

Components of a Digital Technology Music Class

Approaches to Music Technology and Training to support the pedagogical practices in the Regent Park School of Music's Community Music Program

Document 2: EDUCATIONAL WORKSHOPS

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Emily Collins is a Toronto-based interdisciplinary researcher, arts administrator and PhD student in Cinema and Media Studies. She has worked across arts organizations in local and international settings, including the Walter Phillips Gallery at the Banff Centre for Arts and Creativity, Festival Scope (Paris), VUCAVU (Toronto), PUBLIC Journal (Toronto), and the Toronto International Film Festival. She holds graduate degrees in Arts and Culture from Maastricht University (Netherlands) and Cinema and Media Studies from York University (Toronto). Situated at the intersection of film and media, sound studies, cultural studies and gender studies, Emily's PhD research considers practices of deep listening, sonic epistemologies and embodied soundscapes. Namely, her project examines how sonic intervention and experimentation within audio-visual works can function as tools of resistance, instruments for disruption and modes of trans-sensory knowledge formation.

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Joel Ong is a media artist whose works explore emergent ways of interfacing with the environment through hybrid discourses of art and science. His works often begin in improvised ensembles where members come in the form of live instrumentalists, robotic assemblages, scientific apparatus, and digital data. Ong is an alumni of SymbioticA, the Centre of Excellence in BioArts and DXARTS at UW(Seattle), and is affiliate artist at UCLA ArtSci Collective. He is currently Assistant Professor in Computational Arts at York University in Toronto, and Director of Sensorium: the Centre for Digital Arts and Technology.

Walter S. Gershon is Associate Professor of Critical Foundations of Education and Program Coordinator of Urban Education in the Department of Language, Literacy, and Sociocultural Education at Rowan University. His scholarship focuses on questions of justice about how people make sense, the sociocultural contexts that inform their sense-making, and the qualitative methods used to study those processes. Although his scholarship most often attends to how marginalized and vulnerable youth negotiate schools and schooling, Walter is also interested in how people of all ages negotiate educational ecologies outside institutions. In addition to peer reviewed articles, book chapters, and other scholarly publications, Dr. Gershon is editor and/or author of five books, including two national book award-winning monographs.

Peter Appelbaum is Professor of Education at Arcadia University in Philadelphia, USA, where he directs the sTRANGELY fAMILIAR mUSIC gROUP. He works with invented notation and sound structure composition, environmental sound art, and expanded conceptual definitions of sound; he plays horn and cello, and uses ethnomusicology as a tool for community development and academic collaborations. Appelbaum's scholarship is in psychoanalysis and public pedagogy, mathematics education, arts-based research and alterglobal social movements. His Children's Books for Grown-up Teachers: Reading and Writing Curriculum Theory (Routledge 2008) received the AERA Outstanding Book Award. Recent projects include: the Youth Mathematician Laureate Project (<http://yomap.org>), in which youth are provided the resources to serve as inspirational laureates, using mathematics as the art that builds communities characterized by joy, a can-do attitude, and the courage to act on their convictions; and Vomit! Slaughter! Block Chain Corporate Social Impact Investment Markets! Gleefully Murdering Public School!, a multi-media cantata interweaving experimental sound art, classic texts of educational foundations, circus arts, and projected media.

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INTRODUCTION

This section details activities that are designed to function in at least the following three ways:

- . Lessons that comprise a single or multiple sessions at RPSM
- . Portions of lessons of a single session at RPSM
- . Springboards for kinds of lessons and pathways for conceptualizing educational possibilities

In light of these and other such possibilities RPSM educators might imagine for the content provided in this section, we have elected to present these educational possibilities not as a unified curriculum but instead as a series of workshops that can be used in any order and according to a teacher's particular educational purposes and needs. Along similar lines, we understand that portions of each workshop, from a specific exercise to an idea a workshop is designed to address, can also be "pulled out" of the workshop for a specific aspect of a regularly scheduled RPSM session. For example, an educator might find that a particular breathing exercise designed to have students focus their attention on rhythm and time is a helpful "warm-up" activity at the beginning of every session.

