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## **EFFECT**

### ***Erasmus For Food Education to Children and Trainers***

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# **Pedagogical material on food education towards children for trainers**

**Project Results PR.2, Version: 1.0**

**PR2: Pedagogical material on food education towards children for trainers**

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## **Part A (2-3 pages)**

This part is divided in two subchapters. The first one is based on the current literature on the importance of helping children in the identification of the portion of each food group that is adapted to them. The second one is based on the findings from our quality study (Project Results 1, White Book) that provided useful information about the knowledge of food portions in the three countries targeted by the EFFECT project.

### **Existing literature about food portion in children:**

Optimal nutritional intake is essential for the health of children. A balanced diet that provides sufficient energy and essential nutrients is vital for supporting metabolism and daily activity during the child growth and development. However, excessive energy intake is associated with an increased risk of overweight/obesity. This is a major public health concern because being overweight or obese in childhood increases the risk of disease in the short- and long-term (More, Lanigan, and Emmett 2021).

The relationship between BMI and food intake in children is well documented. There is a consistent body of evidence showing that food portion that is served to a child is linked to his food intake (Rigal et al. 2019; Hebestreit et al. 2016).

Furthermore, in the current obesogenic environment, the portion of energy-dense and ultra-processed foods increased while the one of fruit and vegetables decreased. Children liking for highly palatable energy-dense foods impact on the increase of the consumed portion of these foods (Diktas et al. 2022).

In addition, food properties can influence energy intake, including energy density, ease of consumption and sensory factors that stimulate the onset of satiation. Foods textural properties are the major determinants of its eating rate. Liquid and semi-solid foods are eaten faster than solid foods which led to an increase in the energy intake of children (Bolhuis and Forde 2020; Reigh et al. 2022).

Thus, there is a need to help children to reduce the portion size of energy-dense foods and to increase the one of foods, such as fruit and vegetables, that are recommended in public health policies (WHO Regional Office for Europe 2022).

Some food- and individual-level strategies have shown promise in helping children consuming the appropriate portion of each food, including the use of portion-controlled meals, reduced pack sizes, modified tableware, attentive eating and portion control strategies (Vargas-Alvarez et al. 2021).

Recently, three-dimensional portion control tools have been launched, with claims to control portion sizes by either physically delineating volume (i.e., portion pots, guided tableware) or by including visual prompts for appropriate amounts, such as calibration marks in tableware and serving utensils. Such tools are practical to be used by children. They could be an efficient tool to correcting misperception of inappropriate portion sizes at the time of serving (Vargas-Alvarez et al. 2021).

## Results from our qualitative study about food portion in children:

The qualitative study conducted in three countries confirm that continuous and practical actions about a healthy balanced diet in school are the best way to rise children awareness about the importance of the critical importance of food for their health.

The qualitative study was led in the three countries with adult stakeholders participating either in focus groups or in interviews, as presented in the table below:

France	<ul style="list-style-type: none"><li>● <b>1 focus group - 6 persons</b></li></ul> Profile: <i>Scientifics and experts working with children</i> <ul style="list-style-type: none"><li>● <b>12 interviews</b></li></ul> Profile: Teachers, directors, school canteen
Spain	<ul style="list-style-type: none"><li>● <b>1 focus group - 6 persons</b></li></ul> Profile: <i>Teachers in a primary school and worker with childs</i> <ul style="list-style-type: none"><li>● <b>5 interviews</b></li></ul> Profile : Teachers and canteen workers
Greece	<ul style="list-style-type: none"><li>● <b>3 focus group – 10 persons</b></li></ul> Profile: <i>Teachers and museum educators trainers participated</i> <ul style="list-style-type: none"><li>● <b>10 interviews</b></li></ul> Teachers, education teachers

## Explaining what a balanced diet is and why it is important for children health

According to adult stakeholders, some children seem to have difficulty in understanding why they should follow specific "dietary rules" and why they should eat different types of food in certain quantities and proportions.

