

First lessons overview for Otto DIY EDU Program

Activity name	Description	Key concepts	Duration
1. Meeting Otto - Design your Ottomization	Students learn what a robot is and meet Otto (in the theory) while designing their own Otto version on paper	Understand what a robot is Meet Otto as a robotic project	1 hour
2. Project: Robot invention	Students build their own robot using recycled materials	Reinforce what a robot is Basis about building & robot mechanisms	1 hour
3. Otto Head - Playing sounds	By building the Otto head, students start knowing the software Otto Blockly using the buzzer to play sounds & ringtones	First building & coding approach Understand buzzer	1 hour
4. Otto Head - Full Buzzer section	Students explore all the blocks available in the Buzzer section of Blockly (level 1)	Coding exploration Different approaches to play sounds	1 hour
5. Math fun w/Otto - Buzzer	By playing a game in competition mode, students solve math operations using Otto head and sounds to define competition rules	Math practice Fun way to use knowledge	Teacher choice
6-7. Project: Coding a music sheet	Students learn basis of music reading & code some easy music sheets of popular melodies	Reading music sheets Understand tones in music Reinforce buzzer coding	2 hours
8. Math fun w/Otto - Repeat block	Introduce the repeat block as a way for students to create shorter & more efficient programs + a tiny competition using a random number generator	Learning loops Improving codes	1 hour
9. Otto Head - Ultrasound sensor	Introduce the ultrasound sensor to student to learn about distance measurement & object detection	Understanding ultrasound sensor Learning conditionals	1 hour
10. Project: Music instrument	Students make a project of a new musical instrument using the buzzer to play different sounds when the ultrasound sensor detect measure distances	Combining ultrasound + buzzer Project designing	1 hour

11. Project: Invisible Piano	Students draw piano's key in a paper and make a simulation of pressing the keys while the ultrasonic sensor detects distances and plays the sounds that correspond to every piano key	Combining ultrasound + buzzer Project designing Creative thinking Out of the box thinking	1 hour
12. Measuring distances	Using the serial monitor & ultrasound sensor students experiment with the sensor's ability to measure distances	Using ultrasound sensor Understanding serial Reinforce coding skills	1 hour
13. Project: Watchrobot	Students make a project of a robot that can detect when an object in front is removed & act as an alarm	Combining ultrasound + buzzer Project designing Reinforce coding skills	1 hour
14. Coding test	Students proof their coding skill by solving a challenge implementing all knowledge they have gain in class	Reinforcing coding skills Problem solving	1 hour
15. Intro to servomotor	Students learn about the servomotor component by experimenting with coding blocks to control it	Understanding servomotors Coding exploration	1 hour
16. Using variables	Introduce the concept of variables and its use to store the position's value of the servomotor	Learning variables concept Improve coding	1 hour
17. Project: level meter	In this project students must use recycled materials to make a lever prototype to measure the noise in the classroom (as prototype it doesn't really measure the noise)	Reinforcing coding skills Project designing	1 hour
18. Project: parking bar	Students make an automatic parking bar by using the ultrasonic sensor to detect objects and then move the servomotor to open the parking bar	Reinforcing coding skills Project designing	1 hour
19-20. Open projects	By presenting three project options to students, they will decide which one they want to make. They could work in small teams	Reinforcing coding skills Project designing Team building	Teacher choice