

Title	Cooking with Market Rubbish Foods Using Computational Thinking	Teacher	Fatma Merve Yıldırım
		Time	60-75 minutes
Subject:		Home Economics/Environmental Science/Computer Science/Interdisciplinary	
Aims		<ul style="list-style-type: none"> - Reducing waste production among students, encouraging recycling, being environmentally friendly, - It is aimed to raise awareness for sustainable development and to encourage the development of creative and innovative solutions. - Understand the concept of food waste and surplus foods. - Learn how to plan and execute recipes using surplus foods. - Develop computational thinking skills, including decomposition, pattern recognition, abstraction, and algorithm design, while creating a dish from market surplus foods. 	
Key CS elements:		Algorithm design.	
Age group :		12-14 years old (Middle School)	
Learning situations:		Activity type:	extracurricular
Resources:			
<ul style="list-style-type: none"> - A variety of market surplus or "rubbish" foods (e.g., slightly bruised fruits, vegetables with blemishes, day-old bread) - Basic cooking tools (knives, cutting boards, pots, pans, etc.) - Stove or hot plate - Whiteboard and markers - Paper and pencils for planning recipes - Access to recipes or cookbooks (optional) - Aprons and gloves for food handling 			
Learning development:			
<p>*Introduction (10 minutes):</p> <p>1. Hook: Start with a discussion about food waste. Show images or statistics about how much food is wasted daily in markets and households.</p> <p>2. Objective Sharing: Explain that students will learn how to reduce food waste by making dishes from market surplus foods using computational thinking skills to plan and execute their recipes.</p>			

Surplus foods are excess food items that are produced or available but not immediately needed for consumption. These are foods that are perfectly edible but may be unsold, unused, or overproduced by retailers, manufacturers, or households. Instead of being consumed, surplus foods are often at risk of being wasted or discarded if not managed effectively.

Examples include:

- Food from supermarkets that is approaching its expiration date but is still safe to eat.
- Excess food from farms due to overproduction or aesthetic standards.
- Leftover food from restaurants or events.

Surplus foods can often be donated to food banks, repurposed, or sold at a reduced price to avoid food waste. Managing surplus food is a key element of reducing food waste and improving food security.

I. Decomposition (10 minutes):

1. Activity: Break down the process of creating a dish from surplus foods into smaller tasks.

- Example tasks: Selecting ingredients, deciding on a recipe, preparing ingredients, cooking, and presentation.

2. Discussion: Discuss how decomposing the cooking process makes it easier to manage, just like breaking down a problem in computer science.

II. Pattern Recognition (10 minutes)

1. Activity: Identify patterns in cooking with surplus foods.

- **Example:** Recognize patterns in how certain ingredients can be used together, or how certain cooking techniques can make use of imperfect produce.

2. Hands-On: Have students explore the available surplus foods and identify common characteristics or uses (e.g., overripe bananas for smoothies or bread).

3. Discussion: Relate these patterns to how recognizing patterns in coding or data can help solve problems more efficiently.

Example Discussion: "If we have several overripe tomatoes and stale bread, what patterns do we see? We often find that overripe tomatoes work well in soups or sauces, while stale bread is great for croutons or bread pudding."

III. Abstraction (10 minutes)

1. Activity: Focus on the essential elements needed to create a successful dish from surplus foods.

- **Example:** Abstract the core principles such as flavor balance, texture, and nutritional value.

2. Discussion: Discuss how abstraction helps in focusing on the most important aspects of cooking, similar to how it simplifies complex problems in computational thinking.

Example: If students have overripe vegetables, the abstraction might be: "The texture is soft, so we should think about soups, sauces, or baked dishes rather than raw salads."

IV. Algorithm Design (15-20 minutes):*

- 1. Activity:** Guide students to create a step-by-step algorithm for cooking their dish using the selected surplus foods.
 - Example: The algorithm might include steps like sorting the foods, deciding on a recipe, prepping ingredients, cooking, and plating the dish.
- 2. Group Work:** Students work in small groups to draft their cooking algorithms, ensuring each step is clear, logical, and efficient.
- 3. Discussion:** Compare this process to writing a program or set of instructions in computer science, where each step must be logical and lead to the desired outcome.

Example Recipe: Surplus Vegetable Soup

Step 1: Collect ingredients (e.g., overripe tomatoes, soft zucchini, near-expiry carrots).

Step 2: Wash and peel the vegetables.

Step 3: Cut the vegetables into small pieces.

Step 4: Heat oil in a pan and sauté onions and garlic.

Step 5: Add the vegetables to the pot and stir for 5 minutes.

Step 6: Add water or vegetable stock to cover the vegetables.

Step 7: Bring to a boil, then simmer for 20 minutes.

Step 8: Blend the soup until smooth.

Step 9: Add salt, pepper, and herbs to taste.

Step 10: Serve the soup with croutons made from stale bread.

Cooking Activity (15-20 minutes):

- Students follow their algorithms to prepare a dish using the market surplus foods. Encourage them to adjust their plan if necessary and document any changes.
- Discuss how the process of using surplus foods creatively can reduce waste and make use of resources that would otherwise be discarded.

Conclusion and Reflection (5 minutes):

- 1. Discussion:** Reflect on how computational thinking helped in planning and executing the cooking project. How did it make the process more organized and successful?
- 2. Real-World Connection:**

Homework/Extension:

- Students can try cooking another dish at home using surplus or leftover foods, documenting their process and reflecting on how computational thinking helped.
- Research the issue of food waste and write a short essay on how computational thinking could be used to develop solutions at a community or global level.

Assessment:

- Participation in discussions and group activities.
- The clarity and effectiveness of the algorithm designed by each group.
- Evaluation of the dish based on creativity, use of ingredients, and adherence to the algorithm.

Expected results:

- **Understanding of Surplus Foods:** Students will comprehend what surplus foods are and how they can reduce food waste by repurposing them.
- **Development of Computational Thinking Skills:** Students will apply decomposition, pattern recognition, abstraction, and algorithm design to plan and execute recipes from surplus foods.
- **Problem-Solving in Real-Life Contexts:** Students will enhance their problem-solving abilities by creating practical solutions to reduce food waste through cooking.
- **Creativity and Innovation:** Students will be encouraged to think creatively while designing recipes, making the cooking process more efficient and sustainable.
- **Awareness of Environmental Impact:** Students will develop a stronger sense of responsibility toward sustainability and reducing food waste.

Notes: