



Coding a Microbit Musical Instrument

Grade level(s) I use with: this has primarily been a 5th / 6th grade project, although the few times I have used it 7th and 8th grade they really enjoyed it.

Lesson Overview: this often follows a set of lessons explaining and practicing with simple circuits and can serve as an introduction to adding a microprocess to

a circuit so that it can do a lot more than just buzz, light up an LED or make a motor spin.

Students are tasked to create a simple musical instrument that they can use to play a song note by note - using a microbit, an external speaker and whatever “making” materials they want.

The basic task is for them to create an instrument that they can use to “play” a simple song. This requires that they understand and can code using the accelerometer, this way they can play individual notes when they press buttons as well as when they move the microbit so that it is logo up / down / left etc. Using this it is possible to get up to 8 different notes - which can play quite a large number of simple tunes - think Mary had a little lamb, Jingle Bells, etc. But there is always a student coming up with the Star Wars Theme or some current pop song chorus. The assessment is that they have to record a flipgrid video playing their song - with a bonus if they are willing to sing-along, not real popular with my middle school kids :-). Here is a sample video that I have permission to share: <https://flip.com/s/LKxZhMRdamhm>

Materials and equipment I use:

- Microbit - we only have the V1 version, since the V2 has a built in speaker this project could also work but would lose the element of having to understand the basic ground, current and data alligator clip connections.
- Monkmakes external speaker - https://monkmakes.com/mb_speaker typically about \$10, you will need one for every microbit along with 3 alligator clips for each pair of microbit / speaker
- Making stuff - cardboard works great since it can be formed into any shape, but we’ve also had some great creations with tubes, cans, boxes, etc. I tend to avoid hot-glue since it is not very friendly with microbits and external speakers . . . lots of masking tape is my favorite.

Related links:

Here is the slide deck that I used in 2022 when I last taught this unit - feel free to copy and use, and if you make improvements love to have you share them with me!

https://docs.google.com/presentation/d/1sOgluTrfdk-nLhA8fnAEVWSGmun_E7_SVOmuD4_T61o/edit?usp=sharing

Ongoing questions and ideas for the future:

There are a wealth of speaker add-ons for the microbit, I've only explored the microbit and it works but I wonder if there are options that could sound alot better - that would be fun. Also some cool possibilities for a similar project using