« *Children need to know what they should eat, which vegetables to eat, which legumes to eat, they need to know what to eat at each meal... That sometimes there are foods that we don't like but that are necessary for our daily functioning, and these messages we have to reinforce here at school.* »

Furthermore, the interviewees in the three countries noted that most children bring a lot of processed, fatty and sugary products (cakes, crisps, sodas) in their school bags as snacks for school. This underlines the importance of rising their awareness about the fact that they should be consume occasionally and in small portions.

## Using games and different materials to captivate children and help them to better assimilate

Some canteen workers reported the use games and tricks created by themselves to explain healthy eating to children. However, they lack validated resources from public health agencies or healthcare providers. They want children to enjoy learning and discovering new things. One speaker suggested covering the children's eyes and tasting a dish/food to guess what it is.

Teachers and educators validated the need of concrete tools such as: tasting workshops, quizzes, videos, printed materials, presentations within the school curriculum, photo languages, games...

“*Sometimes children respond better to certain materials than to words you can tell them; stories, videos, posters, etc. The visual is always more appealing to them*”

Bringing food at schools to discuss about the different associated topics was also used by teachers. For example, discussing the nutrition declaration on 3 cake packages, or discussing how to make the breakfast of each child more balanced.

## Providing a step-by-step approach with increasing difficulty

Interviewees explained that it is important to “*dose the amount of messages*” that are conveyed so as not to “*drown children with information*”.

The message given to children should therefore be adapted to their level of understanding. There should also be time for questions and answers to help them to better appropriate the different topics.

## Connecting to children’s daily habits

For the sustainability of healthy behaviors, it is necessary to set a lifestyle for children to follow in their daily lives. Thus, children should have meaningful examples that illustrate their daily lifestyle, for example, mentioning snack time that takes place during school time: “*Everyday actions are more effective than exceptional events*”.

They need to get take-home tools to help them to apply healthy behaviours they have been explained at school and to be able to discuss them with their family.

“*Families and the community can support learning in the classroom and play an important role in food education, so that children can integrate this learning into their lives and maximize the educational benefits*”

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## **PART B**

This part contains 4 activities dealing with food portions for children. They are sorted by increasing difficulty. The two first activities focus on basic concepts around food groups and food portions and could be presented to all children aged from 6 to 11. The two last activities might be more adapted to children aged 8 and more.

## **Activity 1. Food Families !**

### **GENERAL INFORMATION**

Children need to understand the difference between food groups, to have a better understanding of the portion of each type of food that they need to eat daily.

### **DESCRIPTION**

With edutainment game based on visual and memorable experiences we will tackle the different food groups and their importance in a healthy balanced diet for children.

### **OBJECTIVE**

The aim of this activity is to increase children's knowledge about food groups and their health benefits to have a better understanding of food portion.

# Food families!

Duration: 2 hours

During our focus group, we understood the importance of game at this age. Thus, we have chosen to develop an edutainment game.

This is a collective game, for a maximum of 10 children.

Food families! will cover two topics: 1) identification of different food groups and associated food items to consume in a balanced diet and 2) understanding of the major health benefits of each food group.

## 1) Identify the different groups:

36 cards will be given to children, each card corresponds to one food item and belong to one food group as follows:

Grains	Fruits & vegetables	Dairy	Meat, fish & egg	Legumes
Pasta Rice Bread Semolina	Apple Orange Broccoli Carrot Spinach Banana Zucchini	Yogourt Milk Hard cheese Fresh cheese	Beef steak Chicken drumstick Salmon Whit cod Egg	Lentils Chickpeas White beans

Nuts	Fats	Sweet products*	Salty fried products*
Walnuts Almonds	Olive oil Butter	Ice creams Croissant Cookies Chocolate bar Vanilla creamy dessert Candies	Chips Fries Nuggets

