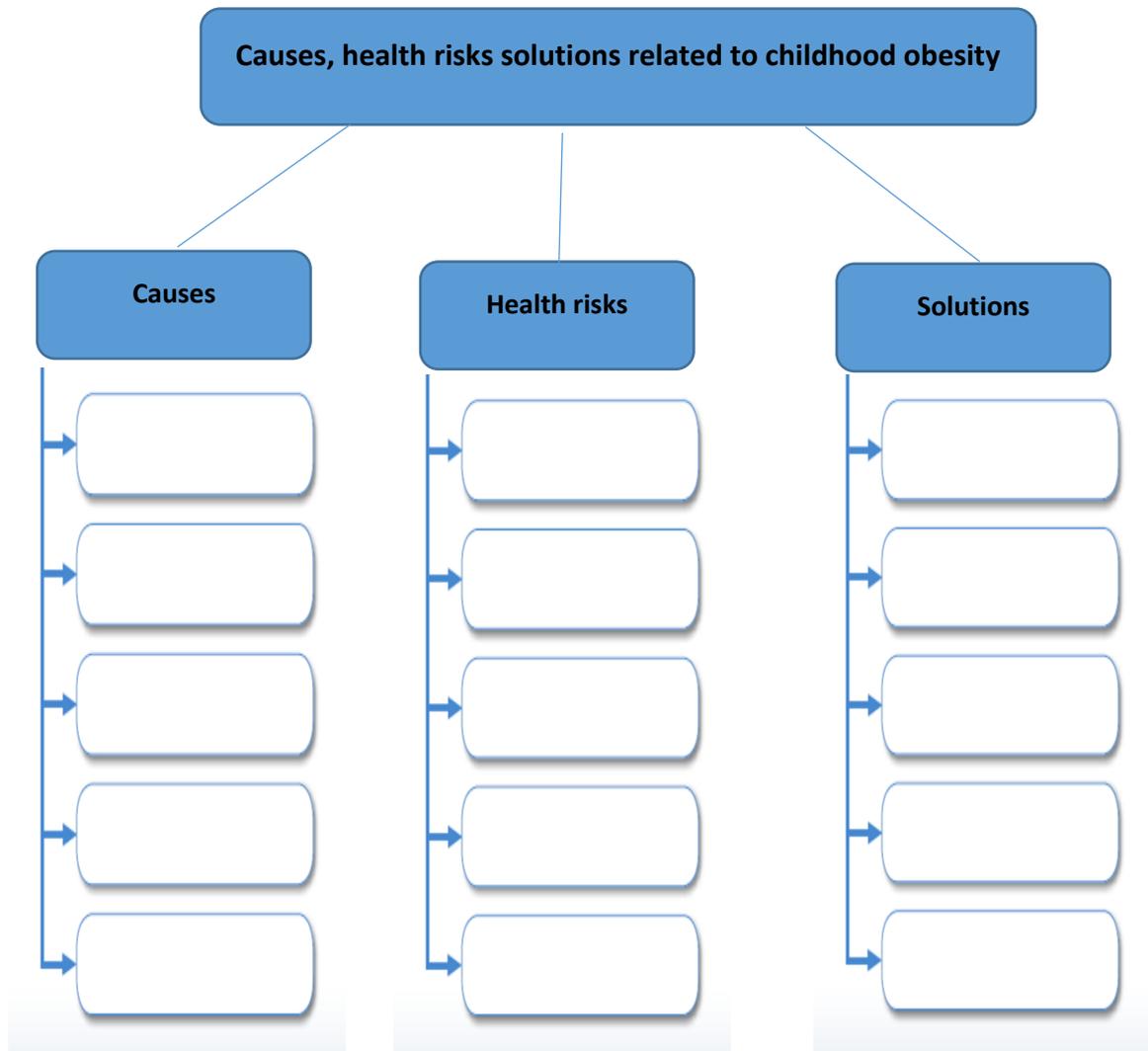
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Hypothesis 4:

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3.2.5. Draw a childhood obesity concept map, using your main conclusions from activity 3.2.4. Complete the map, writing causes, health risks and solutions related to childhood obesity.



