YOUTH MWPE+

Multilingualism and Work Perspectives in Europe

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

'Youth, Multilingualism and Work Perspectives in Europe' Project

CLIL LESSONS

VOLUME VI

ROBOTICS

Erasmus+

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ERASMUS + PROGRAMME

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‘YOUTH, MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE’ PROJECT

In a context with a rising unemployment among young people and early school leaving, our schools have an important role to play. Young people need to be flexible to a new labour market with quickly changeable skills. Multilingualism, e-skills and knowledge of the European labour market are essential for youth.

‘Youth, multilingualism and work perspectives in Europe’ project intended to reach this aim by emphasizing the importance of motivational strategies and ‘coaching’, both to promote academic excellence and to achieve a successful job profile, encouraging students in key skills to enter the workplace. Thus, we developed language competences and digital skills by promoting the use of Content and Language Integrated Learning (CLIL) in our schools and ICTs in the job search process. As a result, we enhanced learning and using foreign languages as a necessary means for integration into the European labour market and we analysed the possibilities to work abroad and raised awareness in the students about the importance of education and training in labour world. We also promoted the participation of socially disadvantaged students in the school's activities, giving them access to ICTs.

Our partnership worked to modernize our schools and adapt them to new ways of teaching and learning. It was about cultivating the notion of European citizenship through the study of laboral possibilities in Europe. The students were involved with activities that made them acquire knowledge on their labour market and the skills they need to find work in Europe. They developed skills in ICTs, language learning and speaking in public by presenting their tasks in English and they shared their material through eTwinning. Simultaneously, teachers prepared CLIL lessons about many areas: History, Science, Technology, Arts, ...

There were jointly produced products: the present e-book with CLIL lessons, a webpage with the study of the labour market in Europe and videos and all the products made by students. Throughout the two years, there were meetings in the different countries involved on the project where students showed their tasks and products. Finally, there was an evaluation plan with questionnaires, group discussions, observation and analysis, which was performed by students and teachers in progress of the project and in the end.

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LITHUANIA

ROBOTS IN DAILY LIFE

CLIL LESSON GENERAL LAYOUT

1.- TITLE OF THE UNIT

ROBOTS IN DAILY LIFE

2.- SUBJECT

ICT, English language, science

3.- STUDENTS' LEVEL/AGE

Secondary School (13 - 16) Pre-Intermediate, Mixed Ability Class

B1 according to CEF (Common European Framework)

4.- GROUP SIZE

30 students in class (6 pupils in a group)

5.- TIMING

40 – 55 minutes

6.- PLACE

Computers' Lab

7.- INTRODUCTION

The aim of the lesson is studying the Use of robots in daily life. The students acquire knowledge that will help them understand what robots are used in different life situations and why are we using robots. They will be invited to create one common robot and write a description of it. The description should include the unknown fields of the robot use in daily life.

8.- OBJECTIVES

• Being able to check understanding about Robots by watching presentation of theoretical part.

• Improving communication skills doing a few words tasks in English.

• Practicing in presenting the description of Robot functions and purpose in daily life.

• Developing critical thinking and creativity.

9.- SUBJECT CONTENT

• The purpose of Robotics, Sciences and Technology.

• The possibilities to use different types of robots in daily life.

10.- LANGUAGE OBJECTIVES

• Enriching their vocabulary.

• Practicing the use of vocabulary and internet resources doing different tasks about robots

• Improving spoken and written language.

11.- TASKS

1. Solve the crossword.
2. Fill in the gaps with correct words.
3. Match the pictures with correct definition.
4. A description about robot in daily life “My robot”

12.- ACTIVITIES

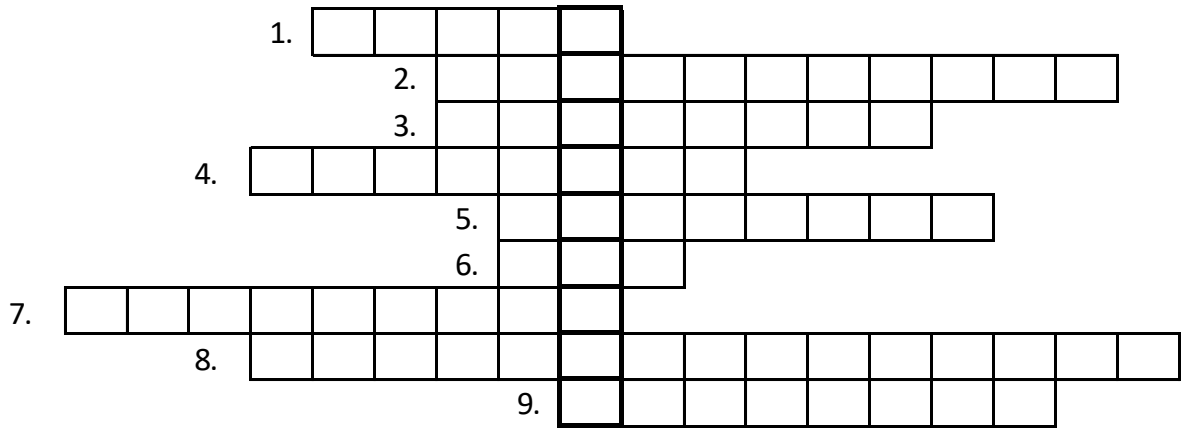
Session 1. Watching presentation and videos about robots in daily life;
Session 2. Check the understanding and useful information by doing WORDS tasks.
Session 3. Practical activity – creating a part of a common robot in groups.
Session 4. Presentations of descriptions.
Session 5. Feedback voting for the best function of final common robot.

13.- DETAILED SESSION

Session 1

Timing: 20 minutes

• Create 5 groups of pupils, one or two students from every country in each group. Students are given the crossword[1] which should be completed while listening the presentation.



[1] https://docs.google.com/spreadsheets/d/1BFBqtObBr9NtCIr0eyLSuwjHFqfripvK649y5l2Pq-s/edit?usp=sharing

1. The name of the person that introduced the word robot to the public the first time?
2. Robots, that mimic real-life animals or humans.
3. Through where do you control the robot Spykee?
4. A company, that manufactures delivery robots?
5. A human-like robot.
6. A robot that teaches children to sing.
7. The process of learning.
8. How robots are sorted.
9. The process, in which the robot is assembled.

The keys[2] are:

1.	K	a	r	e	**L**										
			2.	A	n	**i**	m	a	t	r	o	n	i	c	
			3.	I	n	**t**	e	r	n	e	t				
4.	S	t	a	r	s	**h**	i	p							
				5.	H	**u**	m	a	n	o	i	d			
				6.	N	**a**	o								
7.	E	d	u	c	a	t	i	o	**n**						
			8.	C	l	a	s	s	**i**	f	i	c	a	t	i	o	n	s
						9.	**a**	s	s	e	m	b	l	y	

• Presentation[3] of the information about the use of robots in daily life.

[2] https://docs.google.com/spreadsheets/d/1IsFQOK8Aud9if3Eahvok4SlWzH0OVN-EzESH7ehwNV4/edit?usp=sharing
[3] http://prezi.com/4ehg68v3njaq/?utm_campaign=share&utm_medium=copy&rc=ex0share

Session 2

Timing: 10 minutes

• Students check their vocabulary by doing different words tasks.

Task 1. Fill gaps with the correct word.

WORD LIST: *robots; programmed; vacuum; humanoid; designed.*

1. …….. are mechanical devices, programmed to perform specific repetitive functions.
2. Remotely controlled robots are used to check out suspect cars for booby traps, which they are also …….. to disarm.
3. Robot, called the …….. cleaner with a brain, covers every area of every room.
4. Nao is an autonomous, programmable …….. robot developed by Aldebaran Robotics.
5. The delivery robots are …….. to bring food directly from restaurants to customers doors.

The keys: 1. ROBOTS; 2. DESIGNED; 3. VACUUM; 4. HUMANOID; 5. PROGRAMMED.

Task 2. Match the pictures with correct definition[4].

Vacuum cleaner robot	Food delivery robot	NAO robot	Crime fighting robot	Sushi robot

The keys: 1. NAO robot; 2. Crime fighting robot; 3. Vacuum cleaner robot; 4. Sushi robot; 5. Food delivery robot.

[4] https://docs.google.com/document/d/1kqNiWYtiKbdnBW4jNWVeagzX_UWxjMqi5s2mCKchpqc/edit?usp=sharing

Session 3

Timing: 15 minutes

Practical Activity

Creating a part of a common robot in groups. Each group gets different material and the part of Robot's body: (hands, legs, heard, body, base). Then they use their creativity and make the parts of the Robot. Then join their part to the whole common robot.

Session 4

Timing: 5 minutes

Presentations[5] **of descriptions**

Students prepare the description and discuss the possible functions of the robot.

MY ROBOT	
Name:	
Functions:	
Tools, materials you used to create it:	

Session 5

Timing: 5 minutes

Feedback: voting for the best function of final common robot.

[5] https://docs.google.com/spreadsheets/d/1qnE9VAEBazV1j_hZQK8p8qYV3TLe3lMQvSQm9MmOftE/edit?usp=sharing

14.- SOURCES

• The theoretical content about the robots in daily life:
http://prezi.com/4ehg68v3njaq/?utm_campaign=share&utm_medium=copy&rc=ex0share

• Words Tasks handouts.

• Different material for making robot: matches boxes; foil; plasticine; paper; lego bricks.

• Computers with Internet connection (access in smartphones appropriate).

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POLAND

TYPES OF ROBOTS

CLIL LESSON GENERAL LAYOUT

1.- TITLE OF THE UNIT

TYPES OF ROBOTS

2.- SUBJECT

Informatics, craft

3.- STUDENTS' LEVEL/AGE

13-16 years olds

4.- OBJECTIVES

4.1. Content objectives:

1) I know different types of robots.

2) I can make a model of robot from the drawing.

3) I know how to use simple technical tools and emaze application to make a poster and Voki[1] or Robot Voice Generator[2] to generate a speech?

4) I can prepare robot from different recycling things like batteries, old mobile phone, watch, radio with using glue, screws, tape for electric wires and different nuts ?

5) I can differentiate types of robots and their use.

4.2. Language objectives:

Students will find out new words from robotics field.

[1] http://www.voki.com/
[2] https://lingojam.com/RobotVoiceGenerator

5.- ACTIVITIES

Students will work in groups. We will start with the brain storm. After that students will design model of theirs robots. Then they will work on phones and tablets doing the cards of their robots on emaze[3]. And finally every group have individual presentation of theirs robots. .

6.- DETAILED SESSION

a) Aim

b) Activities 1-4

c) Summary of the lesson

7.- DETAILED PLAN OF THE CLIL LESSON

Welcome the class.

AIM. (PRESENTATION) - Give the objectives for the lessons:

These are the aims of the lessons:

a) I know different types of robots and robotic vocabulary.

b) I can make a model of robot from the drawing.

c). I know how to use simple technical tools and emaze application to make a poster as well as some apps like Voki[4] or Robot Voice Generator[5] to generate a speech?

d) I can prepare robot from different recycling things like batteries, old mobile phones, watches, radio using glue, screws, tape for electric wires etc.

e) I can differentiate types of robots and their use.