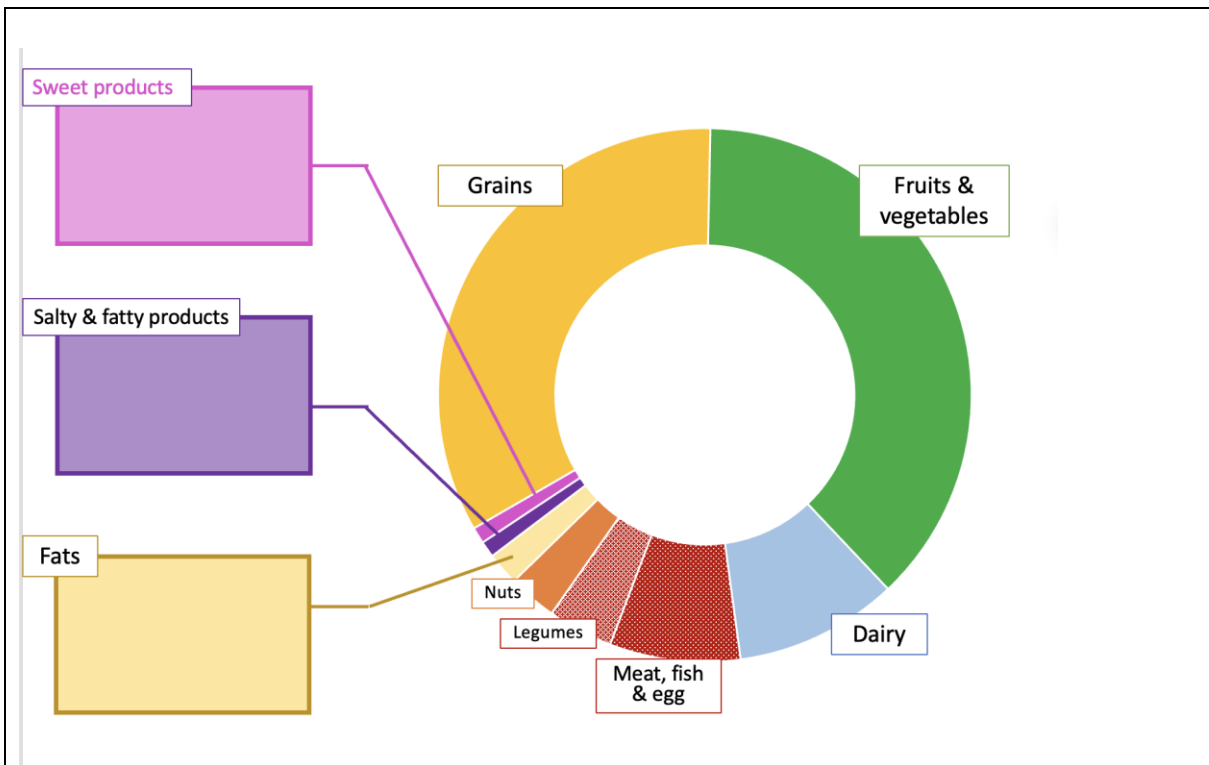
\*A lot of sweet products were included in order that children could understand that this group contains a huge diversity of products, that should remain a very little share of their daily food intake.



Example of one card

On a large sheet, a wheel will be printed with all food groups mentioned with the corresponding share recommended for children.

The player will need to place each food item card on the wheel within the food group it belongs.



The adult explains the different groups at the end with a discussion, a correction sheet is available to explain the group.

The emphasis should be made on the importance of fruits and vegetables as compared to sweet products, even if there are plenty of sweet products that children know.

- 2) There is another pile of cards presenting different health benefits. Children need to pair them with the previous group that they made.
  - Good for digestion (fiber) ☑ pairing with vegetables, legumes and whole grains
  - Provides long-term energy (complex carbs) ☑ pairing with whole grains
  - Avoid getting cold immunity (vitamins) ☑ pairing with fruits & vegetables
  - Good for the bone (calcium) ☑ pairing with dairy
  - Good for the brain (omega 3) ☑ pairing with nuts and fish
  - Good for muscle (protein) ☑ pairing with meat, fish, egg, legumes and dairy

On each “health benefit” card, there will be a short explanation about nutrients that could be read or not by the adult depending on the children age.

