TITLE: Programming loops

LEARNING SCENARIO		
School: **GENIKO LYKEIO ALIKIANOU**	***Duration (minutes):***	**90**
Teacher: **STYLIANOS STAVGIANNOUDAKIS**	***Students age:***	**15**

Essential Idea:	**Programming**

Topic:

- Advanced ErgoBot programming

Aims:

- Navigate the ErgoBot

Outcomes:

- Use programming loops to repeat sections of code.
- Use white space to create more readable programs.
- Test subsections of a complex program.
- Use mathematics to determine turn angles in geometric figures.
- Collaborate as a team to produce a synchronized set of programs.

Work forms:

- individual work
- work in pairs
- group work

Methods:

- presentation
- discussion
- interactive exercise

ARTICULATION

Course of action (60 minutes)

INTRODUCTION

The teacher explains and starts a discussion with the pupils:
One common feature of programming languages is the capability to create loops. A loop allows a section of commands to be repeated over and over again, resulting in a shorter, cleaner program. In a robotics program, the code to create specific behaviors can be placed inside loops, causing the robot to repeat a behavior as many times as needed.

MAIN PART

Topics for discussion
Is it useful, particularly in manufacturing, to create loops, where robots need to continuously perform tedious or difficult tasks?
Task
Navigate the ErgoBot using an interactive programming environment.

Exercise
Use a loop to program the ErgoBot to travel in a square with the fewest possible commands.
Use a loop to program the ErgoBot to travel along a more complex hexagonal path.
Program a two-part motion routine for a pair of ErgoBots.

The teacher explains and gives instructions on how to solve tasks.
Pupils solve tasks and present their solutions.
Pupils and teachers discuss and evaluate the presented solutions.

CONCLUSION

What is a programming loop?

A set of commands that repeats continually until a specified condition is reached

Methods		*Work forms*
presentation		*individual work*
discussion	*demonstration*	*work in pairs*
graphic work		*group work*
interactive exercise /simulation on the computer		

Material:

- Computer, ErgoBot, three interactive simulations

Literature

- https://www.pasco.com/resources/video/FzKjfq0R9vA

PERSONAL OBSERVATIONS, COMMENTS AND NOTES