[3] https://www.emaze.com/
[4] http://www.voki.com/
[5] https://lingojam.com/RobotVoiceGenerator

ACTIVITIES

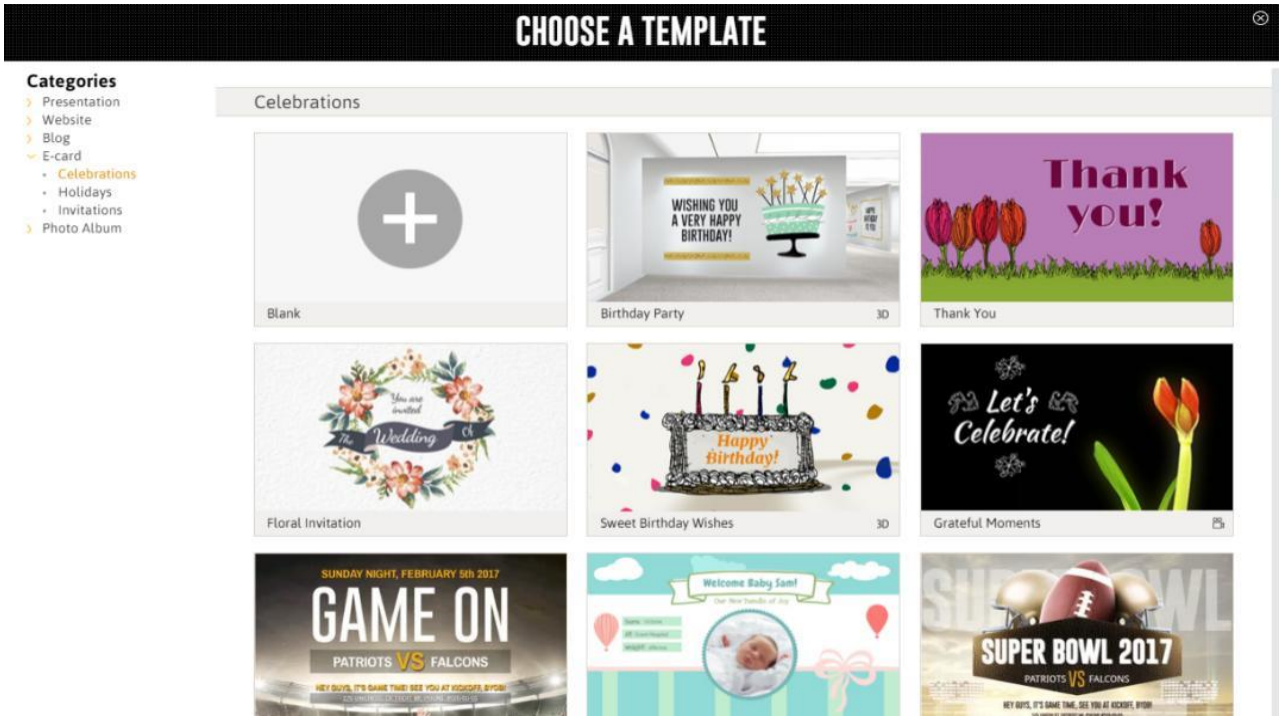
Activity 1 - Groups will draw robots[6] which help in daily life-new robots ideas! Each person from group will draw a robot. At the end group choose the best one. Before that students will watch some futuristic robots and get inspired! You have got 7 minutes.

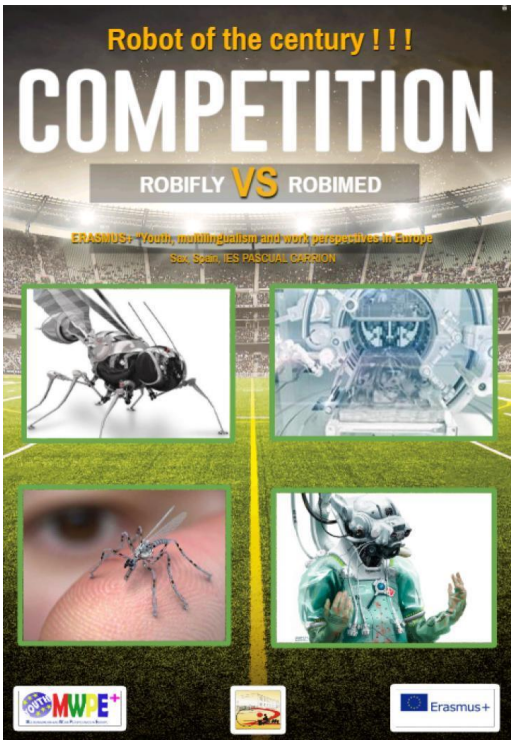
Eventually students can watch a short presentation prepared by Polish team[7].

[6] https://docs.google.com/presentation/d/1AShqSIszq5Xo4yAROLjva0KCFcD8mLaNJqmnJ7vQjBM/edit?usp=sharing
[7] https://docs.google.com/presentation/d/1KjQNx_iw6PT35pUCoCzMXJ8rNQgx3_YKQAnepYr_Rxg/edit?usp=sharing

Activity 2 - Groups will make robots. They will use other groups' drafts and they will bring them to perfection. You have got 20 minutes.

Activity 3 -. In the next task groups create e-cards on emaze platform[8] and send them to one of the leading team's student. They can take a photo of a created robot's model. You have got 7 minutes.





Steve

the best robot friend

[8] https://app.emaze.com/mypresentations#/home

Activity 4 - While creating posters different students prepare a speech answering for the given questions:

- What is the name of your robot?
- What are activities your robot can do/make?

To prepare your speech put in on the platform like Voki[9] or Robot Voice Generator[10] to generate a speech? This mp3 send to the leading team's student.

Example of audio file[11].

Activity 5 - Students give the presentations showing the posters and giving the speech done by the speech robotic generator.

[9] http://www.voki.com/
[10] https://lingojam.com/RobotVoiceGenerator
[11] https://drive.google.com/file/d/0B3PEd3cBSjmibTFlOHAzeExzVG5YZWhYUXU5cmZJM3hwcGdr/view?usp=sharing

7.- ASSESSMENT

Summary of the lesson:

What were the aims of the lesson? Polish students ask the questions or the questions will be asked in the short kahoot test. Students can also accept the students' presentations as full summary of the findings in the lesson.

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SPAIN

CONTROL AND ROBOTICS

CLIL LESSON GENERAL LAYOUT

1.- TITLE OF THE UNIT

CONTROL AND ROBOTICS

2.- SUBJECTS

Technologies; ICT

3.- STUDENTS' LEVEL/AGE

15-year-old students

4.- OBJECTIVES

4.1. Content objectives:

1) Knowing the elements of a control system.

2) Getting the basic knowledge of programming microcontrollers. Flochwarts.

3) Knowing the architecture of robots.

4.2. Language objectives:

1) Practicing reading skills.

2) Practicing speaking skills.

3) Getting technical vocabulary related with robotics and electronics.

4) Practicing action verbs related with the motion of robots.

5.- ACTIVITIES

Practical activities in Technology workshop.

Programming with the software Picaxe Editor through flowcharts.

Uploading programs into the robot microbot and testing the robot in several situations with analog and digital inputs and digital outputs.

6.- DETAILED SESSIONS

Session 1.- Introduction - Introductory session - Video and basic vocabulary activities

There's no doubt that there will be a need for people to be involved in programming mechanical devices in the foreseeable future.

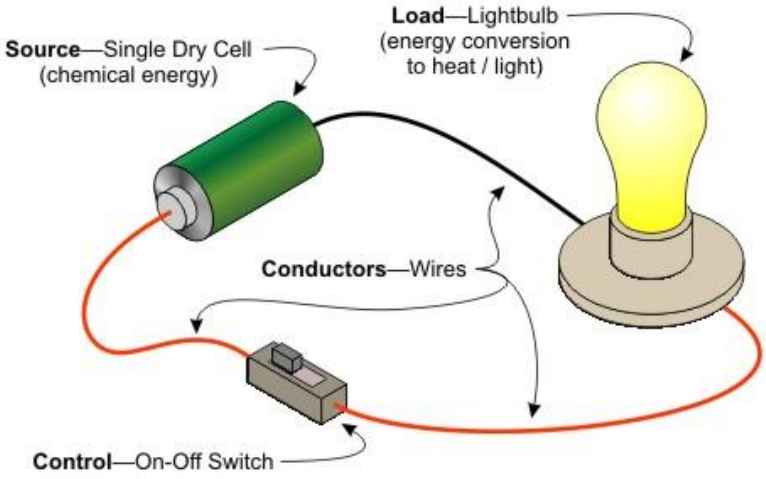
By programming robots, students can discover if they have aptitude and interest in a job market of the future.

A control system is a system of devices or set of devices, that manages, commands, directs or regulates the behavior of other device(s) or system(s) to achieve desire results.

1. Introduction

In our environment there are innumerable control systems, which although they are used daily, have not been the subject of our analysis:

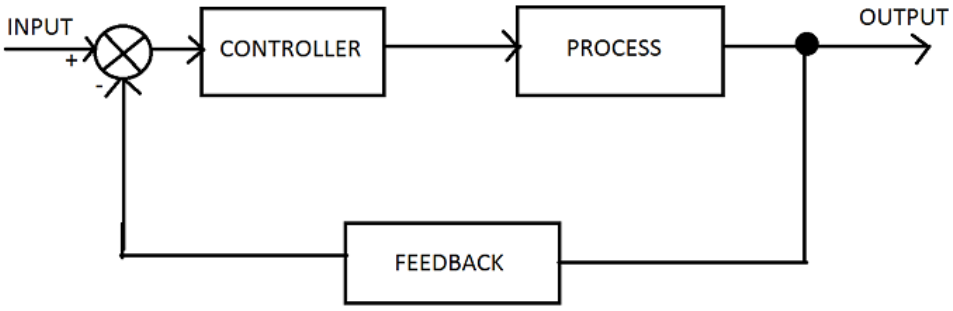
• The turning on and off of a light bulb. The **control element** is the **switch**.



• A washing machine. The **control element** is the **programmer** that, at given times, opens and closes the electric circuits that correspond to the drum's motor, the pump's motor, etc.

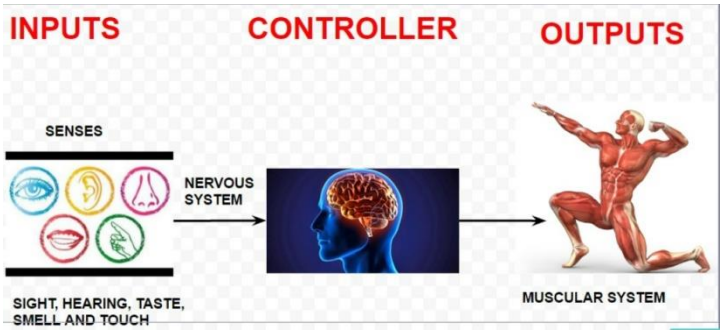
• A fire alarm. The **control element** is the **sensor** that, upon detecting the presence of smoke in a room, triggers a circuit that in turn makes the alarm sound.

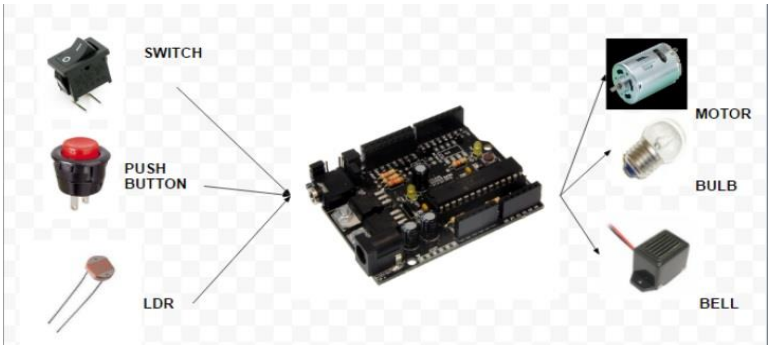
Any system of control can be explained using the following diagram:



To understand this diagram let´s watch an introductory video, '[The Basics of Robotics](https://youtu.be/Nj-zCvPY_Wo)'[1]

As we have seen in the video, every system control has to **sense**, **think** and finally **act**. The diagrams below compare the operation of the control process in human beings and machines.



