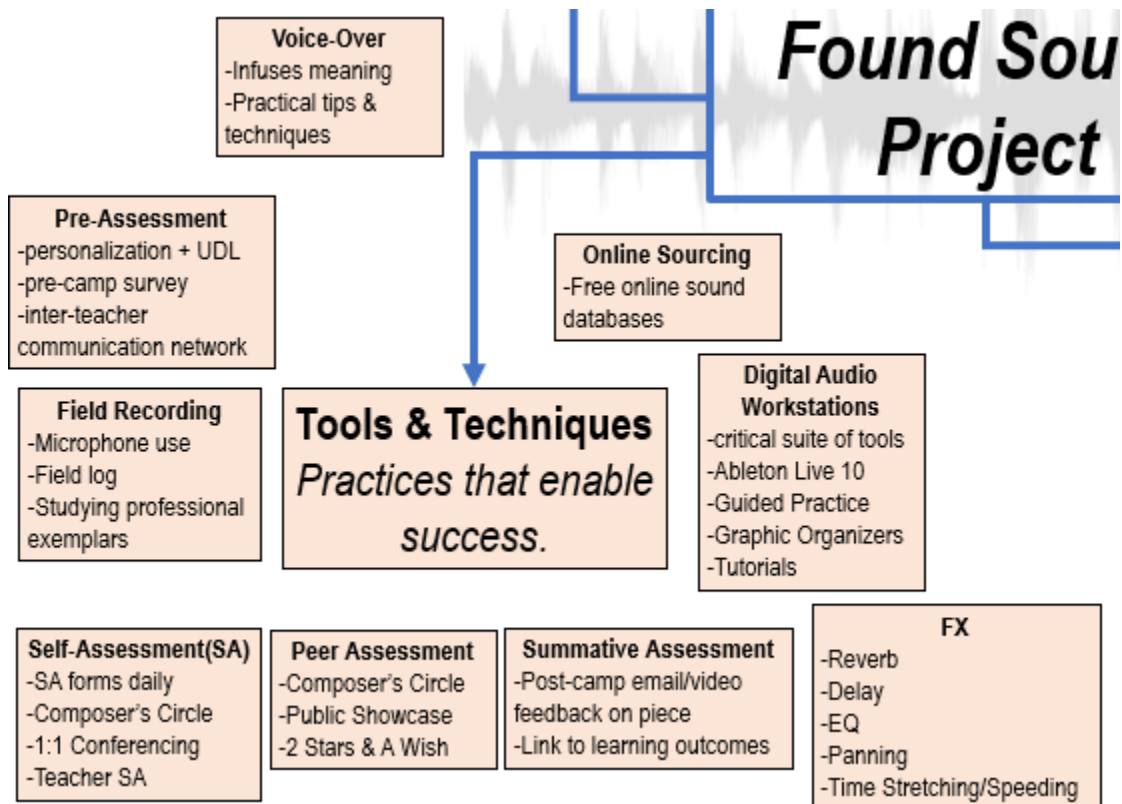


Found Sound Project Document #3

Tools & Techniques



This section gives a brief introduction to some of the Tools & Techniques that learners will utilize in the Found Sound Project (FSP). This answers: "How will the participants assemble their sound composition?" Teachers wishing to use aural tools and projects in future classes will benefit from adapting these techniques and using these tools in contexts that suit their learning goals.

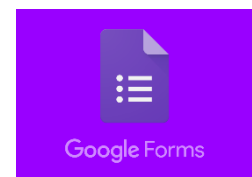
Pre-Assessment

1. Pre-Project Survey

Prior to the camp, send a survey to learners to premeditate their readiness and any needs they may have. Consider asking about the following:

- prior experience with music performance and composition (instruments, voice, etc.)
- prior experience with music technology (DAWs, recording devices, etc.)
- ask about learning preferences including:
 - how they work best in groups, what they need
 - how long they can typically stay on a single task
 - whether the student has learning exceptionalities that they would like us to be aware of
- allergies, medical needs, mobility
- ask learners or parents to pose any questions they may have (and follow-up)
- goals for the camp and why they have decided to take part

Utilize the information from this survey to consider whether your planned activities and camp structure suit these needs. When a mismatch is discovered, apply UDL principles to accommodate.



