Teacher: F.Merve Yıldırım
Subject: Extracurricular activity

Title	**Making Maracas**	**Time**	2 hours
Subject:		**English Language, Art and Technology Integration**	
Aims		**General competence**[1]: Awareness of computational thinking concepts to create a maraca with recycled materials **Specific competence**[2]: Allowing students to deepen their understanding of the cultural aspect of maracas and computational concepts. **Aim of the activity:** How to make a maraca via computational thinking	
Key CS elements:		Decomposition; Pattern recognition; Abstraction; Algorithm design.	
Age group :		**10-12 year old**	
Learning place:	**Çetin Şen Science and Art Center**	**Activity type:**	**extracurricular**
Resources: 1. Websites or apps about musical instruments. 2. Computer/ mobile phones with internet access.			

Learning development:

Problem definition:

Creating the right steps to make a maraca by using computational thinking skills and recycled materials.

Introduction

- Begin by explaining what maracas are and their cultural significance.
- Show examples or play a short video of maracas being used in music.

Four Principles of Computational Thinking:

1. **Decomposition:** Breaking down complex steps into smaller, manageable parts.
2. **Pattern Recognition:** Identifying similarities or patterns within data.
3. **Abstraction:** Discuss abstraction: focusing on essential details while ignoring unnecessary information
4. **Algorithm Design:** Creating a step-by-step plan for creating the maracas.

I. Decomposition:

- **Activity**: Break down the maraca into its basic parts: the body, filling (for sound), and handle.

  - Body: What part will hold the filling? (e.g., a plastic bottle, can, or other containers)
  - Filling: What materials can be used to create the sound? (e.g., beans, rice, or small pebbles)
  - Handle: What will you use to hold and shake the maraca? (e.g., a stick, pencil, or rolled-up paper)

- **Goal**: Identify each component needed to construct the maraca.

II. Pattern Recognition

- **Activity**: Observe patterns in existing maracas, including the sound they produce and how they are assembled. Students can experiment with different fillings (e.g., rice vs. beans) to see how the sound changes.
- **Goal**: Identify patterns in how different materials affect sound and durability, as well as how the maraca is structured.

III. Abstraction

- **Activity**: Strip away unnecessary complexity. Focus on the core components of a maraca—something that makes noise and a handle. Ask students to ignore unnecessary embellishments (e.g., decorations) at this stage.

- **Goal**: Understand the basic function of a maraca and how to create one with minimal resources, using only recycled materials.

IV. Algorithm design:

- **Activity**: Design a step-by-step process for constructing the maraca:

Step 1: Gather recycled materials (e.g., bottle, rice, pencil, etc.)

Step 2: Create a small hole in the container to attach the handle.

Step 3: Insert the filling material (rice, beans, or pebbles) inside the container.

Step 4: Secure the handle using tape or glue.

Step 5: Test the sound of the maraca by shaking it and adjust the filling if necessary.

Step 6: Once satisfied with the sound, optionally decorate the maraca using other recycled materials.

Reflection and Discussion

Testing

- Students shake their maracas to test the sound.

- Discuss whether the maracas met their expectations and if their algorithms worked as planned.

Reflection

- Ask students to share what they found challenging and how they might improve their designs.

- Discuss how the CT process helped in making the maracas.

Conclusion

- The teacher summarizes the lesson and emphasize how computational thinking can be applied to solve problems in various contexts, including arts and crafts.
- The teacher encourages students to think about other activities where they could apply CT principles.

Homework/Extension:

- Students can explore making different types of musical instruments using the same CT approach.

Assessment:	- Observe student participation during discussions. - Review the written algorithms and the final maracas for creativity and adherence to the plan. - Evaluate students' reflections on the CT process.
Expected results:	By the end of the lesson, students will understand how to break down a problem (making a maraca) into smaller parts, identify patterns in material use and sound production, focus on essential features of the maraca, and follow a structured process (algorithm) to create it. They will also develop an appreciation for using recycled materials to create functional items.
Notes:	

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Students will also learn the importance of creating something with the materials that they find easily in their everyday lives.

Materials:

- Empty plastic bottles or small containers with lids
- Rice, beans, or small pebbles (for filling)
- Decorative materials (markers, stickers, paint, ribbons, etc.)
- Glue, tape, scissors
- Paper and pencils for planning