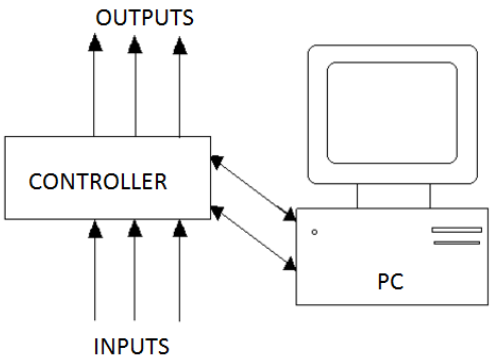


[1] https://youtu.be/Nj-zCvPY_Wo

The inputs of the system are the senses; they communicate with the environment and give the information to the thinking part (brain or microcontroller). Then the thinking part gives orders to the outputs to act.

Session 2.- Parts of a control system

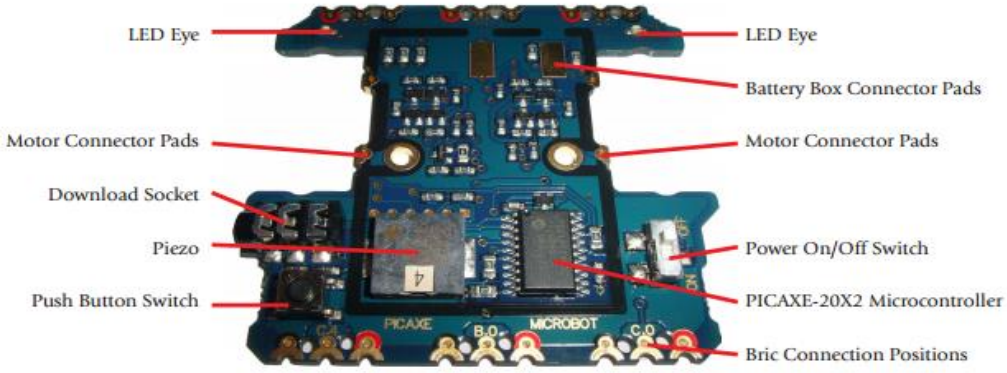
The control element that we are going to use is the computer, the control software Picaxe EDITOR and the microcontroller Picaxe 20X2. To do this we will use inputs and outputs.



In our control system we have the following elements:

• PC: On the computer we will put the necessary instructions into the programme so that it functions according to the plan.

• Controller: This is an element of communication (interface) between the computer and the plan. The programme passes the information to the controller, which is what receives signals (switches, push switches, sensors, etc.) and gives orders (turning motors or lights on and off, etc.)



• Inputs. These are the signals that are sent from the plan to the controller: switches, push switches, limit switches and temperature, light and position sensors, etc.

SWITCH

PUSH SWITCH

LIMIT SWITCH

LIGHT SENSOR

TEMPERATURE SENSOR

IR SENSOR

ULTRASONIC SENSOR

• Outputs. These are elements that carry out actions: motors, LEDs, bells, etc.

MOTOR

LAMP

LED

RELAY

BELL

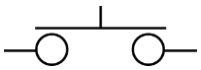
The main inputs and outputs we are going to use at this level are:

INPUTS

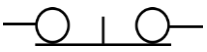
PUSH SWITCH: Pushbutton switches are mechanical switches which when the button is released it returns to its normally open (off) position or vice-versa. A spring returns the switch to its default position.

There are two types:

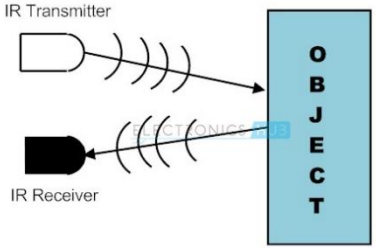
• A **push Normally Open** (NO) switch allows electricity to flow between its two contacts when held in.

SYMBOL 

• A **push Normally Closed** (NC) switch does the opposite, i.e. when the button is not pressed, electricity can flow, but when it is pressed the circuit is broken

SYMBOL 

INFRARED SENSOR: IR Sensors work by using a specific light sensor to detect a select light wavelength in the Infra-Red (IR) spectrum. By using an LED which produces light at the same wavelength as what the sensor is looking for, you can look at the intensity of the received light. When an object is close to the sensor, the light from the LED bounces off the object and into the light sensor.



OUTPUTS

MOTOR: Device which provides motion.

LIGHT EMITTING DIODE: A light emitting diode is a diode that emit light when a current flows through it. A diode only allows the current to flow in one direction.

Session 3.- Introduction to the robot Microbot Picaxe 20X2 .

Microbot Picaxe 20X2 is a robot designed for beginners in robotics and schools. The robot is supplied with motors to move about, a bumper to detect collisions, a line tracker so it can follow paths, two LED eyes, and a piezo sounder to make sounds. The source of power are 3xAAA batteries.

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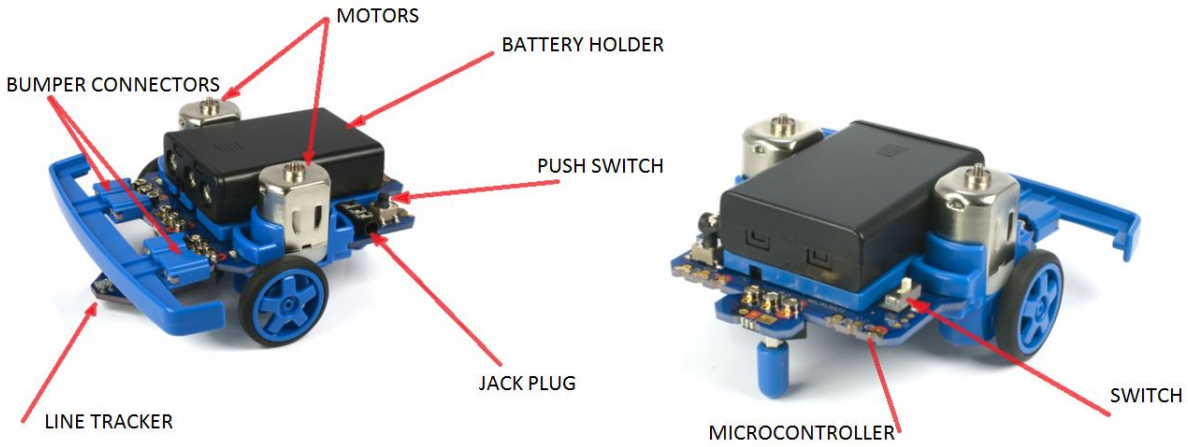
The picture below shows the parts of the robot Microbot Picaxe 20X2.



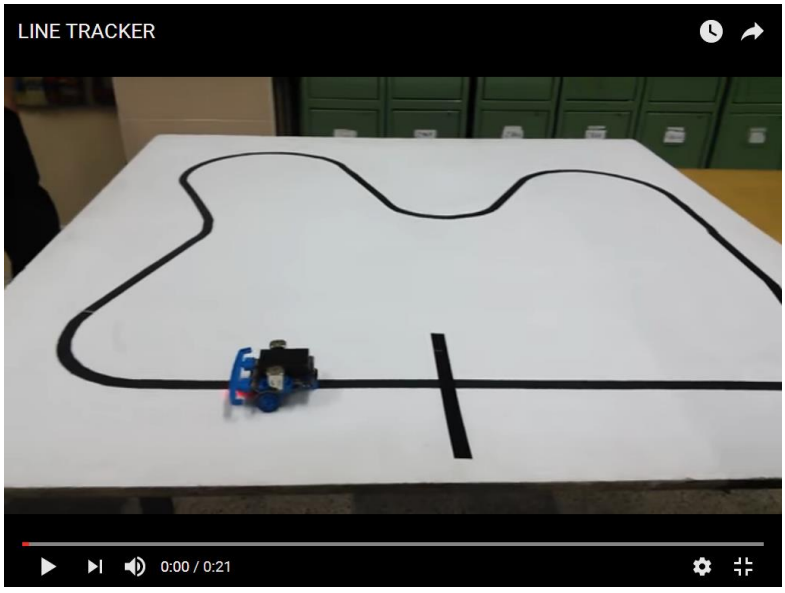
With the knowledge acquired in the previous sessions answer the following questions.

a) What inputs can you see in this robot?

b) What outputs can you see in this robot?

c) In pairs, discuss with your classmate about what you think this robot is able to do. Then explain it to the rest of your classmates.

d) Name the inputs and outputs needed to make the programme of the video 'Microbot Picax 20X2 LINE TRACKER'[2]



[2] https://youtu.be/YU__B25vMMQ

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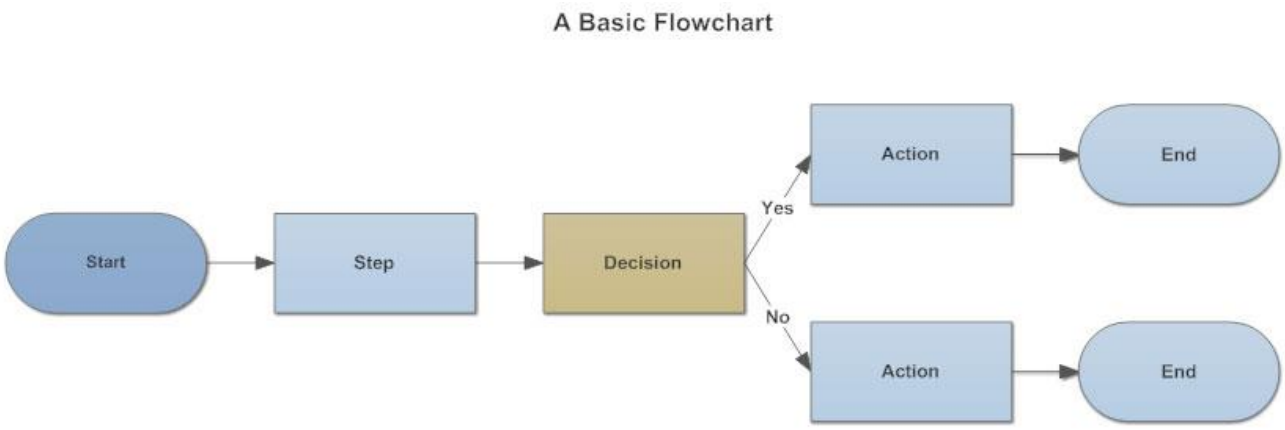
Session 4.- Programming

In order to control your Microbot you need to interact with its hardware via programming the appropriate PICAXE 20X2 pins.

PICAXE-20X2 Microbot Pinout Table.

Pin	Description
Input C1	Bumper Left
Input C2	Line Tracker
Input C3	Bumper Right
Input C6	Push Switch
Output B1	Left Led
Output B2	Piezo Sounder
Output B3	Led Right
Output B4	Left Motor Forward
Output B5	Left Motor Backward
Output B6	Right Motor Forward
Output B7	Right Motor Backward

We will program the robot through flowcharts, which is an easy and graphic way to program. 'A flowchart is a visual representation of the sequence of steps and decisions needed to perform a process. Each step in the sequence is noted within a diagram shape. Steps are linked by connecting lines and directional arrows. This allows anyone to view the flowchart and logically follow the process from beginning to end'.