3.2.6 Design a prediction model for childhood obesity, using the following Model coding sheet (OPTIONAL TASK)

Model coding sheet		
1.	Name of model	
2.	Model creator (team/student name)	
3.	What phenomenon/structure/function does the model represent?	
4.	Phenomenon/structure/function representation Variables Relationships represented	
5.	Explanation of phenomenon/structure/function: How does the model explain the phenomenon/structure/function represented?	
6.	Prediction of the phenomenon/structure/function: Can anyone make predictions using this model? Examples of predictions	
7.	General comments	

3.2.7. Create a prediction model for childhood obesity.

Prediction model for childhood obesity

3.3. What are individuals' and governments' responsibilities for reducing childhood obesity?

In order to answer the question concerning individuals' and governments' responsibilities to reduce childhood obesity, you should first formulate hypotheses, collect data from a variety of inquiry-based sources (e.g., such as texts, articles, pictures and videos, tables and diagrams, simulations and scientific measurements).

3.3.1. Formulate some specific questions and hypotheses which should help you to answer the second main question of your investigation: *What are individuals' and governments' responsibilities for reducing childhood obesity?*

Question 1:

Question 2:

Hypothesis 1:

Hypothesis 2:

3.3.2. Discuss with your group about the information and the sources you should use in order to answer the question concerning *individuals' and governments' responsibilities for reducing childhood obesity*. After searching and evaluating information concerning individuals' and governments' responsibility for reducing childhood obesity, you have to analyse your data, make inferences, synthesize and draw conclusions. Discuss briefly with your group your final conclusions and then write below your main conclusions.

3.3.3. Name some sources where you can search information to answer your questions.

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UK government's childhood obesity plan (2016)

Strong controls on price promotions of unhealthy food and drinks
Tougher controls on marketing and advertising of unhealthy food and drink
A centrally led reformulation programme to reduce sugar in food and drink
A sugary drinks tax on full sugar soft drinks, with all proceeds targeted to help those children at greatest risk of obesity
Labelling of single portions of products with added sugar to show sugar content in teaspoons
Improved education and information about diet
Stronger powers for local authorities to tackle the environment leading to obesity
Early intervention to offer help to families affected by obesity



GOVERNMENTS CAN ADAPT POLICIES TO PROTECT PEOPLE FROM OBESITY BY:

- Applying tax to sugar-sweetened beverages
- Making healthy diets more affordable and accessible
- Regulating marketing of foods which are high in fats, sugars or salt to children
- Using of front-of-package nutrition labelling to inform consumer on nutritional quality of the food products

World Health Organization
Western Pacific Region

PHYSICAL ACTIVITY CAN HELP PREVENT OBESITY

at least **150 minutes** per week for adults

at least **60 minutes** per day for children

World Health Organization
Western Pacific Region



HEALTHY EATING PLATE

Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

The more veggies—and the greater the variety—the better. Potatoes and french fries don't count.

Eat plenty of fruits of all colors.

Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

Eat whole grains (like brown rice, whole-wheat bread, and whole-grain pasta). Limit refined grains (like white rice and white bread).

Choose fish, poultry, beans, and nuts; limit red meat; avoid bacon, cold cuts, and other processed meats.

STAY ACTIVE!

Harvard School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu



3.3.4. After data collection concerning individuals' and governments' responsibilities for reducing childhood obesity, you must analyse your data, make inferences, synthesize, and draw conclusions. Discuss briefly with your group your final conclusions and then write below your answer.

What are individuals' and governments' responsibilities for reducing childhood obesity?

The form consists of a large blue-bordered box. At the top right of the box, the question "What are individuals' and governments' responsibilities for reducing childhood obesity?" is written in red. Below the question, the box is filled with horizontal dotted lines, providing a space for students to write their answers.

3.4 What are the perceptions and knowledge about childhood obesity of people in your community?

3.4.1 To answer this question, you should prepare a short questionnaire and/or interviews to investigate the perceptions and knowledge of the people in your community about childhood obesity. Later, you will present the results of this investigation at the public event (open schooling event). During the public event, you will discuss and debate the perceptions and knowledge about childhood obesity expressed by the local community participants, as well as challenges raised and suggest ways to address them.

3.4.2. For this purpose, you should distribute your questionnaire to your parents, relatives, and other residents of the area where you live to be completed. In addition, you can conduct some interviews.

3.4.3 After data collection, you need to analyse the data and write your results and draw conclusions.

3.4.4. Prepare a scientific presentation and a poster on the topic *Childhood Obesity: Challenges and Solutions*.

Your poster could be printed and be displayed in a prominent place in your school. The poster will be entitled: *Childhood Obesity: Challenges and Solutions*.



