

Lesson Plan— Micro:bit

Using the Radio function

Code Playground



```
int x=10
for(int a=0; a<x; a++)
{
  if(a==x) // check for c
    break; // exit loop
}
```



Learning objectives

"I can use the micro:bit radio feature to communicate between two or more micro:bits"

Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

"I can design and construct models and explain my solutions."

"I can demonstrate a range of basic problem solving skills by building simple programs to carry out a given task, using an appropriate language."

Resources

- Laptops or desktop computers
- Micro:bits (one per computer)
- <https://microbit.org>
- At least one set of walkie-talkies
- A basic radio (digital or FM/AM is fine) or an online radio feed

Main activity

The micro:bit can be used in lots of creative ways, but did you know they can communicate with each other? Ask the children if they know how, and to share their ideas and suggestions

The micro:bit uses its radio feature to communicate with other micro:bits – it can send and receive messages.

How does radio work? Ask for suggestions. Radio communication works by sending information across space by using radio waves. Can the children think of any examples in everyday life where radio communication is used, and what information is sent?

Start by playing a radio channel as the first basic example – the information being received is the audio data (music/news etc). other examples include:

- Television
- Phones (both landline and mobile)
- Baby monitors
- SatNav/GPS
- WiFi

Devices that send information using radio waves are called transmitters. Devices that receive information are called receivers. Devices that do both are called transceivers. Can the children separate their examples into the three separate categories of transmitters, receivers and transceivers? Which category does the micro:bit fall into?

Ask the children to code two micro:bits to send a question and answer between them. Assign each child/pair/group a number from 1-x, with two groups assigned to each number, and those two groups assigned either as question or answer. Set up the groups so that the 'questioners' don't know where their answer will come from.

The 'question' group should code their micro:bit to receive the answer when they ask the question out loud, the 'answer' group should code their micro:bit to send a yes/no answer based on a button press when asked the question.

Can the 'questions' guess who their answerer is by asking yes/no questions about their mystery partner?

Differentiation

Lower Ability/ASN

Match up the transmitter blocks with the corresponding receiver blocks using the micro:bit flashcards. Work with your partner to decide what message you want to send/receive and make sure each micro:bit is coded using the matching blocks.

Higher Ability/Extension

The children should code their micro:bit to be a transceiver (i.e. both a transmitter and receiver of information).

Think of a useful way to use the radio feature at home or at school using different inputs. For example, can the children code their micro:bits to let you know when someone is at the front door?

Plenary

Have the children play out the activity from the lesson

Swap over roles so that the questioners and answers get a go at both. Remember to re-programme the micro:bit

Assessment Questions

What is the name for a radio the sends/receives information?

Can you name some devices that use radio communication?