Main Instructions

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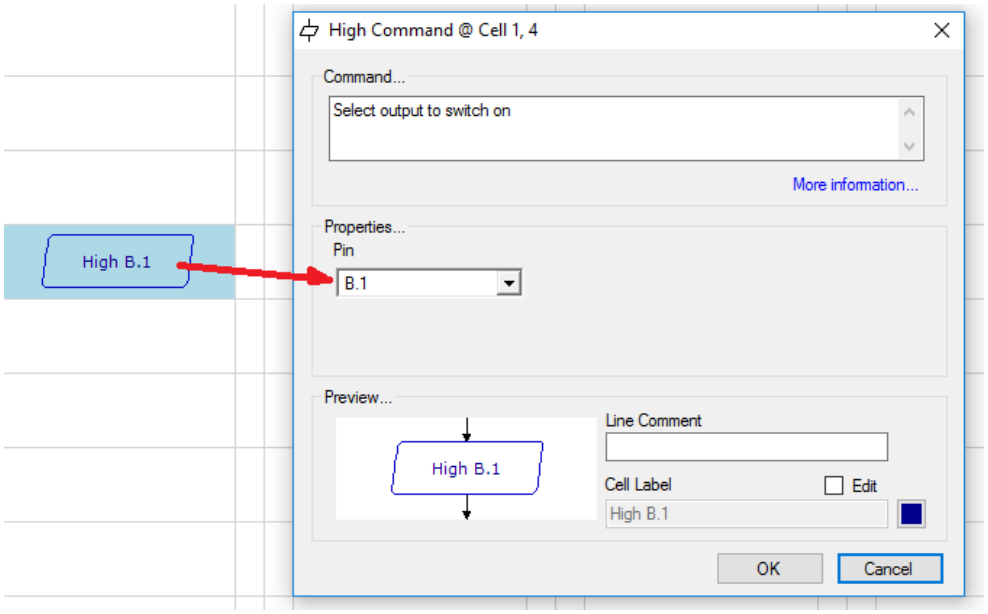
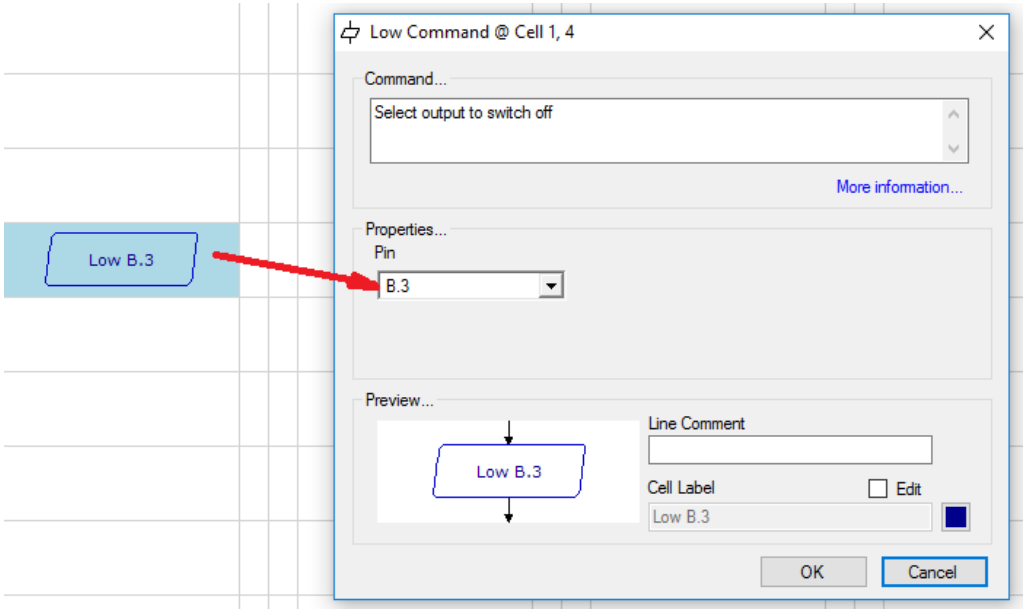
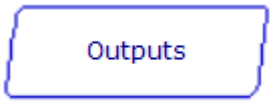
Every program have to start with this command.

Select an output and switch it on.

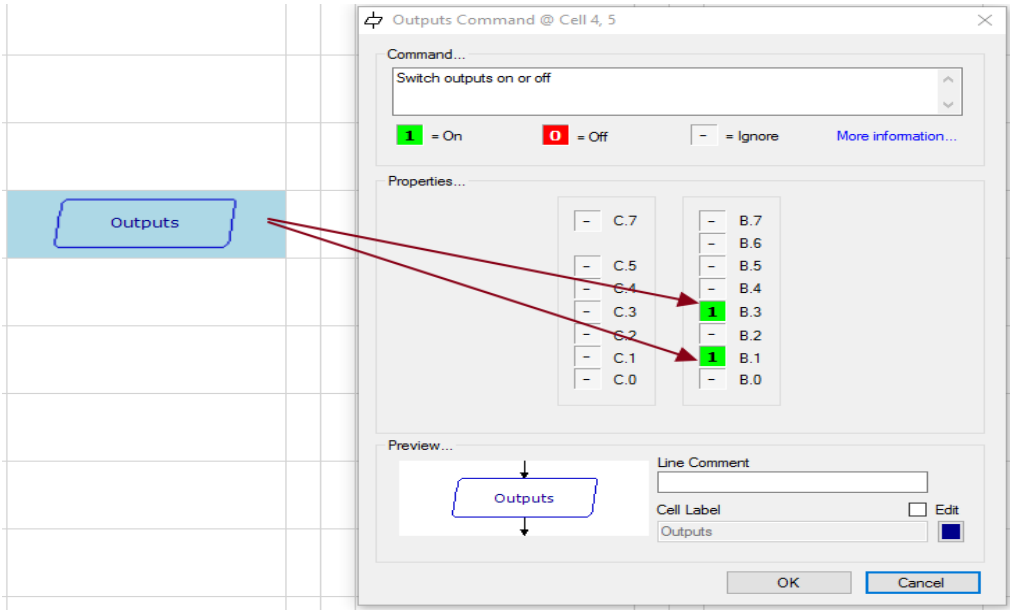


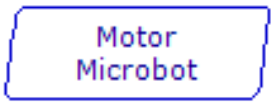
Select an output and switch it off.





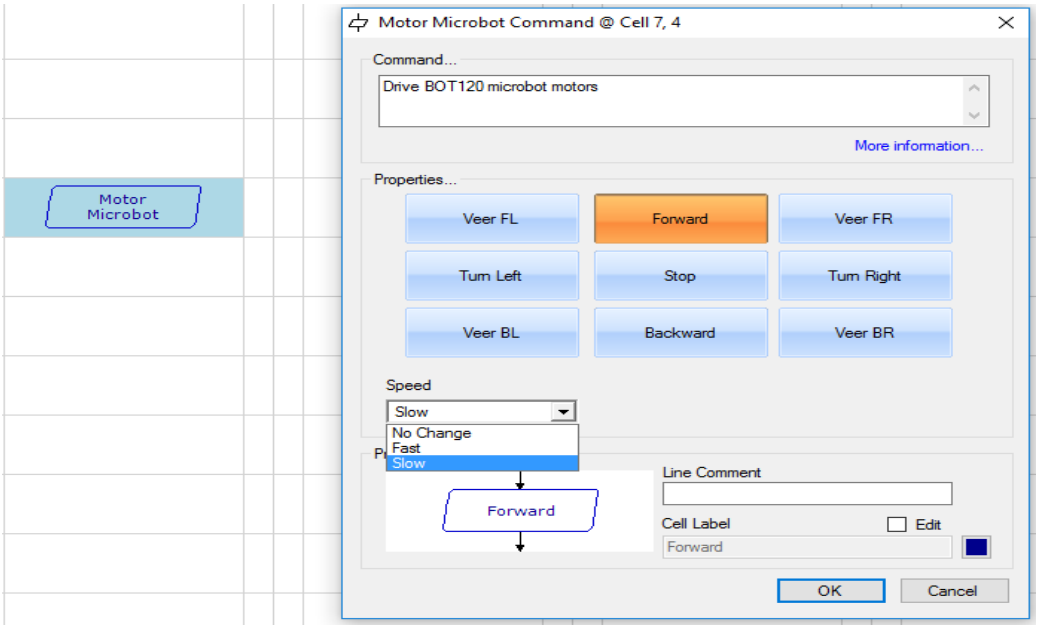
This command switchs the outpus highlighted **High** or **Low**. In the example of the picture below, the outputs 1 and 3 wich are the front leds of the microbot are **on**.





With this command it is possible to drive the motors of the robot microbot by clicking the 'movement' buttons on the Motors cell dialog having the option to select between fast and slow speed.

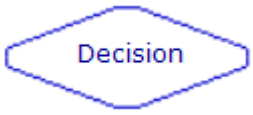
In the example below the robot will go forward at slow speed.



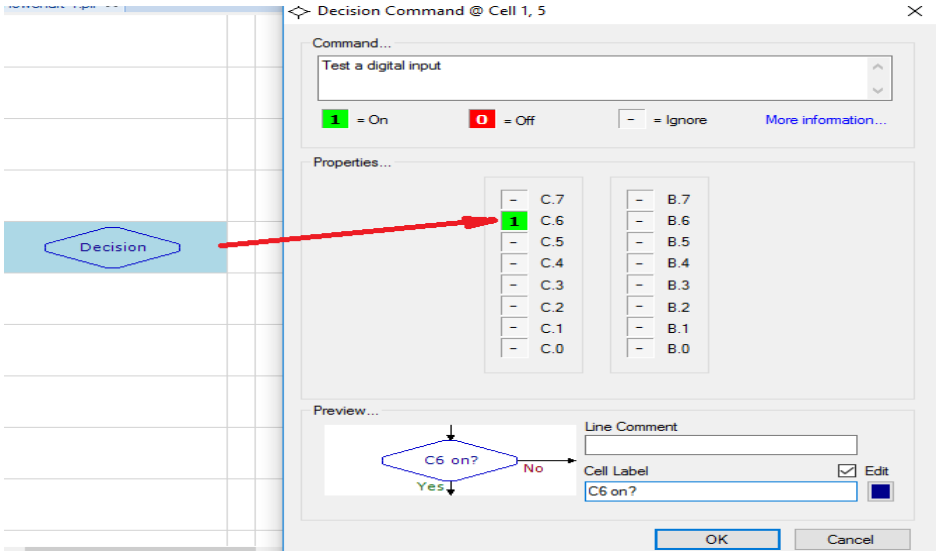
MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

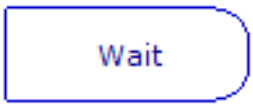
A ‘turn’ movement is when one motor is switched forward and the other backward.

A ‘veer’ movement is created by only switching one motor on at a time.

