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

Assignment Details:
https://use.vg/IJ013H

- 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