Workshops have been divided into larger sections, those that attend to music and sound exploration in general and those that are more technology-focused. They have also been organized from those that require general musical knowledge and experiences and those for which some previous experience and understanding of technologies would be more helpful, whether that is taking the time to learn before teaching the lessons or knowledge accumulated over time.

All workshops can be adapted to work with students in a wide range of contexts and experiences including questions of age, musical knowledge, and familiarity with materials, analog and digital alike. This is also the case for how long the activities in each workshop will take and how each workshop will be pedagogically presented to the class depending on their age, experiences, and the teacher's expectations and needs.

MUSIC/SOUND EXPLORATION

Centering Together

Materials: None

The purpose of this activity is to change the affect/feeling of a classroom/workshop space through sound. It can be used as a moment to pause and de-escalate tensions or as a way to create a collective feeling at the beginning and/or end of a session. Although it may seem that this is an overreach for such a simple and straightforward exercise, the speed and depth at which it works speaks to the deep connections between people, ecologies, and sound. This can also be accomplished virtually (everyone voicing a pitch on zoom).

1. Educator selects a pitch
2. Students sing that pitch or a relative harmony on whatever octave they prefer in the moment
3. While there may be an inclination towards a more consonant harmony (e.g., 3rds or 5ths in Western Art theories), any pitch will do as the group is forming a sound as a whole. That sound will necessarily become a chord if there are harmonies. For this exercise, it is that the group produces a sound together that is of significance rather than if that sound is perceived as consonant or dissonant by any person or understanding of music (e.g., a m7b9#13 is still a chord produced collectively together)
4. Have everyone hold that chord until the feeling of the room palpably changes for the educator.

Improvising Communication [Walter Gershon]

Materials: None

1. Break students into pairs
2. Each individual in every pair practices making up a one bar phrase (in 4/4 to begin)
3. Then each person practices improvising a two measure phrase (in 4/4)
4. Pairs (or groups of 3 depending on numbers of students in class) practice making up simultaneous phrases
 - a. The phrases do not need to be interlocking or otherwise “fit”
 - b. The phrase can vary each iteration or carry parts that are similar
 - c. They do not need to be the same in any fashion other than length of time
 - d. Pairs/groups of three are placed together where the process is repeated (pair improvises with another pair; each pair deciding if they’re creating a phrase they’ll sing together or not)
5. Process is then done as a whole class
6. Variations
 - a. Longer phrases (4-8 measures)
 - b. Differing time signatures (e.g., 6/8, 7/4)
 - i. Both as a group together and/or different time signatures in pairs/groups simultaneously (e.g., pair 1 in 6/8, pair 2 in 5/4)
 - c. Entering/leaving as a round

Musical Ideas and Feelings [Walter Gershon]

Materials: None

1. Ask students to provide a definition of music
 - a. All definitions/ideas accepted and noted
 - b. Ask students to combine/use those definitions to create their own that speaks to the varieties of answers provided (pairs, small groups)
 - c. Share answers and then combine as a class
2. In pairs or small groups, ask students to produce a musical idea
 - a. Definition for a musical idea is not provided
 - b. Any form of expression or idea is welcomed
 - c. Those ideas shared to the whole group
 - d. Have the group produce a musical idea together
3. In same/similar process to musical idea, ask pairs/small groups to produce a musical feeling without defining what a musical feeling might be
 - a. As with musical ideas, all are accepted and noted
 - b. Once small groups produce the feelings, then produce as a whole class
4. In small groups (or half class if the total is small), ask the groups to:
 - a. Consider a musical idea that is expressed as a feeling (using an idea to produce a feeling, e.g., a legato repeated motif to create a sense of calm)
 - b. Consider a musical feeling that engenders an idea (using a “musical feel” to create the idea of X, e.g. playing quickly to indicate anxiousness)

Music and Emotions [Peter Appelbaum]

Materials: recordings or samples or memories of favorite sounds

1. Students share their favorite sound, why they remember it, what memories or feelings it conjures for them
2. Students discuss the types of sounds, the types of memories, and the types of feelings – the various ways in which sounds are connected to memories and feelings.
3. The group creates a chart of the different sounds, and what memories or feelings they are associated with. They add any new categories that the sounds evoke in each other as the discussion and activity unfolds.
4. The whole group discusses whether there are types of memories or feelings that are not in the chart, and whether they can think of any music or sounds that are associated with those, as well. They are added to the chart.