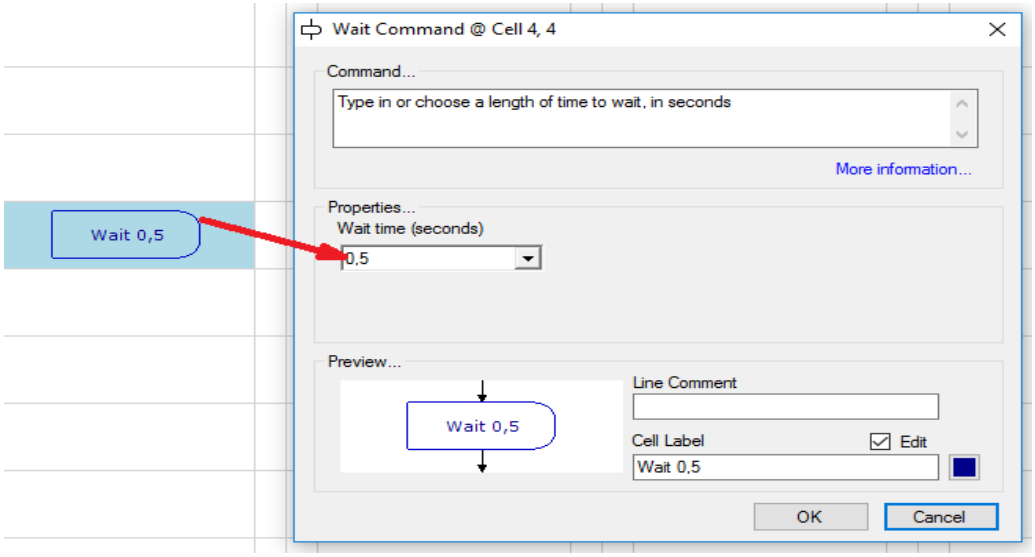


This command test a digital input. Depending of the value of the digital input (‘0’ or ‘1’) The program will run for two different paths. In the example below the digital input tested is C6 (Switch). If the switch is pressed (‘1’) the program will run through the path ‘**yes**’, if not it will run through the path ‘**no**’.





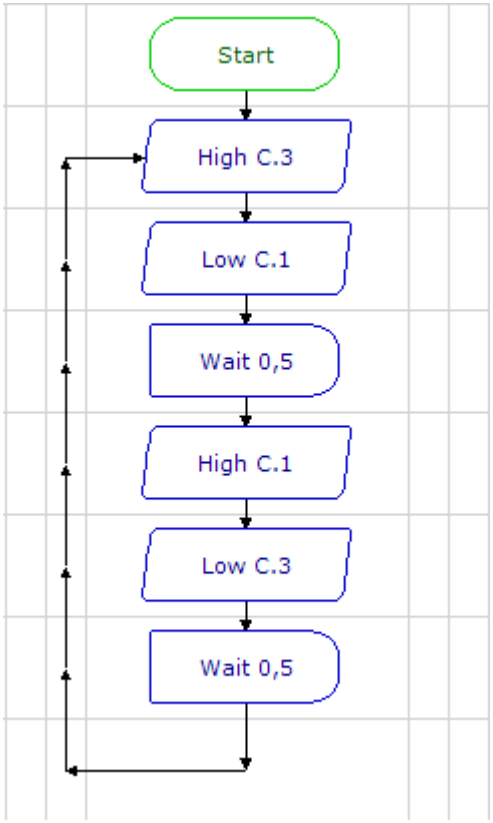
The program waits in seconds the time you choose. In the example 0,5 seconds.



MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

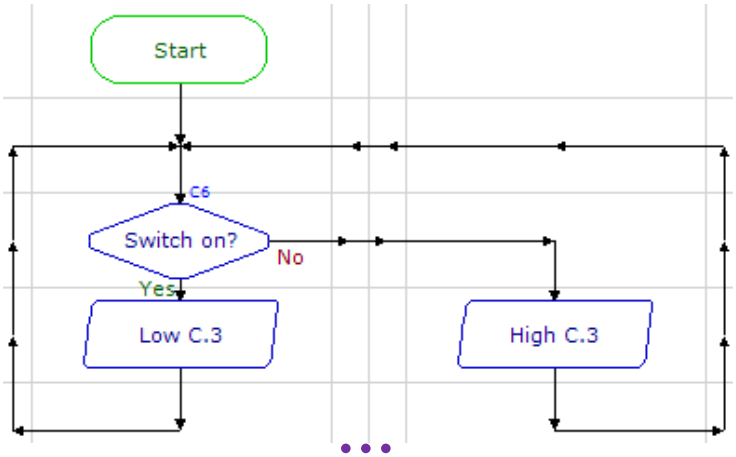
EXAMPLE 1:

The following program turn on the right LED eye and turn off the left LED eye, then wait for 0,5 seconds and turn on the left LED eye and turn off the right LED eye.



EXAMPLE 2:

The following program tests the operation of the push button by lighting the right LED eye when the button is pushed.



MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

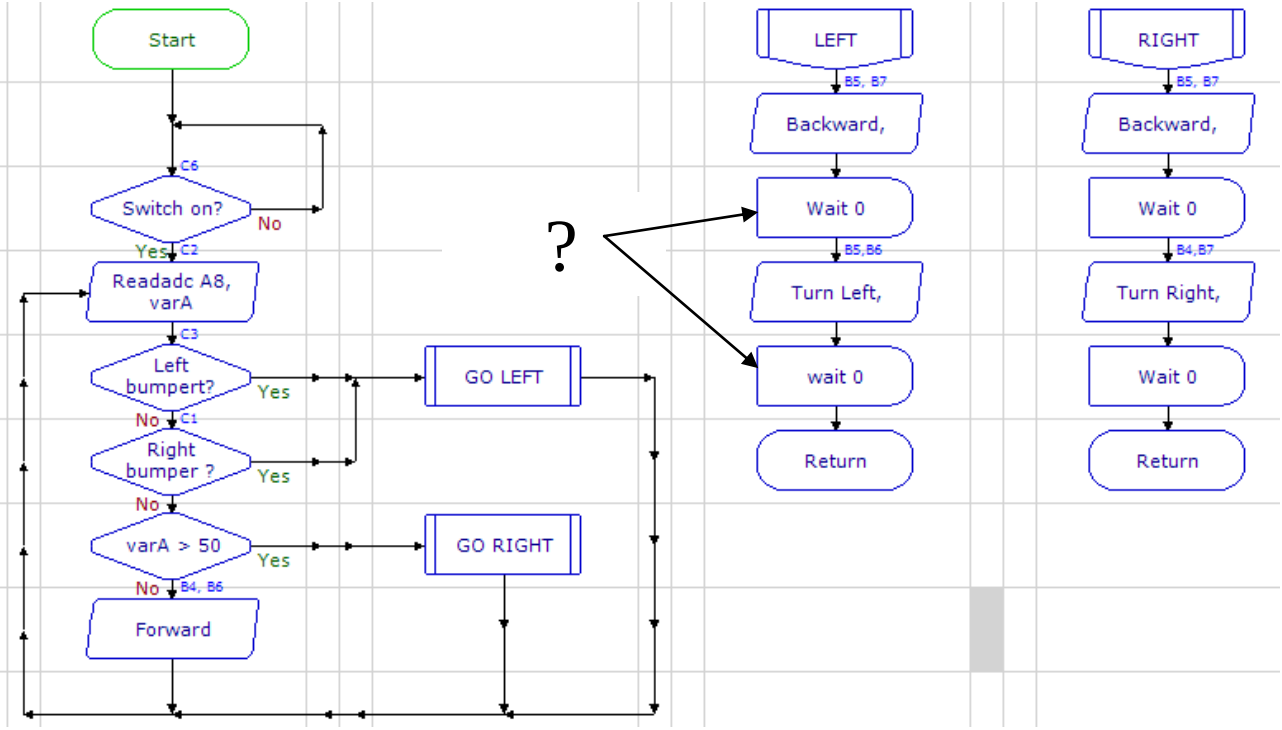
PROGRAMMING ACTIVITIES

Activity 1.- Create a program that will light the left LED eye if the left bumper is pressed and the right LED eye if the right bumper is pressed.

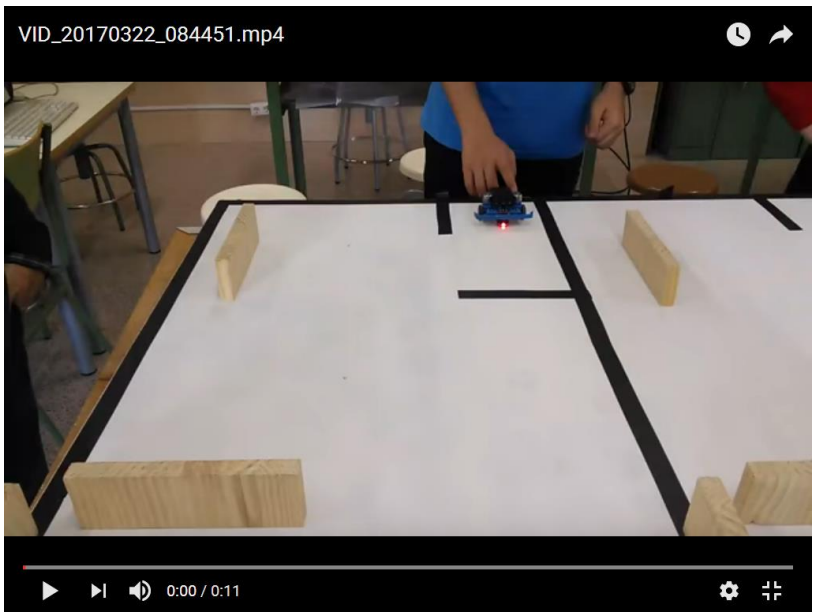
Activity 2.- Design a program that will drive your Microbot forward until it collides with something and its bumper switches are activated. When a collision is detected, your Microbot will stop, and it will not go forward again till the bumpers switchers are off (open).

Activity 3.- Design a program that will drive your Microbot forward until it collides with something and its bumper switches are activated. When a collision is detected, your Microbot will reverse backwards for a short distance, turn left or right, and then continue on its forward path until another collision occurs.

Activity 4.- Upload the following program to your microbot and calculate the apropriate delay to resolve the labyrinth as it does in the video[3].

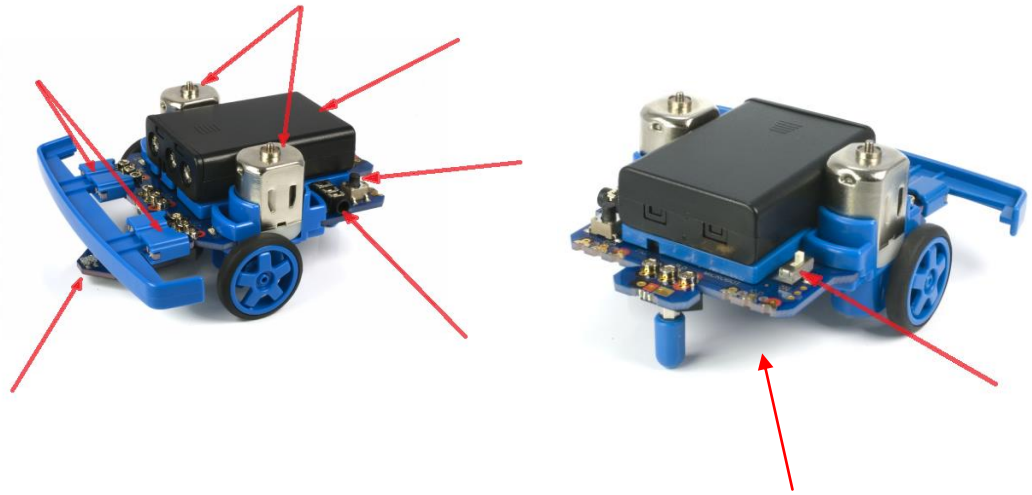


[3] https://youtu.be/revDa4et5h0



REVISION ACTIVITIES

Activity 1.- Match the parts of the robot with the correct name.