2. Inter-teacher communication

For another angle on pre-assessment, conference with each learner's private teacher at the studio if they happen to take lessons there. This will give you an instructor's perspective on the student's learning profile.

Self-Assessment

As described in the Learning Outcomes, self-assessment is a critical skill for artists. Some tools and techniques include...

1. Self-assessment forms

Each day, the student will complete a simple self-assessment form, pictured below. These will be reviewed by the facilitator as formative assessment and to guide preparation for the next day's activities, lessons and learning.

**Found Sound Project
Daily Reflection**

Name: _____ Date: _____

Today, I really liked learning about

Something I'd like to learn more about or practice tomorrow is...

The most interesting sound I heard, discovered or created today was...

**Found Sound Project
Project Reflection**

Name: _____ Date: _____

What is something you accomplished today on your sound creation?

What is something that challenged you today on your sound creation?

Describe one new skill or tool you used today that relates to field recording, audio editing or composition.

2. Composer's Circle

This daily routine will give students an opportunity to reflect and share on their intentions and goals. Students will have an uninterrupted opportunity to speak on a prompt provided by the facilitator. Each morning, students will make intentions and goals. At the end of the day, they will reflect on success, challenges and next steps.



3. 1:1 Conferencing

During studio time when students are arranging their compositions, teacher should be in the constant habit of circulating, checking in with students and priming their thinking (Spencer, 2017, p.5)

4. Teacher self-assessment

At the bottom of each lesson plan is a section to reflect on key questions and concerns. This camp will be run twice this summer and each time a lesson is delivered is an opportunity to refine, reflect and improve.

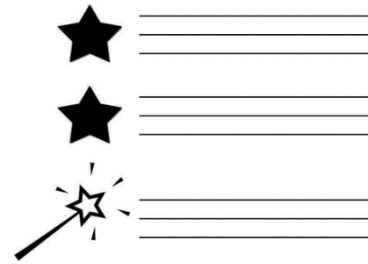
Peer Assessment

1. Composer's Circle

After sharing their own experiences, the Composer's Circle will open up into a dialogue lead by the facilitator. This is an opportunity for students to share their opinions, critiques and suggestions to others.

2. Public Showcase – 2 Stars & A Wish

During the public showcase, each camper will prepare a 2 Stars & A Wish slip. This will indicate two things that they really liked about the person's composition and one thing they wish had been there. The facilitator will collect these, vet them for acceptable content and include this feedback in the summative assessment feedback.



Summative Assessment

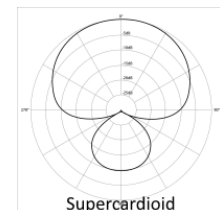
1. Post-camp email/video feedback

The camp facilitator will take time after camp has concluded to prepare detailed feedback for each student on their composition and performance within the camp. This feedback will be prepared in the weekend following the camp and be as specific as possible, making reference to the learning outcomes and to specific moments/effects/choices within the composition. Finally, this email will include a synthesis of the peer feedback provided in the 2 Stars & A Wish activity above.

Field Recording

1. Microphone tutorial

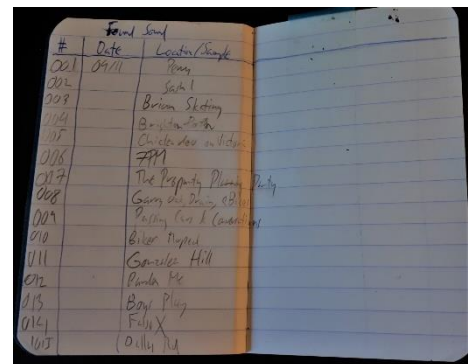
The sound recordists primary tool is their microphone. Zoom recorders have a super-cardioid polar capture patterns. Understanding this feature can be accomplished best through experiential exercises and trial and error. Zoom recorders have audio-thru jacks which allow the recordist to hear directly what is being captured through headphones. Students can experiment with different microphone positions for different goals. Sometimes recordists are interested in high fidelity: capturing a sound with documentary precision. Other times, we manipulate our microphone position intentionally to exploit expressive effects.



