BALANCING SUSTAINABLE FOOD

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Balancing a Sustainable Diet – Teacher's Guide

Duration: 2 days (4 half-day sessions)

Target group: Vocational culinary and catering students

Learning mode: 25% theory · 75% practice

Overall Aim

- To teach students how to plan and prepare meals that are healthy, sustainable, and enjoyable.
- The module integrates three essential dimensions of a good meal: health, sustainability, and consumer acceptance.
- Students learn to see how their culinary choices affect both personal and planetary wellbeing.

Pedagogical Approach

- Learning by doing – practical cooking and evaluation form the core.
- Short theory inputs – each half-day starts with two 15-minute mini-lectures.
- Reflection through sensory experience – tasting and evaluating own creations.
- Collaborative learning – team-based cooking and peer feedback.

Objectives

1. Introducing students to the principles of nutrition focusing on meeting dietary requirements sustainably
2. Encourage practical skills in preparing meals that are both nutritionally balanced and nutritionally sustainable
3. Raise awareness of the impact of ingredient choices on health, culture and the environment

UNIT TOPICS

1. Nutritional challenges in the Western diet
2. How to intergrate sustainability to the menu planning
3. Consumer acceptance
4. Evaluation of the outcomes

1. What are the nutritional challenges in the Western diet

Theoretical learning: Students learn the basics of human nutrition and main health challenges in Europe.

Focus: Macronutrients, micronutrients, fat and sugar quality, fiber, salt.

Lecture (2 x 15 min + discussion)

- General nutrition principles – macro and micronutrients
- Major health challenges in Europe
  - quality of fat, free sugar, low fiber, high salt

Practice learning: Adjust everyday meals to improve nutrition without losing taste.

What Makes Up Our Food?

- Macronutrients = energy-giving nutrients
  - Carbohydrates
  - Protein
  - Fat
- Micronutrients = vitamins & minerals
- Water = essential for all functions
- SOURCE: General nutritional guidelines for Europe (https://www.who.int/europe/health-topics/nutrition#tab=tab_1) and your country's national nutritional guidelines

Carbohydrates: Energy for the Body

- Main source of energy
- Prefer whole grains, vegetables, legumes, fruits
- Limit refined sugars

Proteins: Building and Repair

- Needed for muscles, enzymes, hormones
- Combine plant and animal proteins
- Mix beans + grains for complete protein

Fats: Not All the Same

- Healthy fats: nuts, seeds, fish, oils (olive, rapeseed)
- Limit: butter, processed snacks, fast food
- Essential for brain, heart, vitamin absorption

Vitamins and Minerals

- Needed in small amounts, but vital
- Common concerns: Vitamin D, Iron, Calcium, Iodine

Hydration and Energy Balance

- Water = ~60% of body weight
- Energy in = energy out
- Balanced meal model:
  - ½ vegetables
  - ¼ proteins
  - ¼ carbs

Mini Reflection

- Which nutrients are hardest to get enough of — and why?

Europe's Nutrition Challenges: What's on Our Plates?

- Major nutrition challenges in Europe
- SOURCE: https://www.who.int/europe/health-topics/nutrition#tab=tab_1

Fat Quality Matters

- Too much saturated & trans fat → heart disease
- Choose unsaturated fats (oils, fish, nuts)
- Swap butter → rapeseed oil in cooking

Too Much Free Sugar

- Sources: soft drinks, sweets, sweetened dairy
- Risks: obesity, diabetes, tooth decay
- Replace sugary drinks with water or berries

Too Little Fiber

- Keeps digestion healthy
- Lowers cholesterol, stabilizes blood sugar
- Sources: whole grains, veggies, legumes, fruits

Too Much Salt

- 75% of salt from processed foods
- High intake → high blood pressure
- Use herbs/spices for flavor

Preparation to practical work

Find a simple pureed vegetable soup recipe appropriate to students' skills

Student session – 45 min

As indivituals or small groups the students (45 min)

- Familiarize themselves to a recipe and process of preparing a pureed vegetable soup
- Evaluate the food ingredients of the dish based on their nutritional quality
- Select one nutritional challenge of the recipe
  - salt content
  - fat quality
  - fiber content
  - free sugar
- Observe the nutritional role of each ingredient: vegetables for fiber and vitamins, oil for healthy fat, dairy/plant cream for mouthfeel.
- Suggest how to make improvements to the recipe

Cooking & reflection

1. Cooking session 45 min
   - Preparing the modified versions of the soup for all participants to have a small sample (á 25 ml) to taste
   - Evaluating the quality Reflection with the group and the teacher (45 min)
   - Documenting the new recipe and the evaluation results (taste/liking and nutritional improvement)

2. How to integrate sustainability to the menu planning?

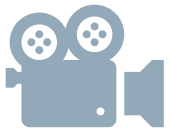
Explores the principles of sustainability in food systems and the impact of local, seasonal, and whole ingredients.