What is Good Music? [Peter Appelbaum]

Materials: internet access with decent sound quality.

1. Students bring their favorite song/music or decide when they arrive
2. The group listens to excerpts they select, or the whole thing, depending on the size of the group, the willingness or capability of the members to sit still and listen, or the goals that the instructor has for this activity. They describe why it is “good,” that is, what *they* like (this develops a language that the group can use to discuss music)
3. The facilitating teacher shares some samples of music *THEY* like that they would use the same words to describe, and the group reacts to the teacher’s choices by sharing whether they can hear the same qualities or not, and why. The teacher should think of types of music that the group members did not use themselves, to extend their sense of how these words might be used in different contexts.

Found Orchestra [Peter Appelbaum]

Part 1. A.

Materials: Anything right here in the room

1. Students explore any objects they can think of in the space they are in, and experiment with ways to produce sounds with them. Tables can be gently stroked, slapped, tapped with different fingers, in different places. The floor can be slid across with one's body, with a shoe, with a hand, stomped on, tapped quietly, slapped, and so on. Water bottles can bounce on a table or a leg, can be tapped with one's finger or hand, can be blown across, etc. It is best not to make any suggestions or model any types of methods.
2. If students are struggling, the teacher can model several very different ways to make sounds.
3. Don't forget bodies – tapping one's head, whistling, slapping a leg or a tummy, all produce different sounds, using hands like sandbags and sliding them. Snapping fingers. Singing. Talking. Screaming, whispering.
4. Discuss the types of sounds and how they are similar and different – high and low pitches? Loud and soft sounds (dynamics)? Long and short sounds (duration)? Same pitch but very different sound (timbre)?

Part 1. B.

Materials: same found objects that were used in Found Orchestra 1.A. ; paper and markers

1. Students get into groups of 3-5 and create a mini-composition to perform on their found instruments. They are instructed to come up with a piece of music that they are remembering, and not one they are making up on the spot, different each time they play it. One way to do this is to put on paper some kind of pictures or shapes or colored marks that indicate when, how and in what way each instrument is to make its sounds. This is an early experiment in "invented notation." It can look like anything, as long as they can look at it and remember what it means. (This can take anywhere from 10-40 minutes)
2. The small groups practice their mini-composition, "reading" the invented notation they created.
3. Groups perform their compositions for the other groups. The audience describes back to the composer-performers what they noticed that was interesting about their use of their instruments or the ways that the different voices worked together in their composition.
4. The group shows their invented notation and explains how it worked for them – what the shapes, colors, symbols and so on meant for them.

Part 2. A.

Materials: everyday objects – either brought in by the students, or a large variety of objects are collected by the teacher and available in the room when they arrive – bring nothing valuable that you worry could be damaged or lost.

1. Students are asked to bring in everyday objects that they think could be "good" instruments – one possible definition of a good instrument is one that can make at least 5 different sounds. (that is, if you cannot come up with five distinctly different sounds with a collection of keys on a keychain, then it is NOT a good instrument for you.)
2. Students are challenged to prepare a mini-composition (about 10-30 seconds long is adequate) that demonstrates the capabilities and range of their instrument. They may need to practice some techniques! – the teacher should introduce this idea that they need to develop experience playing their instrument over time, practicing the different ways to produce the sounds, and in different combinations.

3. Discuss ways to extend these instruments ... for example, one empty bottle could be included in a collection of bottles, each of different sizes, or filled to different levels with water; a keychain with keys might be dropped on different surfaces that the musician carries with them, or expanded to a collection of different chains with different collections of keys. Paper towel rolls can be cut to different lengths, opened up, tapped on different body parts.

