

# TEMPLATE for BEST PRACTICE EXAMPLES



- 1. Name of the project:**  
Sound Meter
- 2. Subjects covered from STEAM areas:**  
Science, Technology, Engineering, Art, Mathematics
- 3. Target group (age range and size of the group):**  
7-12 years old, unlimited group size / how many micro:bits there is
- 4. Duration of the activity:**  
3-4 hours
- 5. Keywords:**  
coding, sound meter, micro:bit
- 6. Key sentence describing context of the activity, followed by short description (200 words):**  
How to measure the loudness of sound (decibels)? How to prepare a sound meter by coding?

Students have to design their own model of a sound meter. Students incorporate knowledge from art, math, and computer science classes. They will learn about how loud different instruments are.

- 7. Description of the activity environment, including the list of materials and tools needed:**  
Environment: classroom  
Materials and tools:
  - iPad or a computer
  - micro:bit coding kit
  - musical instruments (i.e. piano, claves, drums, triangle, violin, trumpet)
  - cardboard
  - watercolors
  - pencils
- 8. Step by step, detailed description of the activity, including teaching and learning strategies:**  
Students are divided into groups of 3-4 students.
  1. Designing the body of the sound meter (Art)  
Students will design the outside body of the sound meter and the theme can be for example, an animal or a musical instrument. After designing students can start to prepare the body of the sound meter.

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### 2. Coding (Science, Technology & Engineering)

Students start coding the actual sound meter. The sound meter is made with a micro:bit coding kit. Students have to design how they are going to connect the micro:bit to a body of sound meter. Teacher can help with the code after they have taught the basic elements of micro:bit.

### 3. Testing (Engineering)

Third phase is to test the code in the micro:bit. The code should recognize different sounds.

### 4. Complete the sound meter

Students have to attach the micro:bit system to the body of the sound meter which they have prepared earlier. Then students can start to try different instruments by using the sound meter.

### 5. Measuring the noises (Mathematics)

Teacher will show what is a spreadsheet that they are going to use when measuring the different kinds of sounds. Students will make a spreadsheet in Microsoft Excel (or similar) where they can make notes on how loud the sound is. Next phase is to measure the noises and write the results to the spreadsheet. Students can try different instruments to make a sound and compare the decibels.

### 9. Learning objectives/competencies:

coding with micro:bit, decibels and measuring them, groupwork, designing, spreadsheet

### 10. Evaluation/Assessment guidelines:

self-assessment, research report

### 11. Lessons learned:

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### 12. Additional information/Links:

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### 13. Contact person:

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