TITLE: Connecting sensors

LEARNING SCENARIO		
School:	***Duration (minutes):***	**90**
Teacher:	***Students age:***	**14**

Essential Idea:	**Connecting sensors**

Topics:

- Pupils deepen their understanding of the meaning, potential and risks of programming at a society level.
- Pupils learn to use artificial intelligence.

Aims:

- Pupils are able to design, create, document, and present programs and robots that solve a particular real-life problem. Created programs include search algorithms, tables and automatic functions. Several simultaneous events happen in these programs.

Outcomes:

- Pupils create more complex games, applications or mobile applications that simulate subject matters.
- Pupils learn about the potential and features of more advanced microcontrollers.

Work forms:

- individual work
- work in pairs
- group work

Methods:

- presentation
- discussion
- interactive exercise

ARTICULATION

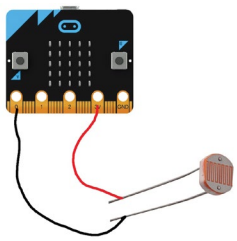
Course of action (duration, minutes)

INTRODUCTION

Teacher starts discussion with pupils:
We can attach many additional sensors to the micro:bit.

MAIN PART

One of the sensors that is easily attached is a GL5528 photo sensor.
That's basically a resistor that changes it's resistance depending on how much light is falling on it.
It has two pins and we don't need to worry about polarity when connecting it.
One of the pins is connected to pin 0 on the micro:bit, whil the other is connected to pin 3 V. (You can also connect it to the GND pin instead of the 3 V).



The next program reads the value from the photo sensor and displays it on the micro:bit screen.
Command pin0.read_analog() returns a value between 0 and 1023.
Depending on what type of photo sensor we're using, how it's connected and how much light is falling on it, the values we get will be between the numbers 0 and 1023.
If you put your hand over the sensor you'll see how the value on the screen is changing.

```
1 from microbit import *
2
3 while True:
4     ocitanje = pin0.read_analog()
5     display.scroll(str(ocitanje))
```

EXCERCISE

According to the previous example, pupils can design, create and test their own programs.
Examples:

https://makecode.microbit.org/reference/input
onButtonPressed

onGesture
onPinPressed
onPinReleased
buttonIsPressed
pinIsPressedisgesture
compassHeading
temperature
acceleration
lightLevel
rotation
magneticForce
runningTime
setAccelerometerRange
calibrate-compass

CONCLUSION

Pupils and teacher discuss and evaluate the presented solutions.

Methods		***Work forms***
presentation	***interview***	***individual work***
discussion	***demonstration***	***work in pairs***
work on the text	***role playing***	***group work***
graphic work		***frontal work***
interactive exercise /simulation on the computer		

Material:

- micro:bit

Literature

- https://makecode.microbit.org/reference/input
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  onGesture

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PERSONAL OBSERVATIONS, COMMENTS AND NOTES