Bumper connectors, line tracker, motors, push switch, battery holder, switch, microcontroller, jack plug.

Activity 2.- Match the names with pictures.

MOTOR

LAMP

LED

RELAY

BELL

Activity 3.- Match the names with pictures.

SWITCH

PUSH SWITCH

LIMIT SWITCH

LIGHT SENSOR

TEMPERATURE SENSOR

IR SENSOR

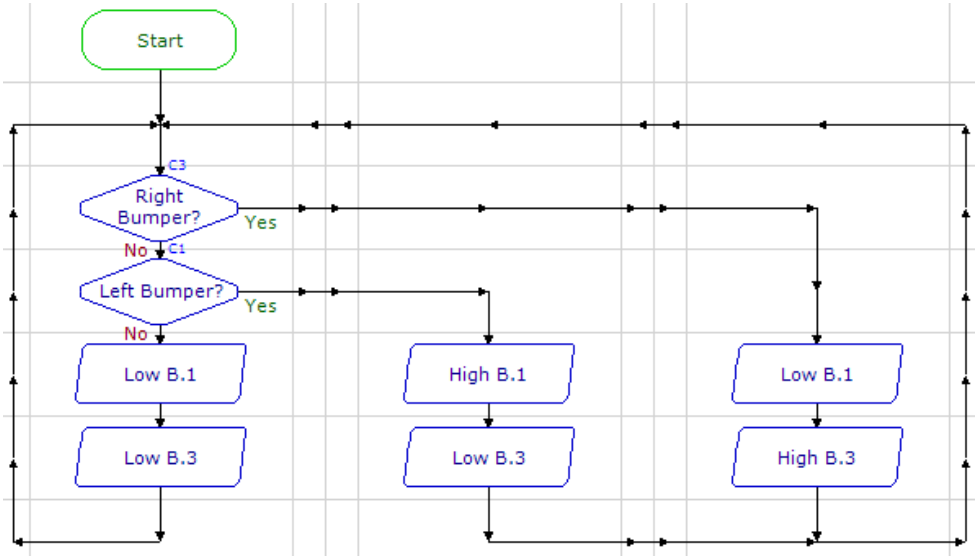
MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

7.- KEY SOLUTIONS

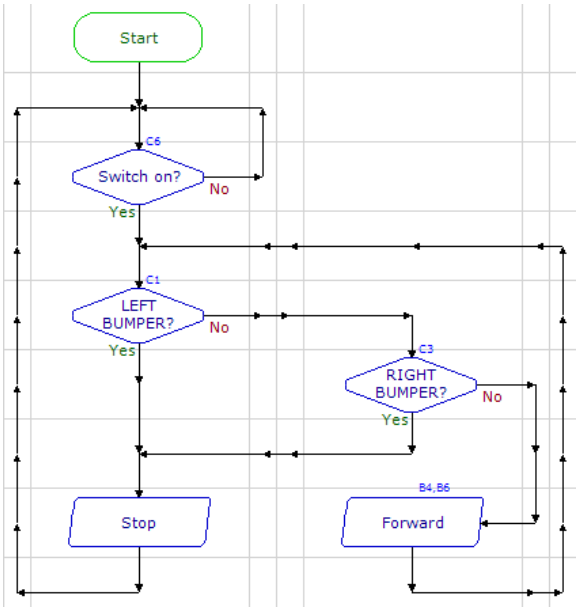
1. Two bumper connectors (switches), one push switch and one line tracker.
2. Two motors.
3. For example it could operate as a line follower, explorer robot, etc.
4. Line tracker and two motors

PROGRAMMING ACTIVITIES

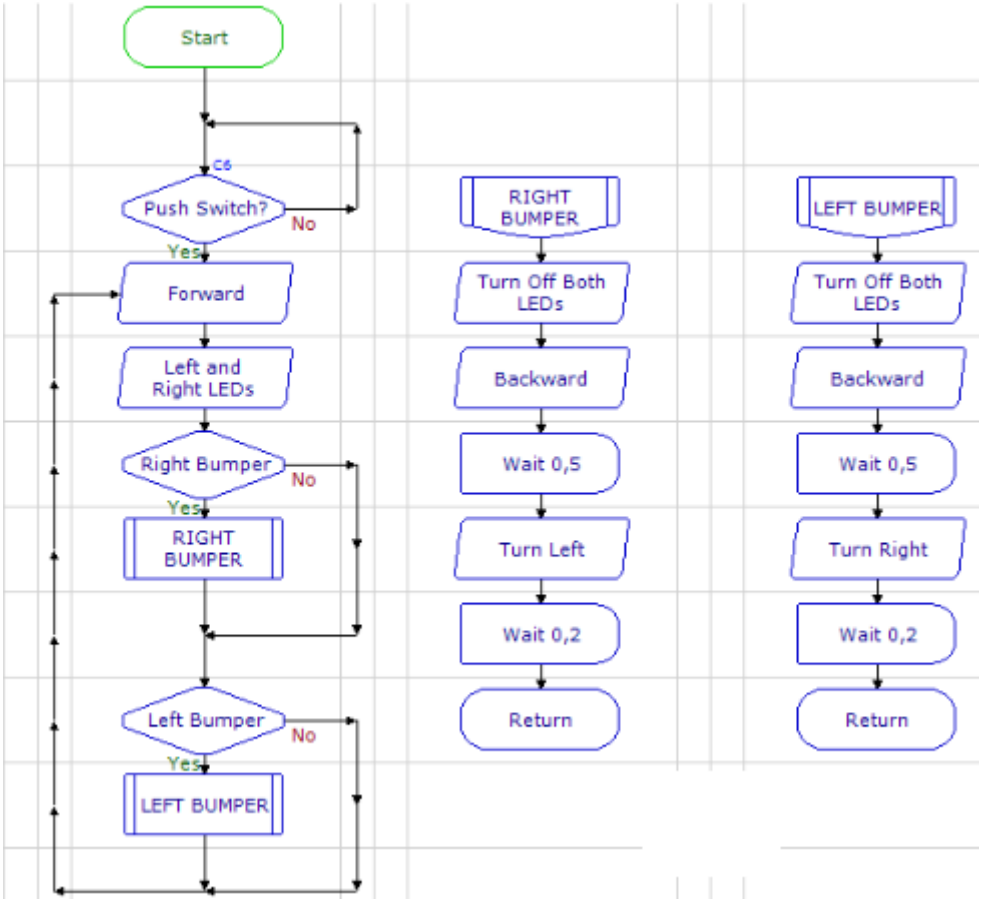
1.



2.



3.



8.- SOURCES

- https://youtu.be/Nj-zCvPY_Wo
- https://youtu.be/YU__B25vMMQ
- https://youtu.be/revDa4et5h0
- https://prezi.com/2yrldz1iz30c/robotics-clil/

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

YOUTH MWPE+

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

BULGARIA

ARTIFICIAL INTELLIGENCE

CLIL LESSON GENERAL LAYOUT

1.- TITLE OF THE UNIT

ARTIFICIAL INTELLIGENCE.

2.- SUBJECT

Social science

3.- STUDENTS' LEVEL/AGE

Level: B1.2. / Age: 14-17

4.- OBJECTIVES

4.1. Content objectives:

1) Learning about robotics and its highest level of development- artificial intelligence.
2) Getting students familiar with the origin of the word 'robot'.
3) Learning about various characteristics of artificial intelligence.
4) Learning about the use of AI as integral part in marketing.

4.2. Language objectives:

1) Reading comprehension – reading and finding the answer to questions in a text on robotics,
2) Speaking – describing, discussing and expressing opinion on controversial issues.
3) Grammar – Past Simple tense forms of the verbs, Comparatives, Present Perfect tense.

First five minutes:

Review: refresh the vocabulary on robotics and provoke students' interest about artificial intelligence.

Advance organizer: present the tasks for the lesson to get them ready and familiar with the topic.

Goal: Learn about the evolution in the notion of artificial intelligence and discuss the importance and influence of it nowadays and in the future.

Resources: video you tube, Powerpoint presentation.

5.- ACTIVITIES

Matching words and definitions, reading texts and answering questions, doing a quiz, watching a video and discussing the issue.

Anticipated problems/solutions: Internet access- not available or other technical problems

6.- DETAILED SESSIONS

Session 1.

Match the words and pictures:

	Word		Picture
1	**Robot** - a machine capable of carrying out a complex series of actions automatically, especially one programmable by a computer.	A	
2	**Android** - a robot with a human appearance	B	
3	**Mechanical doll** - a child's toy that is animated by winding it like a clock	C	
4	**Unmanned factory** - a factory not having or needing a crew or staff because the production is done by robots	D	

Key:

1	2	3	4	5	6	7	8	9	10	11
B	I	A	H	D	K	C	J	E	G	F

Session 2.- Do you know where the word 'robot' comes from?

Read the text on the origin of this word and find it out.

The conventional view of robots visualizes them as mechanical figures made in the human image. These are the robots of science fiction and of popular films. They also recall the mechanical dolls, some of which appeared in Western Europe during the Middle Ages.

The 20th century brought with it more meaningful advances in the direction of today's robots. It also introduced the word itself. Robot is derived from "robota", the Czech word for serf of forced labour and it was introduced into English language as a result of a play by the Czech writer KarelChapek, published in 1920. The play was called 'RUR', short for 'Rossums Universal Robots'.

'RUR' features a factory owner, Rossum, who turns out in his workshop android machines with a wonderful capacity for work. The machines usually sell well to the other manufacturers who put them to work in their own factories.

But this happy state of affairs does not last long. The robots become more advanced and even learn to think for themselves, though they remain devoid of emotions or a 'soul'.

Eventually they rise up and overcome their human masters. In this way was established one of the characteristic traits of robots: they have a great desire to take it out on humans. One of the characters in the play sums up the useful points about robots: 'One robot can replace two and a half workmen. The human machine… was terribly imperfect. It had to be removed sooner or later'.

What is your answer to the question about the origin of the word 'robot'?

And what are your answers to the other questions?:

1. What is the conventional view of robots?
2. What does "robota" mean in Czech language?
3. What does Rossum produce in his factory?
4. In what way do the andrioid machines change when they become more advanced?
5. Why does one of the characters think "The human machine… was terribly imperfect. It had to be removed sooner or later."

Session 3.

Read the definition of artificial intelligence and decide what you understand about it: *Artificial Intelligence is the attempt of computers to mimic or outperform the human brain.*

There are four requirements for a machine to be human-like:

1- Human emotion.

2 - The ability to create its own data associations in order to make decisions and differentiate between true and false.

3 - Self-consciousness, which involves identity, a track of time, and a sense of the world around you. We have 5 senses and a sense of time, and a sense of who we think we are or might become.

4 - Creativity and imagination, something that will probably be the last thing to be implemented properly.

Match these requirements with the explanations that follow:

( ) Some people do not understand why we even have them; some even try to hide them most of the time. The reality is, it is an evolutionary trait that makes us have a purpose in life. Without it, we would not reproduce, complete our daily tasks, or interact with other humans. An artificially intelligent machine would still only be a simple calculator without it. Ability to Create Data Associations and Decide.

( ) It is what's important with AI. Computer programs need to find ways to adapt and collect all data available to connect ideas. Most likely many of these things will be accomplished once natural language and communication is understood by AI developers.

( ) This is probably the hardest things to create. However, I think it is based on things we've already know and seen, then minor variations on those ideas, and since everything is very related anything is possible.

Answer key: Human emotion, the ability to create its own data association, creativity and imagination.

