

■ Incorporating coding and project based learning in the music classroom

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Who are we?

Sarah Stratton

- 17th Year of Teaching in OPS
- 1st Year as Music Supervisor
- Taught high school band & choir, middle school band, and elementary travel band
- Masters of Music Education & Masters in Educational Administration
- 2 Years of Research Experience for Teachers (RET)

Lindsay Wilson

- 13th Year of Teaching in PLCS
- Taught high school band & choir, middle school band and choir, and k-6 general music
- Masters of Music Education & Masters in Computer Science Education
- 2 years in the ITEST SPARCS program at UNO
- 2 Years of Research Experience for Teachers (RET)

How did we get here?

1 | UNO SPARCS PROGRAM

- NSF grant for incorporating computer science into the content areas
- Applied with the idea that I wouldn't be chosen because they wouldn't be able to incorporate music
- Rekindled my own love of programming and computational thinking
- Developed lesson plans using the idea of PBL

2 | UNO RET PROGRAM

- Incorporate movement tracker into research project
- Final project used Micro:bits to track and provide feedback on posture while playing or singing.
- Completion of research paper and poster.
- Presentation at Nafme national conference
- 2nd Year of RET

3 | TO OUR CLASSROOMS

- Created lesson plans for RET, practiced in our classrooms.
- Lindsay- Did a literature review on the application of wearable sensors in music making
- Started research pre-COVID for a master's thesis and completed it in July 2021
- Sarah - 2nd Year project into EarSketch Project with students

Why include coding in the classroom?

- Link between the subjects is closer than one might think:
 - Learning methodically
 - Learn by using different strategies
 - Combining creativity with logical thinking
- Growing interest and accessibility of technology in schools
 - Many schools already have the technology needed to incorporate right now
 - Many things are very low cost for high engagement
- Hands-on involvement
 - Creating Music
 - Manipulating music in new ways
 - Create a do-it-yourself approach without barriers of deep understanding in music theory

Coding with EarSketch

- **Free, online platform - EarSketch**
 - Easy to sign-up - only a username and email address - no other student information is needed
- **Combines coding in Python or JavaScript with Music**
- **Use your own music or use the provided sounds**
 - Student Project #1
 - Student Project #2

Project based learning in Chorus class

1. **Give the students a “problem” to solve**

i.e. you are creating a game/app/ technology to help students who need support in learning the notes on the staff

a. [Project Pitch](#)

b. [sample project guide](#)

2. **Can use as much or as little technology as you want**

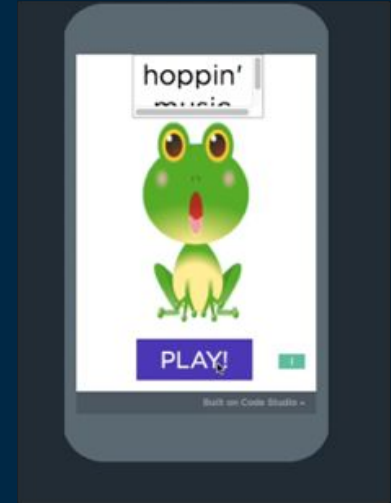
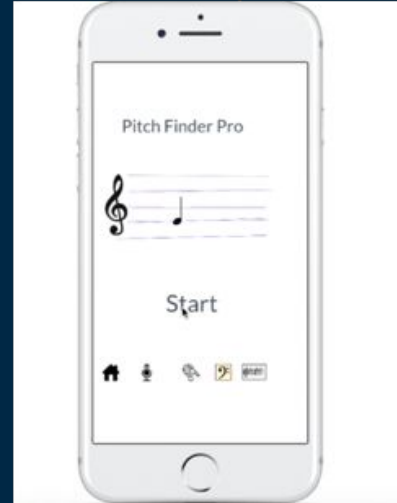
Student projects can be as basic as drawing out the different “screens” on paper to show how their app would work.

Project based learning in Chorus class

1. **Students can push themselves to try new things**

i.e. you are creating a game/app/ technology to help students who need support in learning the notes on the staff

- a. Cool student project
- b. computational thinking with music



Let's Try It

EarSketch

[EarSketch.com](https://www.ears sketch.com)

Assignment Details:

<https://use.vg/IJ0I3H>

- Must include an intro (at least 4 measures)
- Must have a chorus (at least 16 measures)
- Must have an ending (at least 4 measures)
- Must have at least 4 different tracks (i.e. bass, guitar, vocal, etc.)

Micro:Bits

<https://makecode.microbit.org/>

Assignment Details:

- [Lesson plan outline](#)
- What do these sensors do?
- How do we look at the data they collect?
- How could we use that data in the real world?
- [Student materials](#)
- [SIMULATOR](#)

What can you do next?

[Hour of Code](#)

[Makey Makey & Circuit Playground](#)

[Lending library](#)

[Unplugged](#)