Lesson Plan: MY GARDEN

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Subject: NATURAL SCIENCES

Title : Lesson	**Time :**
Subject *: NATURAL SCIENCES*	
Aim: Students will learn about plant biology, ecosystems, and environmental stewardship by planning and developing a school garden using the four principles of computational thinking: decomposition, pattern recognition, abstraction, and algorithm design	
Key CS elements: decomposition, pattern recognition, abstraction, algorithm design	
Age group : 2nd- 3rd Grade (Ages 6-8)	
Learning situations: classrooms	**Activity type : LESSON PLAN**

Resources :

- Seeds (various types)
- Soil
- Gardening tools (shovels, trowels, watering cans)
- Graph paper
- Markers
- Measuring tapes/rulers
- Computers or tablets with internet access
- Journals for recording observations
- Poster boards

Learning development:

Introduction

1. **Engage Students:**
   - Begin with a discussion on the importance of plants and gardens. Ask students what they know about gardens and why they might be important for the environment.
   - Show pictures or videos of different types of gardens and discuss the various plants that can be grown in a school garden.
2. **Introduce Computational Thinking:**
   - Briefly explain the four principles of computational thinking: decomposition, pattern recognition, abstraction, and algorithm design.
   - Relate these principles to the task of creating a school garden.

1. Decomposing:

1. **Explain Decomposition:**
   - Explain that decomposition involves breaking down a complex problem into smaller, more manageable parts.

2. **Decompose the Garden Project:**
    - As a class, list all the components involved in creating a school garden (e.g., choosing plants, preparing soil, planting seeds, watering, maintaining the garden).
    - Divide students into small groups, assigning each group a different component of the garden project. Each group will brainstorm and list the tasks involved in their assigned component.

2. Pattern recognition:

Identify Patterns in Plant Needs:

- Discuss the needs of different plants (e.g., sunlight, water, soil type).
- Provide examples of common plants that might be grown in the garden, focusing also on the time of the year or season. That will affect the final decision on what plants should be chosen. By recognizing these patterns, this can help in planning which plants to place together in the garden.

3. Abstraction:

Abstracting the Garden Layout:

- Once the plants have been chosen, students will have to think about the garden layout and design.
- Students will use graph paper to draw a simple layout of the garden, focusing on the key elements: location of plants, paths, and water sources.
- Encourage them to use symbols and labels to represent different plants and features, abstracting away unnecessary details.
- Students share their garden layouts with the class.
- Discuss the importance of focusing on key information in their designs.

4. Algorithm design:
To fulfill the task, each group will be given a specific garden care task.

- Discuss the steps involved in planting and caring for the garden:
- step 1: decide which plants our garden should have (depending on season)
- step 2: design the layout of the garden, according to water sources, type of plants and their location.
- step 3: planting seeds
- step 4: arrange the right watering schedule.
- step 5: organize a timetable for watering (who is responsible for that)
- step 6: check the soil if it has to be cleaned from weeding.

If we want to go further in the design of algorithm, once each group has its own task, they can create a detailed, step-by-step algorithm for the task itself: so that, if teams move or change roles in another term, everyone will know how to proceed, because they will have create precise and clear instructions.

Assessment:

- Participation in group discussions and activities.
- Completion and quality of the garden layout design.
- Accuracy and clarity of the garden care algorithms.
- Reflections in journals.

Expected results:

- Ask students to reflect in their journals on what they learned about both gardening.
- Talk about the next steps for the garden project, including planting and ongoing maintenance.

Extension Activities:

- Create a digital version of the garden layout using a computer program.
- Conduct a scientific experiment within the garden, such as testing different soil types or watering schedules.
- Connect with a local gardener or botanist for a guest lecture or field trip.