Part 2. B.

Materials: same instruments that were used in Found Orchestra 2.A. ; paper and markers

1. Students get into groups of 3-5 and create a mini-composition to perform on their found instruments. Building on Found Orchestra, 1.B., students should first as a whole group create a list of things they remember as successful in creating a good working group from that last activity: ways that groups worked well together; ways that mini-compositions worked well in combining sounds and instruments in different ways (for example, they may notice a background voice accompanying a foreground voice, or loudness and softness alternating in different ways ...) They are instructed to again come up with a piece of music that they are remembering, and not one they are making up on the spot, different each time they play it. all. Again it can look like anything, as long as they can look at it and remember what it means. (This can take anywhere from 10-40 minutes)
5. The small groups practice their mini-composition, "reading" the invented notation they created.
6. Groups perform their compositions for the other groups. The audience describes back to the composer-performers what they noticed that was interesting about their use of their instruments or the ways that the different voices worked together in their composition.
7. The group shows their invented notation and explains how it worked for them – what the shapes, colors, symbols and so on meant for them.

Variations/Extensions

New challenges might include:

Recycled objects: this time, specifically objects that are recycled and reused that would otherwise be waste are specifically used to create an orchestra

1. Objects that you associate with a theme or commitment. Students choose a greater purpose to emphasize in their orchestra, and design instruments that speak to their commitments. Examples:
 - a. The environment – consider water, stones, fallen branches, soil, sand, etc. as instruments
 - b. Toys – their favorite toys
 - c. Locations – use locations in the room as the instrument; this weird challenge allows someone in a location to use any objects that happen to be there – say, the four corners of a room; the different surfaces on a playground; the same rhythmic patterns played one after the other in the classroom, the hallway, the restroom, and so on ...

Asking a Sound How it Wants to be Listened to [Jacky Sawatzky]

Materials: Pen and paper, paint, image scraps for collage as needed.

The goal of this workshop is to develop a relationship with a sound through a listening practice that is playful and non-judgemental. The workshop evolves around event-scores _a set of instructions (text, drawings, or collages) whereby the execution of the score leads to an experience. The students get the following score as 'homework.' The outcome is a creative

response to the student's experience of 'performing' "Asking a Sound." The format of this response is at the discretion of the teacher.

1. Students are encouraged to choose a route they walk daily and that takes longer than 5 minutes. In those 5 minutes not to look at their phone and to listen.
2. They then choose one sound that jumps out.
3. For the following days until the next class they focus on this sound during your 5 min listening exercise. The goal is to build a relationship with a sound and get to know the sound! They are encouraged to be curious, ask the sound questions like:
 - a. Are you continuous like a drone?
 - b. Do you have a dominant pitch?
 - c. What is your rhythm? The texture?
 - d. How does the weather affect you? And my ability to hear the sound?
 - e. Can you alter your perception of the sound, by walking closer to a building or on the other side of the street?
 - f. Do you think other people notice the sound?
 - g. They think of their own questions to ask, what do they want to know of this sound?
4. Students are asked to make notes in the form of a drawing (draw the sound), give it a colour, write a poem, or give it a word, refrain from giving the sound a label. (like ventilation system)
5. They are encouraged to mostly play with the sound!
6. The group is challenged to prepare to share their creative responses to the sound in class.

Create your Own Listening Walk [Emily Collins]

Materials: None.

This workshop attempts to integrate experimental and alternative listening practices as an exercise in expanding perspectives while developing an engagement with wider conceptions of sound.

The exercise allows students to create their own version/variation of sound or listening walks. They will be given limited guidelines other than instructions on how to use the necessary technology. Instead, they will be encouraged to create without confines or structure, in an attempt to question and ultimately dismantle any preconceived notions of sound, particularly the ideas of unwanted, unproductive or meaningless sound. As learned through the texts in the bibliography, soundwalking is considered as a way to elucidate and enact the embedded and embodied experience of sound in a place/space at that very moment – an event in action that centres on slowness and situated-ness. This exercise reverses the role of the producer and listener so that the distinction between the two is a fluid interaction and equal exchange. In this way, the acts of creating and listening work in tandem in order to compliment and inform each other.

