

**TITLE: Optimizing solutions****LEARNING SCENARIO**

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

Essential Idea:	Programming
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Topic:

- Advanced ErgoBot programming

Aims:

- Navigate the ErgoBot

Outcomes:

- Use the engineering design cycle to create optimal solutions.
- Use comments to provide internal documentation in programs.
- Use mathematics to determine a path.
- Program the speed and acceleration of the ErgoBot.

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:
 Programming and engineering problems usually have more than one solution. Engineers use a process called the design cycle to optimize their solutions within a given set of constraints. In this project you will apply the design cycle to develop creative solutions to a set of competitive programming challenges.

MAIN PART

Topics for discussion

How important is it to include meaningful comments in your programs as a means of internal documentation?

Task

Navigate the ErgoBot using an interactive programming environment.

Exercise

Program the ErgoBot to navigate through a slalom course in the shortest possible time. Use the ErgoBot to transport a small crate from one “loading dock” to another, and then optimize your solution so as to transport the most material in the shortest time. Use the interactive tool to write programs and run them on the ErgoBot.

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 comment in programming?
 An unexecuted line of code describing some aspect of a program

Methods

presentation
discussion
graphic work
interactive exercise /simulation on the computer

Work forms

individual work
work in pairs
group work

**Material:**

- Computer, ErgoBot, three interactive simulations

Literature

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

PERSONAL OBSERVATIONS, COMMENTS AND NOTES