Session 4.

Watch the segment and discuss the questions:

1. Describe the scene.

2. Do you think robots will be so perfect in the future that they will become part of the family? Why?

3. Will robots ever have emotions? Will they be able to fall in love, for example?

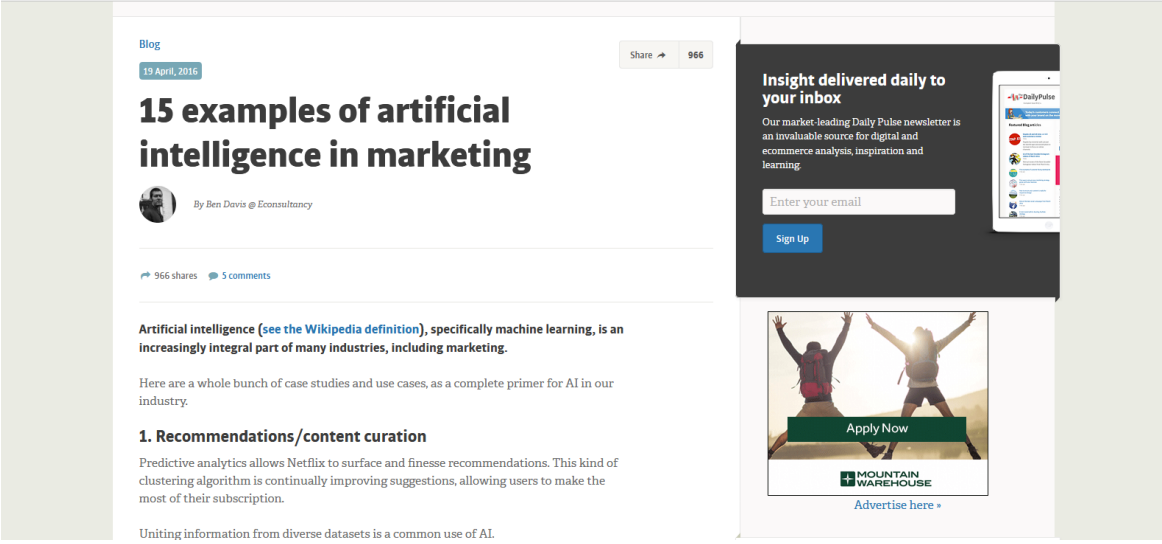
4. What about people? Will they be able to fall in love with robots?

5.What is the future of robots? How present will they be in our lives?

6. What's your opinion about Artificial Intelligence?

Session 5

Do a survey[1] on artificial intelligence in marketing



[1] https://econsultancy.com/blog/67745-15-examples-of-artificial-intelligence-in-marketing/

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

YOUTH MWPE+

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

ROMANIA

ROBOTS IN MEDICINE

CLIL LESSON GENERAL LAYOUT

1.- TITLE OF THE UNIT

ROBOTS IN MEDICINE

2.- SUBJECTS

Science, Chemistry, Biology, ICT

3.- STUDENTS' LEVEL/AGE

14-16 years

4.- OBJECTIVES

4.1. Content objectives:

1) Understanding the importance of using robots,

2) Awareness of benefits and characteristics,

3) Acknowledging the impact on the people,

4) Experimenting an interdisciplinary lesson.

4.2. Language objectives:

1) Acquiring new specific vocabulary related to robots,

2) Using the achieved knowledge in different contexts,

3) Developing skills as: reading, listening, speaking and writing.

5.- ACTIVITIES

Activities are divided in 3 sessions, covering:

- What is a robot used in medicine? Characteristics and benefits,
- The use of robots in autism,
- Advantages and disadvantages.

6.- DETAILED SESSIONS

The first session is based on discovering the most important aspects about the robots in medicine, their use, skills and required jobs.

The second session presents the benefits and utility of robots in treating different diseases, focusing on the autism.

The third session covers the advantages and disadvantages of using such robots.

Students will learn related phrases/ expressions of the topic; they will consider the impact of robots on people's lives.

DETAILED SESSIONS

Session 1 - Medical robots - Progress - Success

Time: 45-50 minutes

Class management: Group work (Students are divided into 6 groups)

Introduction

The teacher shortly presents the three sessions of the lesson.

Time: 2 minutes; Teacher-Students

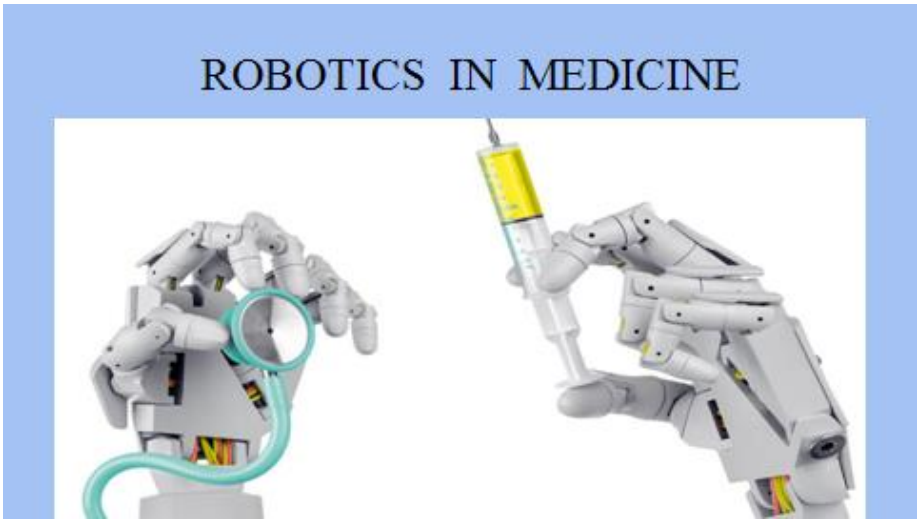
Activity 1 - Brainstorming

Task 1: The teacher asks the following question: What is a robot? Students need to think of a concept/ definition to answer the question.

Time: 3 minutes; Teacher-Students

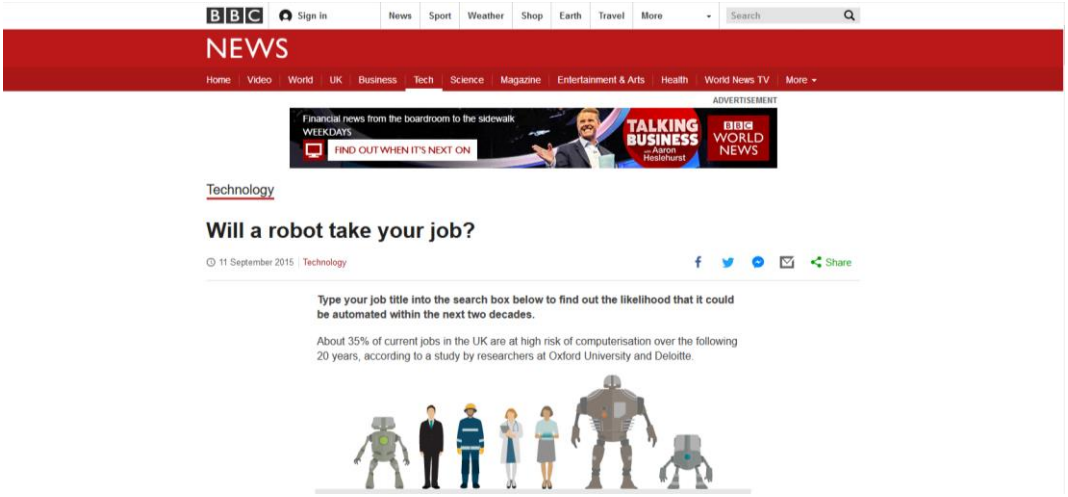
Activity 2 - Presenting[1] the first session - Medical robots - Progress - Success

Task 1: Do an exercise of imagination, choose your future job and then discover if a robot can take your job in the future.



[1] https://docs.google.com/presentation/d/1QPMFdq1I-MDkL8ZB77urTFp5cBmngk6T4Ec_-s0rykA/edit#slide=id.p

Students access a link[2] and play a game to find out.



Time: 5 minutes; Students- Students

Activity 3 - Identifying the key words

Task 1: The groups get a link[3]. They introduce it and find a thematic text. They need to read it attentively; each group selects the keywords and try to explain their meaning.
Time: 8 minutes; Students-Students; Students-Teacher

Selected keywords:

Medical robotics is very recent in the medicine field. Robots can be used to send some drugs or archives in a certain place in the hospital.

A medical robot is a machine, controlled by a doctor through a console. The console doesn't have to be in the same room with the patient. This helps on the control of the robot arm to perform the operation.

The doctor must introduce certain pieces of information before the operation, so that the robot can function properly.

The use of robots in medicine was thought as an advantage for diagnosis and more delicate and immediate interventions.

Manufacturers have introduced a number of new robots to better provide care to remote patients, help with various physical therapies and - similar to the da Vinci system - help perform surgery.

[2] http://www.bbc.com/news/technology-34066941
[3] https://docs.google.com/document/d/1NMCLkjDbKzw0MgTdbWq8VfzYKbWvZUzImlLnNoEUCuU/edit?ts=59024a91

Activity 4 - SWOT analysis

Task 1: The teacher asks students to think and then freely expose their opinion related to medical robots strengths, weaknesses, opportunities and threats. Students perform the task. The teacher writes down on a flipchart the appropriate pieces of information.

Time: 5 minutes; Students-Students; Students-Teacher

Possible answers:

- **S:** safety; reliability; never get tired; immune to radiation and infections.
- **W:** extremely high cost of systems; insufficient data from the research needed to work with the robotic system; lack of judgment; there is a risk of having the robot wrongly programmed before surgery; a robot can not make certain adjustments during the operation, while a doctor can make a different decision at any time.
- **O:** other robots can be manufactured in order to treat more diseases; continuing the research, robots which function nowadays may be improved, removing dysfunctions.
- **T:** increasing the number of robots can increase unemployment; the society could be dominated by robots, which no matter the advantages they have, they are still, inanimate objects, without judgment, incapable of feelings.

Activity 5 - Robots manufacturers

Task 1: The teacher asks students to build a futuristic robot, using the materials they received: cardboards, glue, markers, paper, matches, toothpicks, plastic bottles, cans, scissors, … They must give the robot a name, price and skills (what would they like it to do). Students need to present their prototype, motivating their choice.

Time: 10 minutes; Students-Students.