The experience could take place in busy urban settings (city streets, central parks, etc.) or in indoor spaces (school hallways, classrooms, libraries), as long as there is enough space to activate a bodily engagement alongside a concerted listening effort. Openness and accessibility are one of the key aspects of this workshop, so the space in which the listening takes place is not limited as long it is possible to walk or move in some sense, which is also in an effort to prioritize accessibility. There is no linear requirement as far as the movement is concerned, so long as the students are not static.

- a. Students will individually create a work or experience, which will then be exchanged with their peers or discussed with their instructor. This will open up a site for communication in an attempt to stimulate descriptive thinking, analysis

and language use outside of the realm of visual culture in an attempt to build a stronger literacy of sound and listening practices.

- b. Although this runs the risk of being potentially overly conceptual or esoteric to young people, at least a very introductory and preliminary entry into some of these terminology and ideas offers them the opportunity to broaden their understanding of the ubiquity, complexity and multiplicity of sound, without undermining their aptitude and curiosities.

Tempo, Movement, and Repetition [Marko Djurdjić]

Music can be strenuous, it can be stressful, and it should be learned and studied. However, music should also be expressive, it should be personal, and above all, it should be FUN, especially for children. I can listen to pretentious, drone-y, experimental music all day, but every now and again, I want to put on the Ramones. And that's reflected here, and in our first anecdote.

As a City of Toronto children's and youth summer day camp counsellor, I have utilized any and all methods to engage children, to get them involved, thinking, and at times, screaming. Having worked with children as young as four, creativity, as well as a complete disregard for your own hearing, are sometimes necessary to show kids the fun, excitement, and expressive opportunity that music affords.

One telling example came with the "Junior Jammers," our preschool program. It was the end of the day. It was August. It was hot. The classroom had no air-conditioning. The kids were tired, cranky, and restless. The usual end-of-the-day story time was failing miserably. So we got them to sit down on the collection of mats we kept on one side of the room, and told them we would do a short "repeat after me" song. The song was going to be recorded, and we were going to show their parents, so they had to be REALLY good and REALLY focussed in order to put on a good performance. I told them we would first listen to the song, and then, we would teach it to them. And then I pressed play.

CRASH! BUZZ! VROOM!

There was a veritable explosion as a razor guitar, lightning bass, and cacophonous drums broke the silence. And then, I jumped up, and started SCREAMING along to the chant now blasting out of the industrial Bluetooth speaker we had in the classroom:

HEY! HO! LET'S GO!

HEY! HO! LET'S GO!

(bass)

HEY! HO! LET'S GO!

(guitar)

HEY! HO! LET'S GO!

One of the kids fell back in mock exasperation, so others followed. One girl slapped her hands to her forehead and shook her head. And as the song progressed, I danced, and sang along. The other two leaders also danced along, grabbed the kids by the hands and got them to jump up and dance with us. Soon, we were all bopping along to the music. And exactly two minutes in, I abruptly stopped, and once again repeated that eternal credo:

HEY! HO! LET'S GO!

And just as soon as it started, it was already over.

The following instructions were simple as can be:

- a. The words are HEY! and HO! and LET'S GO!
- b. And yes, you can shout them. In fact, we *encourage* you to shout them.
- c. Just do it in the right place.
- d. But remember to HAVE FUN!

It took less than a minute, and they got it. And they were four years old.

We filmed them running through the song twice, dancing and shouting and starring “punkingly” at the camera, and when one parent came early to pick up his daughter, he heard what we were singing, and instead of getting angry that his daughter was sweaty and screaming at 3:52pm (or thereabouts, the day ends at 4pm), he joined us and danced with her. It was a wonderful, transgenerational moment, and I wish I still had the video but when a computer crashes, so to do your files, and memories.