The adult will ask children if some food groups have no health benefits. Indeed, sweet products and salty fried products do not, thus it will be the time to repeat that they should be limited in a healthy balanced diet.

### Take home messages

**A healthy balanced diet contains food items from different food groups = variety.**  
**A healthy balanced diet favors some food groups while some should be limited.**



## **ACTIVITY 2. At your fingertip, at your hand!**

### **GENERAL INFORMATION**

After gaining knowledge of the different food groups and their health benefits, children need to understand the concept of food portion and to be able to adapt the quantity they eat to their hunger.

### **DESCRIPTION**

With edutainment game based on having memorable experiences we will tackle the food portion that children should consume

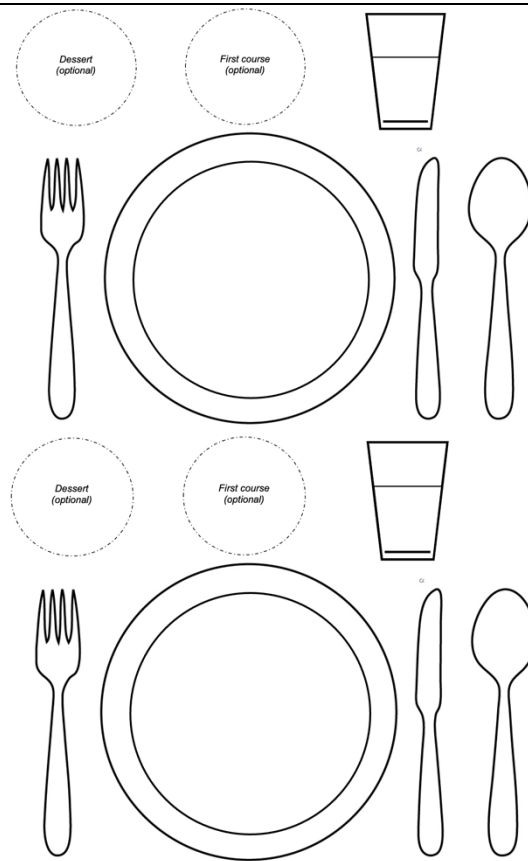
### **OBJECTIVES**

Understand what the different food portions according to different food group.  
Be able to evaluate the portion to eat during a meal using practical tools.

## **At your fingertip, at your hand!**

Duration: 2 hours

Children should draw the plate of food they eat during their previous lunch and dinner. They could add a draw of their dessert (e.g. a fruit, a cake, etc...). It will be the starting point of the discussion of portion.



