



Class 1: [learn] “The Science of Sound”

INGREDIENTS: Attitudinal and conceptual assessment forms (6 each), pencils (6), speakers with awesome bass, a candle, a lighter, a metronome, some sort of waveform demo on the computer

OBJECTIVES -- Students Will Be Able To:

1. Define and explain Learning Exchange ground rules.
2. Conceptually describe how sound travels.
3. Understand musical concepts such as beats, measures, key signatures, and sampling.
4. Describe what they expect from Learning Exchange and what they want to get out of it.

AGENDA:

- INTRO: Setup and introduction/icebreaker for names - say your name and your favorite musical artists.
- 5 MIN: Introduction to the course - review of PASA ground rules and expectations. “This will be challenging, but we’ll help you when you get stuck and you’ll do amazing things,” etc. “Brain is a muscle.” Have *them* define and give examples of what respect means, and what they expect from us
 - Challenge of the course
 - Laptop use
 - Respect (we respect students, they respect us + each other)
 - Let them come up with their own rules
- 10 MIN: The Science of Sound. How does sound work?
 - Travels through the air, yes. But how? (lead them to waves)
 - Concept of a wave - what is it? Show a waveform on the computer screen
 - We will learn what this means next week (build up excitement)
 - Ask them if they’ve felt bass. Demo bass and show a speaker blowing out a candle. Touch the speaker, feel the waves

- Also, get a bowl of water and project over it -> see the waves in H₂O
- 10 MIN: Music specifically. How does music work?
 - Beats, time signatures (basic counting, 4-counts); metronome to demonstrate
 - [overflow] Key of a song?
 - Sampling - what is it (in rap)?
 - Examples: Whatcha Say (Jason Derulo) and Hide and Seek (Imogen Heap); Float On (Modest Mouse) and The Show Goes On (Lupe Fiasco); Stan (Eminem) and Thank You (Dido); Stronger (Kanye) and Harder Better Faster Stronger (Daft Punk)
 - Demo - reverse-engineer a song from the sample
- [overflow] 5 MIN: Overview of the rest of the course
 - Overall goal: teaching how to manipulate and mix music into original remixes and creations. But to get there:
 - Learn more about how sound waves *work*, what the representations on the screen *mean*, and how we can get different songs of different beats/keys in sync
 - Learn how digital music is stored and transmitted
 - Learn how we can manipulate digital music by putting effects on it (delay, reverb, equalization, compression, Auto-Tune, etc.)
- 10-12 MIN: Pre-assessments. Important so that we can tailor the program to your interests
 - Two parts: attitudinal and conceptual
 - Note: we should add music preference information to the attitudinal survey, so we can add songs they like gradually (favorite artists, favorite genres, absolute favorite songs; if they would want to write/record their own rap; etc)
- EXIT TICKET: Tell us (and your peers) about something you want to learn in this course.
 - ~2 minute brainstorm, write it down on a slip of paper if you want (give them the option), then share

Class 2: [lab] “The Audacity of Hope”

INGREDIENTS: Lab 1A/1B, headphones (6), headphone splitters (3)

OBJECTIVES -- Students Will Be Able To:

1. Perform basic functions in the Audacity user interface.
 - a. Record audio.
 - b. Import tracks and create new ones.
 - c. Scroll and zoom.
 - d. Mute and solo tracks.
 - e. Select, cut, copy, paste, and delete music.
2. Align a split-up track (different instruments) to create a song.
3. Cut a sample, repeat it, and add a drum loop to create a beat.

AGENDA:

- INTRO: Quick recap of Monday’s class. What concepts did we cover and why? (maybe a video opening about the science of sound and speakers, if we can find a cool one)
 - After the intro, split into groups of 1 teacher, 2 laptops, 2 kids to start mixing
- 10 MIN: Introduce Audacity. Show students how to launch the program. Have them create a (stereo) track and record their voice, then create another and record onto it.
- 10 MIN: Scrolling, zooming, selecting, cutting, copying, pasting, deleting. Muting, un-muting, and soloing tracks.
- 10 MIN: Open up **Lab 1 and 2**.
 - Lab 1: Students will have to use the selection and time shift tools to align three vocal tracks sequentially to the beat of an instrumental. The tracks will already be in the same BPM, but will be mis-aligned. Students will also have to amplify one track.
 - Lab 2: Students will sample from a song with a strong beat, then loop the sample and overlay lyrics. Again, the tracks will already be in the same BPM, but students will have to make sure they loop precisely the right amount to sound good and stay on beat.
- EXIT TICKET: Demonstrate a function in Audacity (as simple as you want, but can’t repeat) before you leave.