2. Field log

Each student will be provided with a pocket-sized recording field log which will help to organize their samples and catalogue key info. In addition to the date and location, the log is a place for students to note interesting sonic features, identify the subject of each recording and provide timestamps for memorable moments.

3. Professional exemplars



To give students an audiovisual introduction to the concepts around field recording, learners will view [Sound Fields: Adventures in Contemporary Field Recording](#). This 12-minute documentary directed by Sam Campbell provides an accessible glimpse into a few key aspects of field recording including microphone use, spatial awareness and how to manipulate environments to find sound. It also touches on some of the philosophy of soundscaping related to presence, attention, mindfulness and the artist's process.

Voice-Over

One way to communicate and infuse meaning into compositions is by using Voice-Over. This may be an opportunity to include some of the written word associations/fragments of text gathered during earlier activities in the camp. Or, a way to concretize their composition and clarify what their subject may be (*e.g.* a creek, a tree, *etc.*).

Practical tips:

1. Zoom recorders can be used as a high-quality USB microphone. When plugged into a computer, a prompt comes up asking how to connect to the computer. Option 1 (Storage) will allow access to the captured field recordings. Option 2 (Record) will load the Zoom recorder as a microphone, enabling students to capture audio directly into a Digital Audio Workstation.

2. When recording voiceovers, good practices include:

- preparing your words before-hand with a script on a music stand
- considering the emotion/affect of what you are trying to convey. This means *acting* with your voice.
- watching your posture. Just as singers maintain good support and posture, speech performers must do so as well. Record standing up.
- having a drink close at hand
- checking your levels with a test recording. You want a nice robust waveform with recorded audio level between -10 to -20 db. Never go above 0db as this will result in distortion and 'clipping'. Many audio recorders will let you know with red indicators that your audio is in the 'danger zone'.

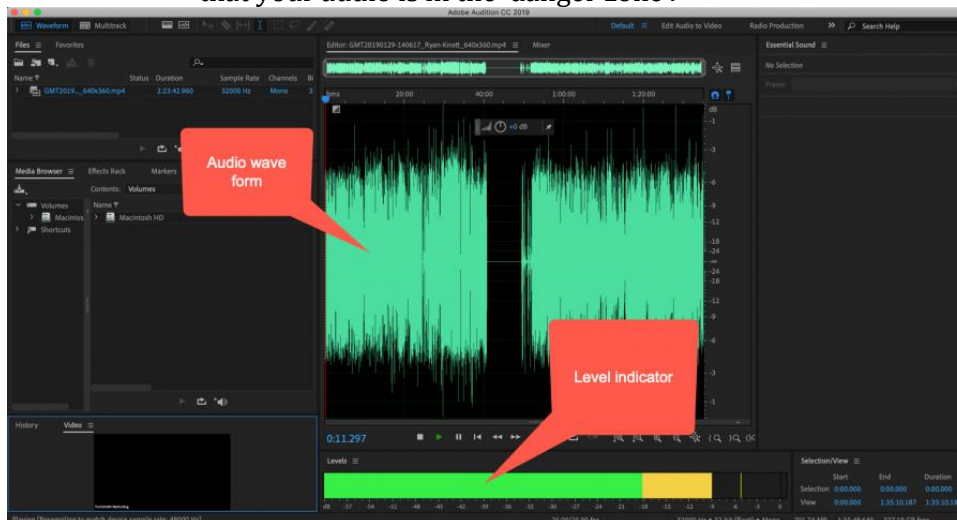


Figure 1 A robust wave form. Notice that is not 'clipping' by reaching the 0db of sound intensity.

- Being prepared to be surprised by the sound of your voice! It is natural to think it sounds different due to osseous conduction.

- Trying to record in a relatively ‘dead’ space (little reverb). If reverb or artifacts are present in the recording, there is no way to remove them. For information on various audio FX, please see FX section below.

3. Don’t worry about getting a perfect take. Don’t stop if you mess up because you can always fix it in post-production where takes can be edited later.

