Teaching programming in primary school:
curriculum, didactic methods, textbooks, online support
CodeInnova

Project co-funded by European Union under Erasmus+ Programme

TITLE: Micro:bit radio comunication

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

Essential Idea:	Micro:bit radio comunication

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

Project co-funded by European Union under Erasmus+ Programme

Teaching programming in primary school:
curriculum, didactic methods, textbooks, online support
CodeInnova

ARTICULATION
Course of action (duration, minutes)

INTRODUCTION

Teacher starts discussion with pupils:

A micro:bit has the abillity to communicate with other devices through a radio connection.

MAIN PART

The next program should be read on at least two micro:bits.

After you do that, you will notice that if you press the button A on any micro:bit, all the others will show the letter A on their display.

The same goes for the button B.

Program:

```python
1  from microbit import *
2  import radio
3
4  radio.on()
5  radio.config(channel=1)
6  radio.config(power=6)
7
8  while True:
9
10     if button_a.was_pressed():
11         radio.send('A')
12         display.show("A")
13
14     if button_b.was_pressed():
15         radio.send('B')
16         display.show("B")
17
18     primljeno = radio.receive()
19
20     if primljeno == 'A':
21         display.show("A")
22
23     if primljeno == 'B':
24         display.show("B")
```

Explanation of the code

import radio – imports the lybrary for radio

radio.on() – turns on the radio

radio.vonfig(channel=1) – defines what channel will be used for micro:bit.
The number can be from 0 to 100.

radio.config(power=6) – defines the strenght of the output signal.
The maximum strength is 7.

primljeno = radio.recieve[] – saves whatever was received to a variable called „primljeno"

Teaching programming in primary school:
curriculum, didactic methods, textbooks, online support
CodeInnova

Project co-funded by European Union under Erasmus+ Programme

EXCERCISE

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

For example:

send number

send value

send string

on received number

on received value

on received string

received packet

set group

set transmit power

set transmit serial number

raise event

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/radio:

Teaching programming in primary school:
curriculum, didactic methods, textbooks, online support
CodeInnova

Project co-funded by European Union under Erasmus+ Programme

send number

send value

send string

on received number

on received value

on received string

received packet

set group

set transmit power

set transmit serial number

raise event

PERSONAL OBSERVATIONS, COMMENTS AND NOTES