Focus: Environmental, social, and economic sustainability in practice.

Practice: Designing and developing further the food sample developed in the session 1 based on local and seasonal foods.

Lecture (2 x 15 min + discussion)

- Principles of sustainability in food chain
- Major issues – local, seasonal, whole ingredients



No to food waste! - Sustainable practices in restaurant Nomad (ENGLISH subtitles)

What is Sustainability?

- Meeting today's needs without harming future generations.
- Triple bottom line: Environmental – Social – Economic.
- SOURCE: https://ec.europa.eu/newsroom/know4pol/items/660524

Sustainability in the Food Chain

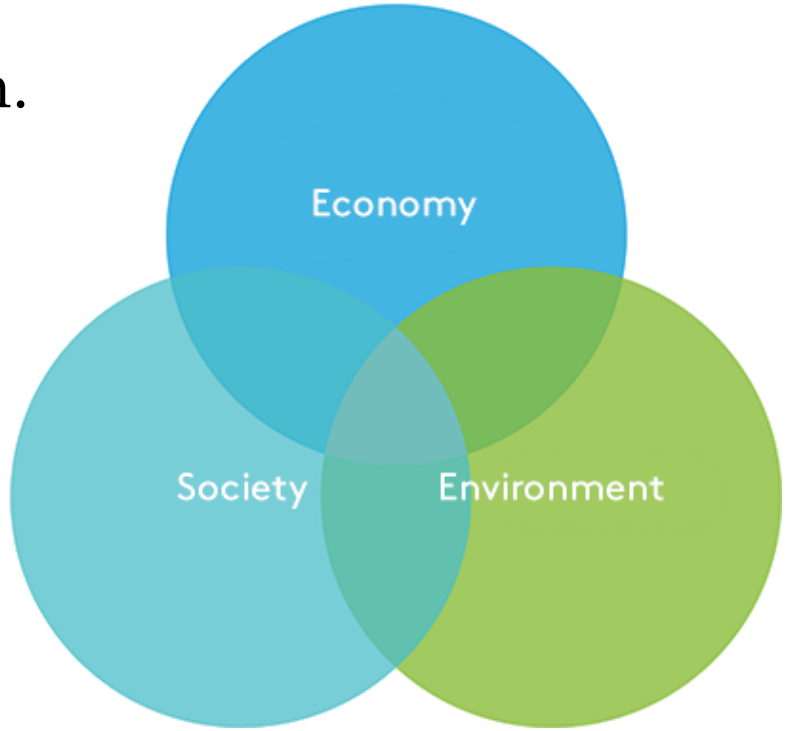
- Food system = production → processing → distribution → consumption → waste.
- Each stage uses resources and causes impacts.
- Food choices influence every step.

Environmental Aspects

- Greenhouse gas emissions: livestock, transport.
- Land & water use: meat vs. plants.
- Biodiversity: monocultures vs. diverse crops.
- Example: beef vs. pulses footprint.

Social and Economic Aspects

- Fair working conditions in production.
- Support for local livelihoods and regional economy.
- Reducing food waste = economic and ethical sustainability.



Eating Local

- Shorter transport chains = lower emissions.
- Supports local farmers and community.
- Challenges: limited diversity in some seasons.
- Example: replace imports with local crops.

Eating Seasonal

- Seasonal foods = lower resource use, better taste, better nutrition.
- Examples:
- Spring: leafy greens, herbs
- Summer: berries, fresh vegetables
- Autumn: root vegetables, apples
- Winter: storage crops, pulses, preserves.