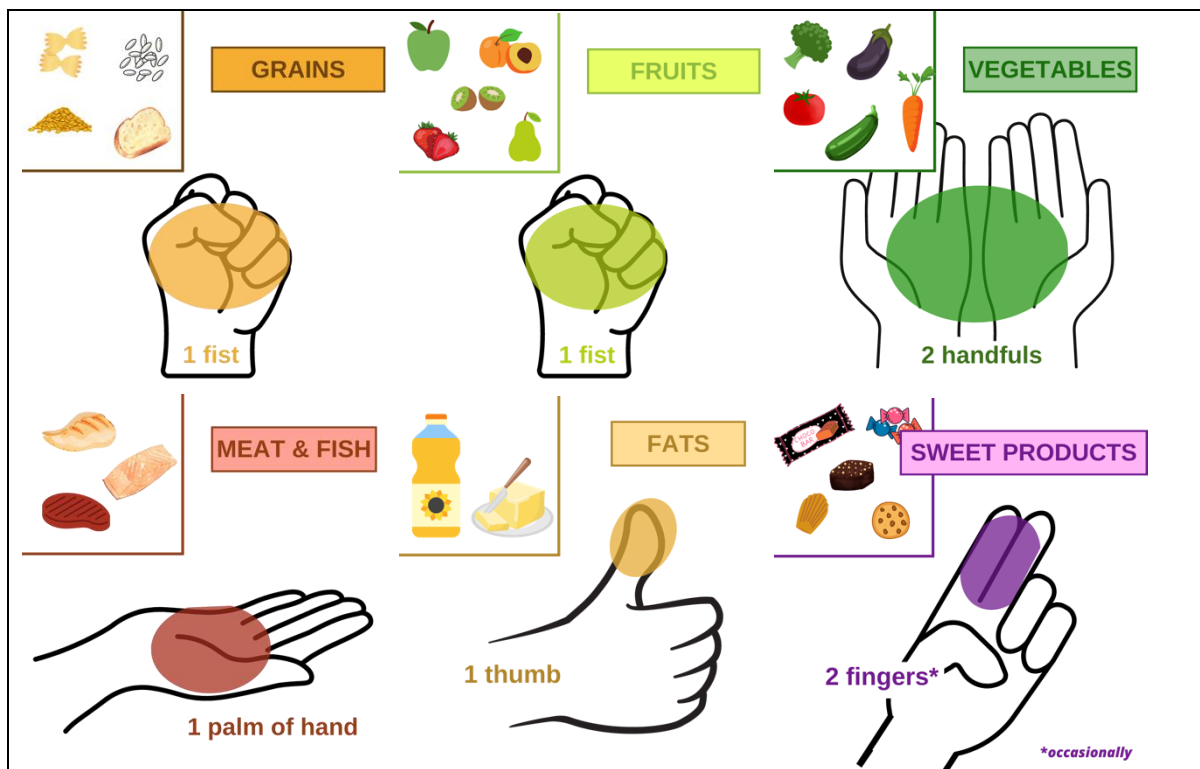
Lunch and dinner

Then, the different items composing the plate will be considered one by one:

- 1- Vegetables: at least half a plate = 2 handful
- 2- Grains:  $\frac{2}{3}$  a plate = 1 fist
- 3- Protein:  $\frac{1}{3}$  a plate = 1 palm of the hand
- 4- Dairy: yogurt = 1 hand or cheese = 1 thumb

We will explain to children how to use their hand to evaluate the food serving that they need.

With the following pictures:



In order that children could easily remember the different food portion using their hands as tools, a summary song will be learned.

During the last part of the session, we will talk about the sensation of hunger and how to recognize the signs. Children's needs are different based on sensation of hunger. Children will be asked if they finished their lunch or their dinner.

- If they did not finish, they will be asked if they were not hungry anymore.
- They will be explained that they do not need to have as much food in their plate as adults or teenagers.

One of the key messages is to understand that a child should not be forced to finish a meal, it is primordial for him to respect his feeling of hunger.

### Take home messages

**The hand is a tool to know the size of food that we should consume.**

**Respect our feeling towards hunger by recognizing the signs and listening to our body**

### **ACTIVITY 3. Fruit salad**

#### **GENERAL INFORMATION**

Children need to visualize that the portion they eat may seem different depending on the container.

#### **DESCRIPTION**

With edutainment game based on having memorable experiences we will tackle the food portion that children should consume

#### **OBJECTIVE**

Understand how to adapt and combine food portion based on the children eating habits

### **Fruit salad!**

Duration: 2 to 3 hours

We will make a fruit salad in small groups.

Two recipes based on the season: one with summer fruits and the other one with winter fruits. As much as possible, fruits used for the salad should be local.

This activity will be the opportunity to tackle several topics:

- Seasonal fruit and vegetables
- Food portions
- Food waste

The activity is divided in three parts:

#### 1-Seasonality

We will talk about the seasonal fruit and vegetables with a calendar. Children will have sticker. The first part of the activity is to find the season of each fruit that will be used in the recipe.