4. You can use claps or loud noises to mark off sections in your recording. These will be visible as tall lines in the audio waveform.

Digital Audio Workstations

Digital Audio Workstations (DAWs) are software suites used for recording, editing and producing audio files. It is the single most important tool in a sound producers repertoire, allowing them to capture sound, create sound, arrange samples in tracks, edit these samples and tracks and mix them into a final piece. The DAW used in the Found Sound Project will be Ableton Live 10, but other examples include Logic, Audacity and Adobe Audition.

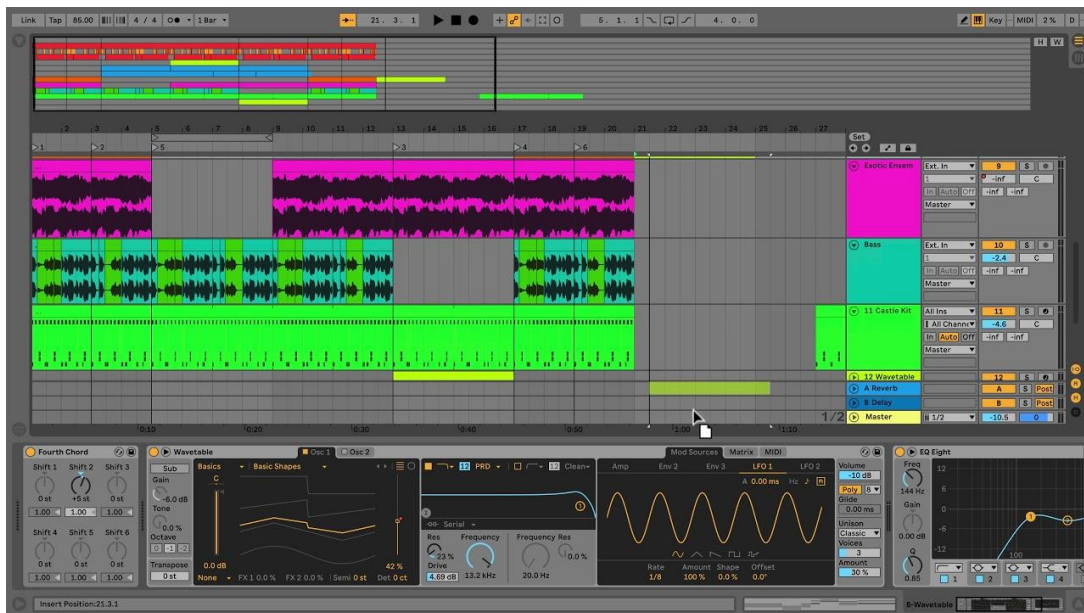


Figure 2 The user interface of Ableton Live 10, a DAW. Most DAWs are based graphically on the design of a multitrack tape recorder with many tracks arranged in stacks. The DAW displays the samples as coloured waveforms that change over time from left to right and includes standard navigation controls (play, rewind, record, etc). DAWs also include modules for controlling track settings, mixing tracks and applying plug-ins, effects, etc.

1. Guided Practice Sessions

DAWs are a tool which require direct practise to understand. This project is organized to include guided practice sessions each afternoon that introduce students to features of Ableton in a curated, gradual manner. We will begin by looking at the interface, importing clips, recording samples, creating tracks and arranging them. Next, they will be introduced to a suite of digital audio FX which can be used to manipulate sound. In each case, students will either be working with source audio that is provided to them or material that they have captured themselves. It is a very good idea for facilitators to familiarize themselves with the DAW they are using before class. I recommend going through the entire project that your learners will complete so that you can experience all the

steps from beginning to end. It is also a good idea to produce handouts with basic info and step-by-step instructions for common tasks (*e.g.* exporting final mixes, arming a track to record, *etc.*).

2. Graphic Organizers

DAWs have the potential to be visually overwhelming. Therefore, to keep learners' thinking organized, a graphic organizer that structures their vision for their composition will be useful. It is always helpful to have a physical draft to work on, edit, hold in your hand. When the entire project can feel overwhelming, a graphic plan can make it easier to take steps to fill in the gaps and complete tasks one at a time. Furthermore, by including areas to focus on 'affect', 'instrumentation', 'FX', you encourage students to not neglect a layer of the composition.

