Module 2

The Labours of Hercules 10-14

ROBOTICS THROUGH SIGN LANGUAGE: ENSURING ACCESS AND ENGAGEMENT OF STUDENTS WITH DISABILITIES (DEAF OR WITH HEARING IMPAIRMENT) TO THE DIGITAL WORLD OF CODING AND ROBOTICS – ROBOTICS4DEAF

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Mythology Scenario

Title

The Labours of Hercules (10-14 years old)

Description

In this scenario, students will be introduced to the legend of Hercules and his famous Labours.

They will construct and program a Robot (Vernie) which will play the role of mythical Hercules, and learn simple movement commands and basic obstacle detecting programs.

They will have to program Hercules to solve the set of problems which will be given to them, such as:

a. Make Hercules move around Peloponnesus

b. Spot Nemean Lion, Lernaean Hydra and Ceryneian Hind

c. Chase the Ceryneian Hind in various parts of Greece.

Finally, they will discuss issues related to the protection and preservation of important cultural sites.

Relevant Subject

History, Mythology, Cultural Preservation

Target Group

This scenario addresses students with deafness or hearing impairments aged 10 to 14 years old.

Other Relevant Competencies

Teamwork, Creativity, Problem Solving

Facilities/Equipment Needed

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For this scenario, you will need 3-4 Lego Boost kits and tablets that are compatible with them. Pupils will be divided into groups and instructions will be given to them.

Pre-requisites

Students should be familiar with the educational material of Module 1 and more specifically with the chapters, which are related to the basic movements of robots, follow the line programs and the use of remote control.

Learning Objectives

Pupils will :

- Develop knowledge about mythology
- Develop knowledge about history
- Assemble a working robot
- Familiarise with distance sensor and motors of the robot and develop skills on how to use them in a working program
- Calculate the perimeter of Peloponnesus and the speed of Ceryneian Hind
- Get familiar with the distance sensors of the robot and learn to use it in basic obstacles detecting programs
- Learn simple movement commands
- Familiarize themselves with simple “one start method” programs

Duration

Estimated Time: 8 Teaching hours

- 2 hours for starting point (introduction), questions, drawing
- 3 hours for the construction of Vernie
- 2 hours for programming the robot and the carrying out of the assignments
- 1 hour for the completion of the assignments, video recording of the proceedings, discussion, analysis of the project and suggestions for new assignments/activities

Theoretical Questions

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Watch this video and answer the following questions:

https://www.youtube.com/watch?v=nIIjhAuC76g

1. How do you imagine that Heracles looked like?

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_____
_____
_____

2. The Ceryneian hind was thought to be running faster than an arrow, how fast do you think it moved?

_____
_____
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3. If Hercules moved around Peloponnesus three (3) times (Peloponnesus perimeter: 1000 km) in one day in order to search for The Ceryneian hind, could you calculate his speed?

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Main Activities

Activities:

1. Draw a picture of the Ceryneian hind and Artemis, you might search the web for information about their looks.

2. Draw a map of Peloponnesus on a big piece of paper. (Draw the perimeter of Peloponnesus in bold black so that the light sensor recognizes it).

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3. Draw a plan of the stables. Make sure that in your figure can be seen both rivers Pinios and Alfeios and use lego pieces for their boarders.

Constructions:

1. Construct the Vernie robot. This robot represents Hercules. After you construct it according to the given instructions, you can decorate it as you would like your Hercules to look like.

Programming:

1. After you have designed your own model (maquette) of Peloponnesus, calculate its perimeter using your ruler.

2. Program Hercules to move around Peloponnesus to search for the Ceryneian hind by using simple movement commands (approximately).

3. Program Hercules to move around Peloponnesus to search for the Ceryneian hind by using the light sensor to recognize the borders.

4. By using black tape draw the path that the Ceryneian hind would make in his attempt to escape from Hercules. Remove the distance-color sensor from Vernie. Place an extension in the front of the robot where you will attach the distance-color sensor facing downwards. Program the robot to follow the path using the "follow the line" method.

5. By using the remote control blocks move the lego pieces to redirect Pinios and Alfeios revers in order to clean the Augean stables.

6. Construct the Vernie robot 2.1 with the arrow launcher. Place Stymphalian Birds (which can be constructed using LEGO or any other material) anywhere on your mat and try to hit them.

Discussion/Conclusion

1. Why do you think Eurystheus asked Hercules to carry out such difficult missions?

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Further Activities

Can you think of any new activities/assignments for Hercules? Note them down and try to complete them in the classroom in collaboration with your classmates.

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UNIVERSITY OF SOCIAL SCIENCES

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