

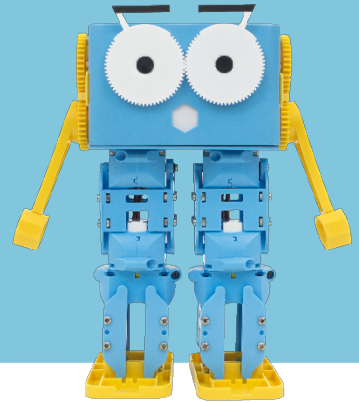
Lesson 2.4 – Obstacle Course Challenge

Education Level: Third/Fourth Level (Ages 11-14)

Lesson Duration: 90 minutes (can be split across sessions)

Prerequisite Knowledge: Lessons 2.1, 2.2 & 2.3

Device Compatibility: Laptop or PC



Lesson Overview

After developing our Marty remote control, we have an easy way to control Marty and his movements. In this lesson, students will design and build a small obstacle course for Marty to go around by first considering what kind of obstacles they can use, using the remote control to walk Marty around the course and finally, programming Marty to complete the obstacle course without any help!

Learning Objectives

- Use techniques like if statements and repeat statements to develop a script to allow Marty to go around an obstacle course
- Consider the environments that Marty will be able to manoeuvre and design a course based on this

Key Vocabulary

- Python
- Coding
- Script
- If Statement
- Functions
- Environment
- Obstacles
- Repeat/Loops

Resources & Equipment

- Marty the Robot
- Python editor
- Access to computers/laptops (with Python installed)
- Resources to build obstacle course such as paper, cardboard and cello-tape
- Marty workbook (Lesson 4)

Additional Reading

- Educator's Guide
- Get Started with MartyPy
- Teachers guide to designing and building the obstacle course
- MartyPy documentation

Learning Plan & Activities

1. Ask students what environments they think we use robots in and why
 - a. Students could name different robots that they know that carry out specific tasks
 - b. Research task/examples if students are struggling to think of robots
2. Recap of techniques that we have covered including if and repeat statements
3. Students design their own ideas for an obstacle course, taking into consideration what they know about Marty's movements and joints
4. Students can either then break into teams to build small obstacle courses or can build as a class
5. Students should then in small groups walk Marty around the course using the remote control that they developed in the last lesson (3)

6. Finally, students should start to develop their scripts to get Marty to get around the course by himself – again with emphasis on testing their scripts frequently!

Additional Challenges

- If you're doing several different obstacle courses, students could try out other group's courses with remote controls and then by programming Marty
- Carry out a competition to see who can program Marty to get the furthest around the course in 10/15 minutes

Curriculum Benchmarks

Curriculum for Excellence – Technologies Benchmark Guide

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 2.4
Digital Literacy	TCH 0-01a	○
	TCH 4-01a	○
Technological Development in Society & Business	TCH 0-05a	●
	TCH 3-08a	○
Craft, Design, Engineering & Graphics	TCH 0-09a	●
	TCH 1-09a	○
	TCH 2-09a	○
	TCH 2-10a	○
	TCH 0-11a	●
	TCH 1-11a	○
	TCH 3-12a	○
Computing Science	TCH 4-12a	○
	TCH 0-13a	●
	TCH 1-13a	●
	TCH 2-13a	●
	TCH 3-13a	○
	TCH 3-13b	○
	TCH 0-14a	●
	TCH 0-14b	○
	TCH 1-14a	●
	TCH 1-14b	○
	TCH 2-14a	●
	TCH 3-14a	○
	TCH 4-14a	○
	TCH 4-14c	○
	TCH 0-15a	●
	TCH 1-15a	●
	TCH 2-15a	●
TCH 3-15a	●	
TCH 4-15a	○	

National Curriculum – Computing, Design & Technology

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 2.4
Computing	1-a	●
	1-b	●
	1-c	●
	1-d	●
	1-e	●
	2-a	●
	2-b	●
	2-c	●
	2-f	○
	3-a	●
	3-b	●
	3-c	○

	3-d	○
	3-g	●
	3-h	●
	4-a	●
	4-b	●
Design & Technology	1.1-a	●
	1.1-b	●
	1.2-a	●
	1.3-b	●
	1.4-a	○
	2.1-a	○
	2.1-b	○
	2.2-a	○
	2.3-b	●
	2.3-c	●
	2.4-d	●
	3.1-a	○
	3.1-b	●
	3.1-d	●
	3.1-e	●
	3.3-b	○
	3.3-c	●
	3.3-d	○
	3.4-d	○