Composition Graphic Organizer

Composer Name: _____

Sketch the 'shape' of your composition here. Consider your intro, development and conclusion:

| Layer: | INTRO | DEVELOPMENT | CONCLUSION |
|----------------------------------|-------|-------------|------------|
| Sound subject(s) of this section | | | |
| Instrumentation/Samples | | | |
| Audio FX & Techniques | | | |
| Intended Affect, Mood, Tone | | | |

Figure 3 An early draft of a composition graphic organizer I will share with students.

3. Specific Video Tutorials

The world of YouTube is an incredible resource for gaining skill and understanding of DAWs. Popular DAWs like Ableton, Logic and Audacity have hundreds of free tutorials posted online where users guide a viewer through a particular process. Giving the students the skills to be able to search through and curate these videos is extremely valuable because this will empower them to do more self-study in the future. Students should be directed to high quality Youtube channels including

[Ableton Official](#), [InspirAspir](#), [Reid Stefan](#) and also be given tips for accessing the quality of a video (play count, like:dislike ratio and production quality). Introducing students to the educational uses of Youtube for aspiring musicians and creatives is a fantastic idea as it really expands the boundaries of their ability to self-teach.



FX

To keep it simple, I will focus on a suite of 5 fundamentally important FX that will be helpful in soundscaping. An awareness of these can be developed through tutorials during the afternoon in-studio sessions.

What are Audio Effects?

They are software devices/tools that change how an audio signal sounds. They are usually applied using a digital audio workstation and help to modify your captured and recorded sound to increase interest, expressivity, etc.

Useful website:

<https://blog.landr.com/audio-effects-plugins-guide/>

1. Reverb

“Reverb” is a contraction of the word reverberation. We experience reverb in our natural environments whenever we are in a cave, car-park or large room. If a sound is generated in an environment, two things happen: 1) the direct sound (“dry signal”) hits your ears, 2) many other sound waves bounce off surfaces in the environment and reach your ears later and with less energy as echoes (“wet signal”). Therefore, reverb is a series of overlapping echoes produced by a sound source. It creates a washy, sustained sound like holding onto a piano pedal or hearing a choir ring out in large cathedral. Reverb is used to shape the sound, add fullness, spaciousness and can make sounds appear bigger and wider.

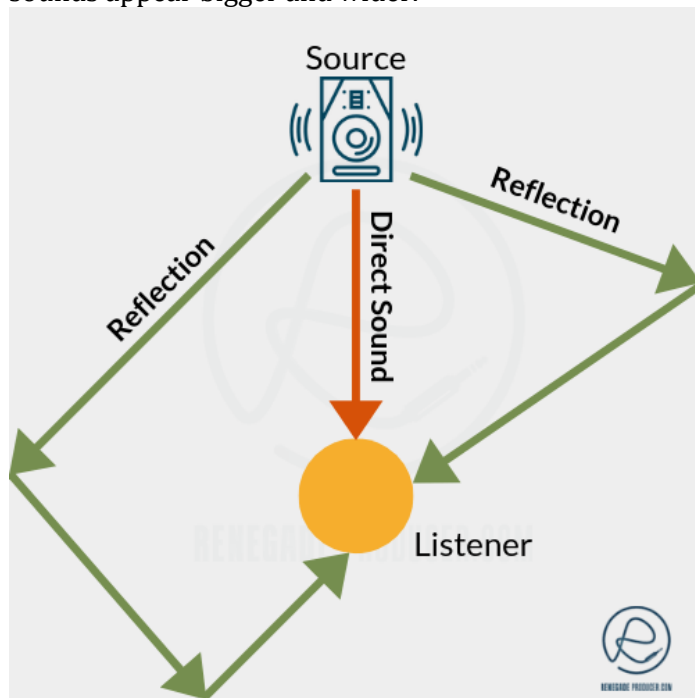


Figure 4 A diagram depicting acoustic reverberation in a physical space. The direct sound (“dry signal” in red) comes to your ears immediately before the reflections (“wet signal” in green). Digital reverb emulates this effect and applies it to an audio signal.