Rembert the design elements that make up a scientific poster

1. Title and authors' names
2. Text: Posters typically employ around 800 words (and no more than 1000 words) of text. Your text **MUST** be organized into sections and labelled with appropriate section headings so that readers can easily navigate the contents of your poster. The text should clearly describe the objective of your study, the research questions, the methodology used, the results obtained, and any conclusions based on the results presented.
3. Graphics: Graphics must appear in context with the main text. When choosing graphics, always choose high-resolution images (300 dpi or higher), and make sure that these images are large enough such that a person standing one meter away can see them.
4. White space: In general, 30% of your poster should consist of white space, 40% should consist of your title and text, and 30% should consist of graphic images.
5. Add references.
6. Add colour to your poster in order to define the different sections of your poster.

Activity 4: Public Event (Open Schooling Event)

4.1. The final activity of this module is the organisation of a public event entitled: *Childhood Obesity: Challenges and Solutions*. For this event it would be useful to create an informative flyer (brochure) promoting *healthy eating*.

Designing, organizing, and holding a public event (students, teachers, parents, social partners of the local community) is an opportunity for you to communicate your knowledge, thoughts and views concerning *the causes, health risks and solutions related to childhood obesity*. In addition, you will have the opportunity to explain to the participants the *individuals' and governments' responsibility for reducing childhood obesity*, discuss and debate *the perceptions and knowledge about childhood obesity* expressed by the local community participants and promote healthy eating by distributing an informative flyer.

4.2. To create an informative flyer for the public event, you should take in consideration the following:

- Must be appealing and interesting.
- Must include scientific information from valid and accurate resources.
- Must contain ways for addressing the problem.
- Must be understandable and accessible to all ages and people from all socio-economic groups and educational level.

4.3. Prepare and write down the agenda for the public event (students, teachers, parents, social partners of the local community) on the topic: *Childhood Obesity: Challenges and Solutions*.



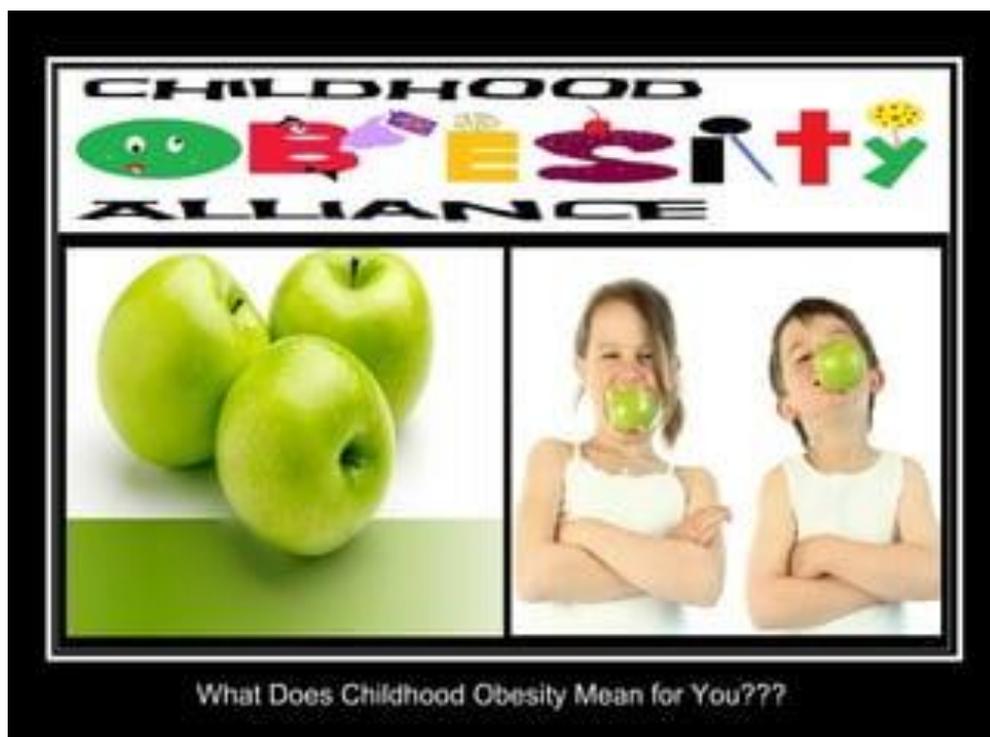
Agenda

4.4. Prepare and write down the invitation for the public event (students, teachers, parents, social partners of the local community) on the topic: *Childhood Obesity: Challenges and Solutions*.

Invitation



Holding a public event (students, teachers, parents, social partners of the local community) on the topic: *Childhood Obesity: Challenges and Solutions*



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