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Creating Geometric Shapes and Sharing Them with Micro:bit

Goals and Tasks

Defines what the exercise aims to achieve.

Learning Objectives

1. Recognize and construct two-dimensional geometric shapes.
2. Program the transmission of information between Micro:bit devices using radio frequency.
3. Promote collaboration and idea-sharing through technological tools.

Didactic Tasks

1. Design a program in Micro:bit to create and assign a name to a geometric shape.
2. Send the information about the created shape to a peer using Micro:bit's radio frequency function.
3. Identify and represent geometric shapes received from other students.

Interdisciplinary Connections

Indicates links to other areas of knowledge.

- **Related Subjects:**
  - Technology (programming and digital communication)
  - Technical Drawing (graphical representation of shapes)
- **Practical Applications:**
  - Data communication and transfer in wireless networks
  - Visual recognition and representation of geometric figures

Required Resources and Materials

List of items needed for the session.

- **Physical Resources:**
  1. Micro:bit devices (one per student)
  2. USB cables for programming
  3. Computers or tablets with internet access
  4. Paper and pencils for drawing geometric shapes

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- **Digital Resources:**
  1. Link to the project on MakeCode: https://makecode.microbit.org/S53322-94341-69602-27002
  2. MakeCode platform for Micro:bit programming

Session Structure

1. Brief explanation about geometric shapes and their importance in everyday life (5 minutes)
2. Introduction to Micro:bit radio frequency functionality and its use in communication (10 minutes)

Introduction

Example: Brief explanation of the states of matter (5 minutes)

Development

1. Explanation of the preconfigured program in MakeCode (15 minutes)
2. Creation of geometric shapes in Micro:bit and naming them (20 minutes)
3. Sending shapes to classmates via radio frequency and graphic representation of received shapes (20 minutes)

Closing

1. Group reflection on the experience of device communication (5 minutes)
2. Student questions and feedback (10 minutes)

Expected Outcomes

Describes what is expected to be achieved through the activity.

Key Learnings

1. Understand how to represent and program geometric shapes in Micro:bit
2. Become familiar with radio frequency functionality for device communication
3. Apply geometry concepts in a technological context

Final Products

1. A Micro:bit device programmed to create and send geometric shapes
2. Graphic representations of the received geometric shapes

Additional Notes

Recommendations or remarks for the teacher.

- **Suggestions:**
  1. Adapt geometric shapes to the students' level
  2. Allow students to explore custom shapes to encourage creativity

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- **Possible Extensions:**
  1. Introduce colors or patterns in the shape representations
  2. Program additional messages to describe the properties of the geometric shapes sent
- **Example Programming**