Using Whole Ingredients

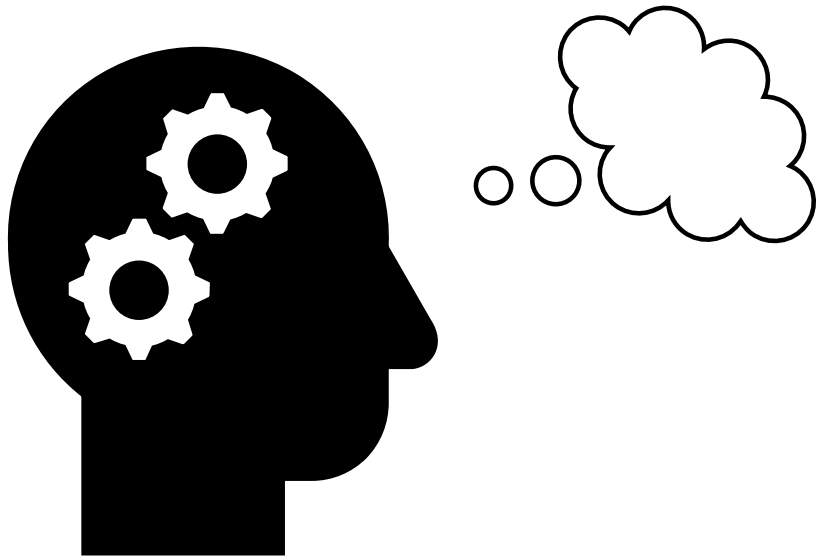
- Less processing = less energy use.
- Healthier: more fiber, less salt/sugar/fat.
- Example: oatmeal vs. sugary breakfast cereal.
- Tip: cook from scratch, use all edible parts.

Sustainable Diets Summary

- Plant-rich
- Local and seasonal
- Minimally processed
- Low-waste

Discussion

- What sustainable practices are easiest to adopt?
- Trade-offs between local and sustainable?
- How can schools and restaurants promote seasonal foods?



Takeaway Message

- Sustainable diets benefit both people and the planet.

Student session – 45 min

- Evaluate your meal
  - the sustainability perspective
- Select one sustainability challenge of the recipe
  - using more local ingredients
  - using seasonal ingredients
  - using whole ingredients
  - and suggest how to make improvements to the recipe

Preparation to practical work - Session 2 – Sustainability Improvements

- Cook one or all (as chosen) of the soup recipes on the recipe slide
- Develope the recipe further into a more sustainable soup

Cooking & reflection

1. Cooking session 45 min
   - Preparing the modified versions of the soup(s) for all participants to have a small sample (á 25 ml) to taste
   - Evaluating the quality:
     - Make a sensory ananalysis of flavour, texture etc. qualities

2. Reflection with the group and the teacher (45 min)
   - Suggest how to make improvements to the recipe
   - Documenting the new recipe and the evaluation results
     - taste/liking and sustainability improvement

Example recipes

1. Vegetable puree soup with bacon crumbles

Ingredients (serves 4)

- 6–7 carrots
- 4 potatoes
- 1 large onion
- 2–3 cloves of garlic
- 2 tablespoons butter
- 1 l vegetable stock
- 2 dl douple cream
- 150 g cream cheese
- Salt and black pepper to taste
- Fresh herbs (e.g. parsley or thyme)
- Bacon crumbles: 150 g bacon

2. Vegetable puree soup with seed mixture

Ingredients (serves 4)

- 6–7 carrots
- 4 potatoes
- 1 large onion
- 2–3 cloves of garlic
- 2 tablespoons rapeseed or olive oil
- 1 liter vegetable stock
- 2 dl coconut milk
- Salt and black pepper to taste
- Fresh herbs (e.g. coriander, parsley or thyme)
- Seed mixture: e.g. pumpkin seeds, sunflower seeds and sesame seeds (approx. ½ dl in total)

3. Lentil and vegetable puree soup with fresh herbs

Ingredients (serves 4)

- 6–7 carrots
- 4 potatoes
- 1 large onion
- 2–3 cloves of garlic
- 2 tablespoons rapeseed or olive oil
- 1 liter vegetable stock
- 2 dl red lentils (rinsed)
- Salt and black pepper to taste
- Fresh herbs (e.g. parsley, coriander or thyme)

3. Consumer acceptance

1. Lecture (2 x 15 min + discussion)
   - Materials and techniques to meet nutritional and sustainability challenges –
     - Plant based raw materials
     - lowering salt/free sugar content
     - increasing fiber content, without sacrificing the taste
     - flavor and liking

Ingredient Toolkit: Plant-Based and Nutrient-Dense Materials

- Plant proteins: lentils, peas, tofu, tempeh, quinoa.
- Whole grains: barley, rye, oats, buckwheat, spelt.
- Healthy fats: rapeseed/olive oil, nuts, seeds, fish.
- Natural sweeteners: dates, fruit purées, beets.
- Salt replacers: miso, mushrooms, seaweed, herbs.
- Seasonal produce: local roots, berries, leafy greens.