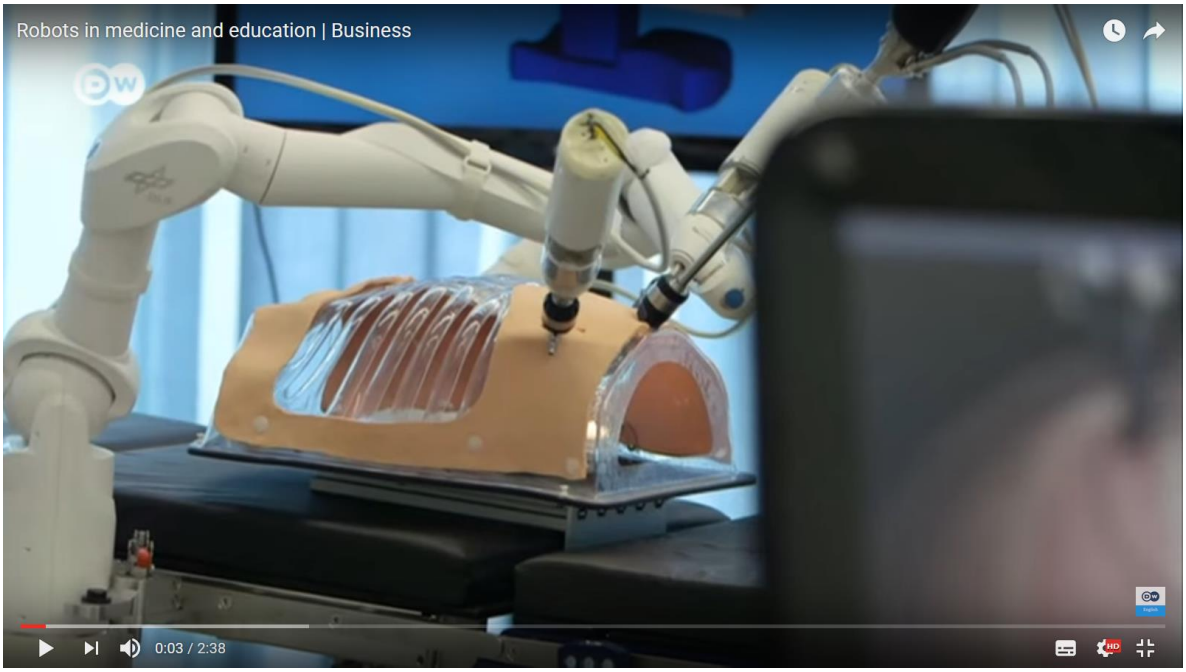
Session 2 - Medical fields of using robots – The autism

Time: 45 minutes

Class management: Group work (students are divided into 6 groups)

Activity 1 - Brainstorming

Task 1: Watch attentively a video[4].



Task 2: Answer the question: What fields are medical robots used in, nowadays? Students express their opinion or knowledge.

Time: 10 minutes; Teacher-Students

Activity 2 - Presentation[5] of contents - The teacher introduces the material

Task 1: Each group of students access the Internet and look for two pieces of information.

1.- The name of a robot used in treating autism;

2.- Two of the robot functions.

[4] https://www.youtube.com/watch?v=Z_eG8vjJEfI

[5] https://docs.google.com/presentation/d/1UyBbuwAJX-73ScfmNUtFQbBN90awoyDHvouAJcJlt_w/edit#slide=id.p

Students perform the task and present it aloud to the other groups.

Time: 10 minutes; Teacher-Students; Students-Students

Possible solution:

1- Bandit Camera; Keepon;

2- It uses motion sensors and surveillance cameras to calculate the child position; it attracts them into social games; it can perceive and synchronize to a person's move-ments; it focuses on improving the system of rhythmic intelli-gence.

Activity 3: Didactic game - ATA (answer - throw - ask)

Task 1: The teacher has a little ball; she asks a question related to the topic of the lesson and throws it to a member of a group. The student who gets the ball has to answer the question, throw it to a member from another group and asking her/him a question. The game continues until all the members ask and answer. If a student gives a wrong answer or doesn't know the answer, her/his team will be eliminated; and so on, until only one team remains, being nominated as winner.

Time: 10 minutes; Teacher-Students; Students-Students

Activity 4 - Advertising campaign

Task 1: Students are asked to militate for a cause - helping children diagnosed with autism to enhance their chances of being integrated, determining people to accept them more easily. They have to make a flyer, using the most appropriate words to transmit the most sensitive message, in order to achieve their goal. (5") Then, students share the flyers to the other groups.

Time: 15 minutes; Teacher-Students; Students-Students

Session 3 - Using robots in medicine - Advantages and disadvantages

Time: 45 minutes

Class management: group work (students are divided in three groups)

Activity 1 - Brainstorming

Task 1: The teacher challenges students to use their general knowledge to perform this task. The leaders of the groups are invited to pick up an envelope. Inside the envelope there are the following themes:

• Doctor's advantages of using robots;

• Patient's advantages of using robots;

• Disadvantages of using robots.

The leaders present teams' tasks, after the working time has expired (5 minutes).

Time: 10 minutes; Teacher-Students; Students-Students

Possible answers:

• Doctor's advantages of using robots:

- He operates seated, in a comfortable position, being more relaxed;
- He benefits of 3D viewing and does not depend on help for repositioning the room.

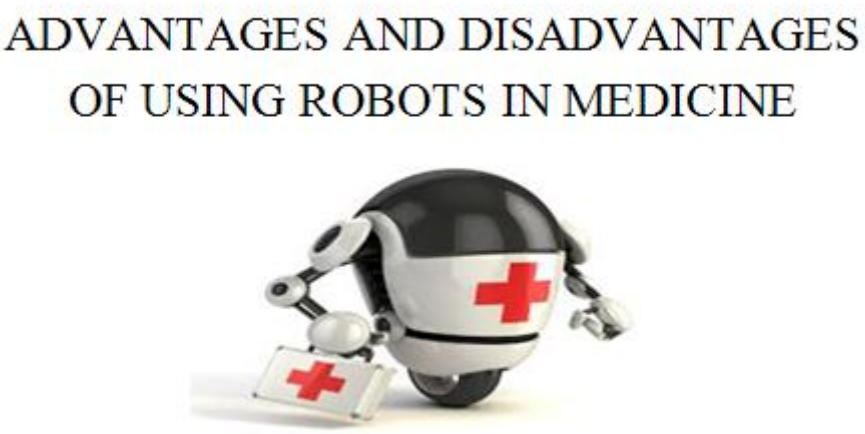
• Patient's advantages of using robots:

- Reducing incision size;
- Diminishing intraoperative hemorrhages and diminishing transfusion needs;
- Reducing the pain;

• Disadvantages of using robots:

- Imposes a large number of training hours;
- The space occupied by such a system in the operating room is large;
- More people are needed to operate the robotic system.

Activity 2 - Presenting[6] the content



Time: 12 minutes; Teacher-Students

Task 1: Word order. Students get little notes with scrambled words. They need to unscramble them to build complete sentences. Each sentence is different and has another message. Each group must express pros and cons related to the message they got. Then they share them aloud, to the other groups. (5 minutes)
Time: 13 minutes; Teacher-Students; Students-Students

Note 1
Unscramble the words to make correct phrases:
the that robot can interesting therapy doctors for make using more consider children

Note 2
Unscramble the words to make correct phrases:
future a with present the thing also of still many robotics the opportunities but a thing job is of

Note 3
Unscramble the words to make correct phrases:
help reduce robots care waste and save improve costs patient hospitals

[6] https://docs.google.com/presentation/d/1VkG4_b3KlQ0AYt6H4LAYoGT2p5ytyRIt_iQxmVvz4Tc/edit#slide=id.p

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

Keys

Note 1: Doctors consider that using the robot can make therapy more interesting for children.

Note 2: Robotics is still a thing of the future, but also a thing of the present with many job opportunities.

Note 3: Robots help hospitals save costs, reduce waste, and improve patient care.

Activity 3 - Writing a short composition

Task 1: Each group of students get worksheets. They need to be creative and imagine they are a robot and think of a name, type of robot and functions they could have in order to help people. Students fill in the worksheet and then each leader shares the groups' ideas. (5 minutes)

Time: 10 minutes; Teacher-Students; Students-Students

Worksheet

If I was a robot, my name would be .....

I would do .....

.....

I would help people ..... because

.....

I would like to live in ..... because

.....

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

YOUTH MWPE+

MULTILINGUALISM AND WORK PERSPECTIVES IN EUROPE

GREECE

SELF-MOVING ROBOT

CLIL LESSON GENERAL LAYOUT

1.- TITLE OF THE UNIT

SELF MOVING ROBOT

2.- SUBJECTS

ICT, English language, science

3.- STUDENTS' LEVEL/AGE

Secondary School (12 - 15)

Intermediated, Mixed Ability Class

B1 according to CEF (Common European Framework)

4.- GROUP SIZE

25 students in class (5 pupils in a group)

5.- TIMING

40 – 45 minutes

6.- PLACE

Computers' Lab

7.- INTRODUCTION

This Didactic Unit aims at studying the self-moving Robots and its usage in today's world through the practice of research process, data collection and presentation. The students acquire knowledge that will help them understand what a Robot is and why are we using robots as well as to get acquainted with the structure of a robot. They are asked to present to the class everything that they learned about robots on their search.

8.- LEARNING OUTCOMES

• Being able to discuss the concept of Robots and its effect on people's lives.
• Identifying that the sector of robots is an inter-disciplinary one, as it includes aspects of Sciences, Technology, Engineer, Math.
• Developing effective internet search skills and selection of appropriate information.
• Practicing in producing speech with the help of the means offered by technology.

9.- SUBJECT CONTENT

• The genre of Robotics and the Sciences, Technology, Engineering and Math.
• Different types of robots related to human needs.

10.- LANGUAGE OBJECTIVES

• Clarifying the terminology STEM and Robots.
• Enriching their vocabulary.
• Practicing finding information using internet - computer technology
• Exercising the collaborative production of spoken and written language.

11.- TASK

A presentation about robots.

12.- ACTIVITIES

• Watching a video about robots and STEM[1]. (2.30 minutes)

• The students will be asked to search the net in order to find information about what a Robot is, why are we using robots, to name some different types of robots, to name the different parts of robots and where does its name originates from, what kind of sensors does it use, from what it is usually made, how does it move?

The students will present their findings to the rest of the class.

Play a game in order to prove the usage of Robots in the STEMS.

• Activities involved in the use of searching the internet about robots.

13.- DETAILED SESSIONS

Session 1

Timing: 25 minutes

• Create 5 groups of pupils, one or two students from every country in each group.

• Every group is going to use two or three computer connected to internet.

• Each group undertakes to carry out research in order to find information about the robots and make their presentations.

• Specifically, each team will deal with gathering information about the robots and

- What a Robot is
- Why are we using robots
- Name some different types of robots
- Name the different parts of robots
- Where does its name originate from,
- What kind of sensors does it use
- From what it is usually made
- How does it move?

[1] https://www.youtube.com/watch?v=v00mj0vRHUE

Session 2

Timing: 15 minutes

Game

• A student will be picked in order to play the role of the robot

• The 5 teams will play the roles of programmers.

• The programmer gives verbal commands for the robot to follow. The commands must be specific and not include any decisions by the robot. For example, 'raise your arm' requires the robot to decide which direction and how high. A better command would be 'raise your arm in front of you so that it is at shoulder height and parallel to the floor.

Here are some examples of good programming commands:

- Turn right 90 degrees
- Move backwards 3 steps
- Take one step to the right

Here are some examples of commands that would causes the judges to make loud buzzer noises.

- Raise your arm and turn on the lights
- Walk until I say stop
- Go into the next room.

14.- SOURCES

• **Motivation Videos:** https://www.youtube.com/watch?v=v00mj0vRHUE

• **Google search engine**.

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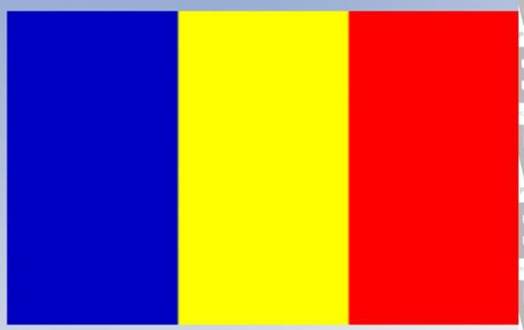

TEAMS

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María Amparo Miró Llinares

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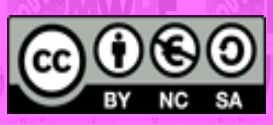

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