<https://www.renegadeproducer.com/images/Basic-Acoustic-Reverb-Diagram.png>

2. Delay

Delay is an effect where a sound is repeated/echoed over time. Delay can be applied to an entire track or a section of track. The original sound, known as the “dry signal” is first played, followed by

echoes known as the “wet signal.” By adjusting the ‘length’ of the delay (*i.e.* the time duration between the dry signal and the wet echoes), you can create a variety of effects. Short delays (*e.g.* 70 milliseconds) will fill out a sound, making it feel more robust. Long delays are useful for creating new rhythms and layers. By adjusting the feedback % of the delay, you control how loud each echo sounds compared to the last. Delay has some similarity to reverb, but typically is much less washy and produces more pronounced echoes.

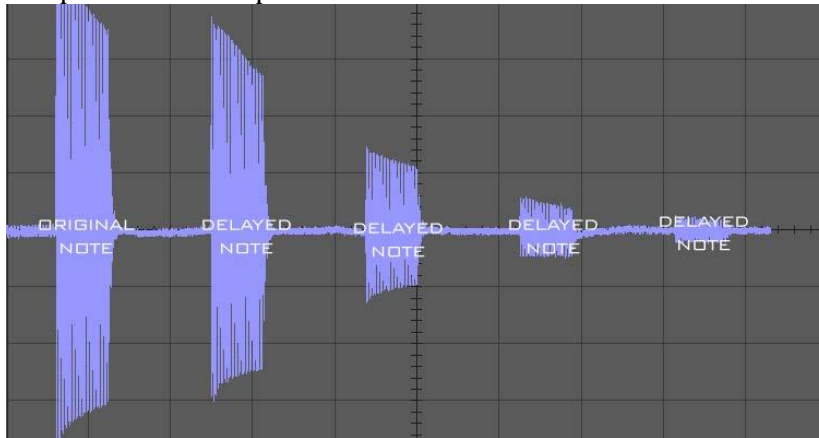


Figure 5 A visualization of delay with time on the x-axis and amplitude on the y-axis. The original ‘dry’ note is far left and all subsequent ‘wet’ notes are after. Notice that the feedback % is <100 because each repeat is quieter than the last – this is common.

<https://www.reasonexperts.com/digital-delay-line.html>

3. Equalization (EQ)

Equalization (EQ) is a technique used to shape the intensity of sound in a particular frequency or range of frequencies. It allows a sound engineer to control the amount of power/energy at particular parts of the frequency spectrum. Humans hear audio frequencies in a range of 20-20,000 Hz and an EQ allows you to boost or cut volume anywhere along the continuum from low to high sound. You could envision it like sculpting or carving a sound because it allows you shape the form of an audio signal.

EQ is typically divided into “bands” that control a particular range of frequencies (*e.g.* a 3-band EQ would allow you to separately adjust low, medium and high sound levels). EQ allows you to hone in on particular frequencies and ignore others, which is very useful in soundscaping for emphasizing particular portions of a sample. Cutting sound in the high band will make the sound darker, lower. Boosting the high end will make it iridescent and tinny. EQ is a key tool for mixing because it allows you to ‘carve out’ space for each sounds in the mix and helps prevent a mix from sounding muddy from sounds competing in a particular range.



Figure 6 A 5-band graphic equalizer. Each slider represents the power/intensity of sound at the various frequencies (ranging from 70Hz on the left to 2200 Hz) on the right. The current settings here have a slight emphasis on the low and high end, with a dip in t

http://musicstudio.bigredroo.com.au/Guitar_Amps_Acoustic_450_Lead_Bass.html

4. Panning:

Panning is the distribution of sound in a stereo (2-channel) space. It allows you to control which side a sound appears to be coming from. This is useful because it allows us to create the illusion of space, placing the listener in a sound space where different tracks are either L, centre or R. Just as we use our 2 ears to 'localize' sound in the real world, panning allows us to emulate this in our compositions. 'Hard Panning' means a sound will only come from one side. Usually we pan across the entire spectrum, L to R.