Technique Toolkit: Healthier and Sustainable Cooking

- Flavor layering – build taste without salt or sugar.
- Fermentation & pickling – preserve and create umami.
- Soaking & sprouting – improve digestibility.
- Steaming & baking – preserve nutrients, lower fat.
- Pulse purées & vegetable bases – replace cream/fat.
- Whole-grain and pulse flours – add fiber.
- Natural sweetness from vegetables and fruits.

Sensory & Culinary Science Tools

- Taste balancing – use acids to enhance flavor with less salt.
- Texture contrast – grains, seeds, and legumes for crunch and creaminess.
- Aroma enhancement – toasting, herbs, spices.
- Color & presentation – appealing, vibrant, plant-rich dishes.

Takeaway Message

- Healthy and sustainable cooking is creative, flavorful, and responsible.

Student session – 45 min

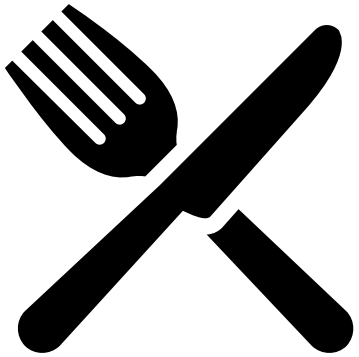
Evaluate your meal (use one of the recipes from the earlier session) from the sensory perspective

- Select one sensory challenge of the recipe
  - visual appearance
  - taste
  - flavor
  - texture
- and suggest how to make improvements to the recipe

Experiment with

- Salt reduction: replace part of salt with lemon juice, herbs, or umami ingredients (e.g., mushrooms, miso).
- Fat improvement: use rapeseed oil instead of butter or cream.
- Fiber increase: add beans, lentils, or whole grains as thickeners.
- Flavor enhancement: roast some vegetables before blending to create depth.
- Taste and compare with the base version.

Cooking & reflection



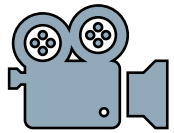
1. Cooking session
   - Preparing the modified versions of the soup for all participants to have a small sample (á 25 ml) to taste
   - Evaluating the quality
     - the original recipe has been prepared beforehand or by one group prepares this
2. Reflection with the group and the teacher (45 min)
   - Documenting the new recipe and the evaluation results
     - taste/liking and sustainability improvement

4. Evaluation of the outcomes

1. Lecture and discussion
2. Evaluation
3. Open discussion

Lecture & discussion

- Principles of sensory, nutrition and sustainability evaluation



www.youtube.com/@Greenandsustainablefoodeducato

Grease Project – Green and Sustainable Food Educators

Principles of Sensory, Nutrition, and Sustainability Evaluation

Evaluate soup in three dimensions:

- Sensory: color, aroma, taste, texture, overall liking.
- Nutrition: fiber content, salt/sugar/fat balance.
- Sustainability: origin, seasonality, waste reduction.
- Reflect on: “What makes this soup delicious, healthy, and responsible?”
- Evaluating food through taste, nutrition, and responsibility.

Evaluation – the results by each team

1. What were the techniques used to improve nutritional quality and/or sustainability of the original dish?

2. How did the consumer acceptance taken into consideration?

Reflection & open discussion

What did you learn?

- On taking nutritional quality into consideration in recipe development
- On taking sustainability into consideration in recipe development
- On combining these tasks to consumer acceptance
- What did you find easy to do?
- What did you find difficult to do?

GREEN AND SUSTAINABLE FOOD EDUCATORS

UNIVERSITY OF TURKU

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THIS PUBLICATION WAS DEVELOPED BY UNIVERSITY OF TURKU
UNDER THE PROJECT " GREEN AND SUSTAINABLE FOOD EDUCATORS ".

PROJECT AGREEMENT NUMBER: 2022-1-FI01-KA220-VET-000085304

ERASMUS+ KA220-VET - COOPERATION PARTNERSHIPS IN VOCATIONAL EDUCATION AND TRAINING

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Co-funded by the European Union