This part could be linked with the activity "***Awareness and reduction of fruits and vegetables waste***" in the "***Food waste***" module, because we will talk about sustainability: using fruit peels to make compost, eating fruits based on season, thinking about local products.

#### 2- Cooking

Then the cooking activity begins. Children peeled and cut the fruits with the help of an adult. Fruit bites are combined to create a colorful salad.

Then, the adult will serve the fruit salad in 4 different food containers:

- a small bowl
- a small plate (dessert plate)
- a normal-sized plate (used in the canteen for example)
- a glass (20cl max)

All the serving will be the same (equivalent to 4 tablespoons), only the food container will be different.

Children will have to guess which container has the more fruit salad. It will be an opportunity to talk about perception.

3- Blind tasting session (mimicry and experiential):

Children will be in group of four and will be blindfold. Each child will be given a food container without knowing which one. They will be asked to eat 3 fruits bites one by one and to describe the food they are eating and associate them with a taste (sweet, sour, salty and bitter). Then, they will be asked to take a full teaspoon with 2 or 3 bytes and to describe if they recognize the fruits that were in this teaspoon. Children will also describe the emotions that they felt while eating and the memories associated with the tasting. Finally, they could eat all the fruit salad they have if they are hungry enough and they will be asked to guess which food container they had. Their answers will be the opportunity to talk about perception.

One of the key message is to understand that the container may impact our perception of the food portion. Thus, we don't need a full plate when we are eating, we need to have the food portion that is adapted to us (cf. activity 2 with the hand).

**Take home messages**

**The appearance of the portion may seem different based on the food container ☑  
important to consider its own hunger**

## ACTIVITY 4. Fresh, mashed and squeezed!

### GENERAL INFORMATION

Understanding the concept of food portion: the impact of food processing.  
*Example of fruit*

### DESCRIPTION

With edutainment game based on having memorable experiences we will tackle the food portion that children should consume

### OBJECTIVE

To visualize the impact of processing in the food appearance and then to experience its impact on time to eat, hunger, and satiety.

## Fresh, mashed and squeezed!

Duration: 2 hours

Two fruits or vegetables will be chosen for this activity depending on the season (with at least one citrus fruit to allow squeezing).

The example below is provided with apple and orange.

The game will be in three parts:

- 1- Quizz about apple texture
- 2- Tasting
- 3- Squeezing

1-The game started with a quiz, children will have in front of them:

- 1 glass of apple juice (150mL)
- 1 cup of fruit puree (100g)
- 1 fresh apple ( $\approx$  120g)

They will be asked to guess how many apples are required to have 1 cup of puree and 1 glass of juice.



It will be the starting point to explain that the process or the way we cook food has an impact on the texture but also on the component in food.

- 1 glass of apple juice = 2 apples in one glass (juice yield = 0,6L/kg of apple) and also no fiber and 16g of sugars (=4 sugar squares)

- 1 cup of apple puree = 1 apple

2-Children will then be asked to rank the 3 apple textures according to what they think they will eat faster.

Then, they will be given 20g of each texture. They could be asked to pay attention to the time they need to eat each texture.

It will be a starting point to discuss the importance of chewing and taking enough time to eat.

The sensation of satiety will be introduced using the difference between the time to eat the apple slices and the apple juice.

3-Children will experience the impact of the process by squeezing oranges. They will be by group of 4 with an adult that will squeeze 1 orange and show how much orange juice is obtained with 1 orange (i.e. not enough to fill a glass).

☐ This third part will also address the sustainability topic by explaining that orange peel could be composted and could be linked to the activity “**Awareness and reduction of fruits and vegetables waste**” in the Food waste module.

#### **Take home messages**

**The texture of foods impacts on how much we eat.**

**It is important to chew and to take enough time to eat to consume an appropriate portion.**