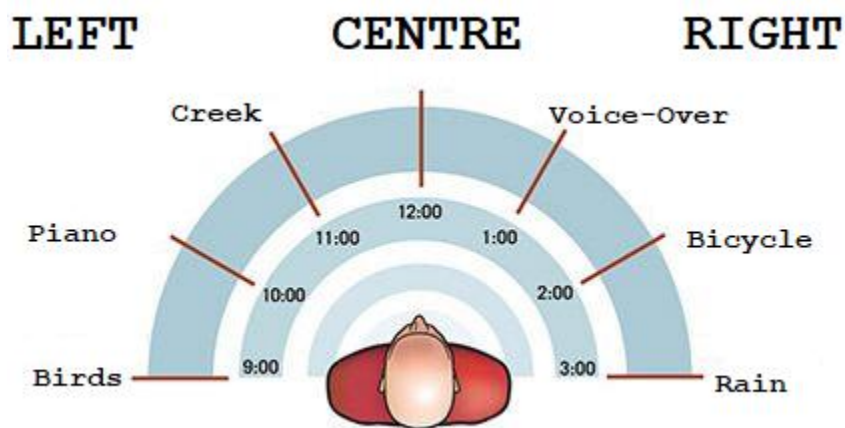


Figure 7An example of what a panned space may look like for a soundscape.

<https://i.pinimg.com/originals/51/26/4a/51264a1bd8ad160cbe5a4902a5a56ea5.jpg>

5. Time-Stretching/Speeding

A sound can be altered by slowing it down or speeding it up. This can result in very interesting effects. In soundscapes, ambient sound (*i.e.* background sound) can often be made in creative ways by extreme stretching of a sound sample (*e.g.* taking a 3-second clip of bird song and stretching it to 120-seconds). Similarly, long sounds can be shortened to create rhythmic and percussive effects (*e.g.* condensing a 10-second gong sound to 1-second). When stretching/speeding up sound, you can either elect to pitch shift it (meaning that the sound will lower in pitch if slowed or rise in pitch if sped up) or keep pitch stable (*i.e.* change in total time but without a change in pitch).

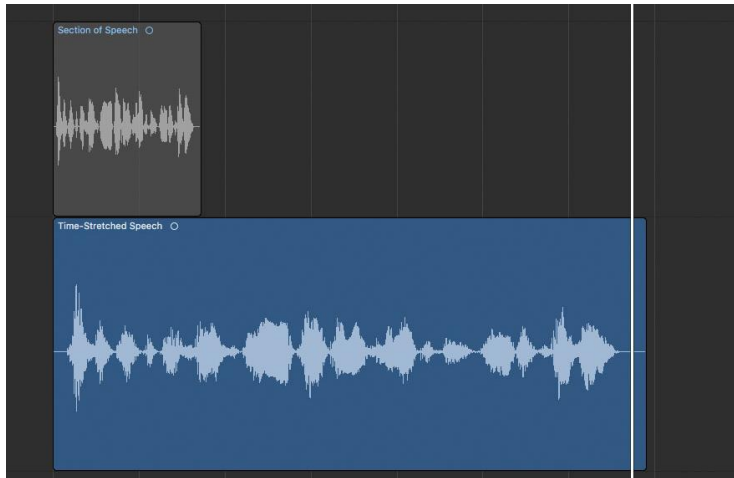


Figure 8 An example of time-stretching. A short spoken word clip (gray) has been stretched to 3x its original length to produce a longer audio clip (blue).

<https://www.soundonsound.com/techniques/sound-design-ambient-music>

Online Sourcing

Students will not be able to capture all the sound effects that they will want or can imagine. Therefore, students can source samples online.

1. Free online sound databases

Students should be introduced to searchable sound databases where audio samples can be downloaded for free. Examples include [Freesound](#), [SoundBible](#), [ZapSplat](#) and [SoundGator](#). The nice thing about all these sites is that you do not need to worry about licensing – all the effects are openly available (usually because they are Public Domain works or under Creative Commons Attribution).

References

Spencer, J. (2017). The Genius of Design. *Educational Leadership*, 74(6), 16–21.