The next day, I brought my computer, hooked it up to a TV, and showed them their performance. And they, of course, loved it. They repeatedly wanted to watch themselves doing this simplistic chorus, and would sing and clap along, screaming with the words as if they were still being filmed. The documentation aspect here became key, both as a teaching tool, and as a way for the children to view themselves in the throes of musical enjoyment. The knowledge that they were being filmed got them even more excited and invested because they *love* seeing themselves act silly on camera. Because the chant was so easy, they were able to memorize it, perform it, and still “move” to the music without falling out of chant, or the rhythm (for the most part). When the song began, they went wild! (It *is* the Ramones, after all; how could you not!)

The best part was that they didn't even *care* about what was happening in the rest of the song. To them, there was an intro, and an outro, and the rest was just dance time.

The main purpose of this exercise is therefore two-fold:

- 1) Chants and repetition are great ways to learn rhythm and tempo. These songs can help students understand tempos and, for those reading sheet music and notation, Italian musical terminology, which is frequently used on sheet music, and which utilizes a series of common tempo marks.
- 2) (And this one, I think, is the most pertinent) By using pop music and coupling it with an activity, you will eschew traditional nursery rhymes and “children's” music, in favour of music that may be more applicable, more interesting, and more “real.”

By utilizing popular yet still repetitive songs, instructors will help prepare children for more complex (or at least, *seemingly* more complex) arrangements, which will help develop trust between students and instructors. If they don't think you're treating them like “little kids,” then they'll be keener to participate. Children can sense when adults attempt to “dumb down” the material, in order to reach them on a “children's level,” and this is the *easiest* way to lose your kid-audience. Never belittle their knowledge, or undermine their opinions and tastes!

Most importantly, you can ask your students to bring in their own musical examples, thus transferring ownership of the lesson, and the material, to the students. This presents not only interactivity, but collaboration. And when they do bring in their songs, get *them* to run the lesson and teach the chant. Make *them* the instructor, and make it a *point* to share the workload, they'll appreciate it more than you may think!

Encourage them to bring in songs they love, songs they sing or belt out; things that are simple, catchy, repetitive. Set parameters, set rules, adhere to them yourself, and they will follow. And when they *do* bring in these examples, you should get just as worked up, just as excited, and just as invested as you want *them* to be.

Finally, when you ask them to bring in their own examples, you'll not only be promoting their place in the classroom as essential and important, but you'll undoubtedly get more contemporary music, more representative music, and more *invested* students. The more involved they feel, the more likely they'll be to participate with gusto (which is the whole point of this exercise).

Some examples of songs you can use:

- . "Hey Ya" – Outkast
- . "Brown Eyed Girl" – Van Morrison
- . "Shake It Off" – Taylor Swift
- . "My Generation" – The Who
- . "Blitzkrieg Bop" – The Ramones
- . "Wake Up" – Arcade Fire
- . "All These Things That I've Done"
(in particular, the "I've got soul but I'm not a soldier" part) – The Killers
- . "Seven Nation Army" – The White Stripes
(shows them that you can even turn musical, non-vocalized elements into a chant!)
- . "We Will Rock You" – Queen
(Those stomps!)
- . "Single Ladies" – Beyoncé
(The choreography potential is through the roof)
- . "Surfin' Bird" - The Trashmen/The Ramones/The Cramps
- . "Happy" – Pharrell
(Although not necessarily "chant" based, the consistent rhythm and clapping is a logical addition to any rhythm/tempo exercise)
- . "Hey Jude" – The Beatles
(Get some kids to scream out the "JUDEY JUDEY JUDEY JUDEY!" part, while others continue the "na na na" part, then switch them halfway through. Have FUN with it! Have fun with *all* of these!)

This activity also has two other ways in which it can be employed:

- 1) It can also be used as a start-of-class focus exercise.
 - a. Chanting has been used as a meditation technique for eons, and you can start every class with a new song. Stand in a circle, put on something that will repeat, get in the zone, and get focussed. Keep your eyes closed, breathe during verses, and "read" each other once the repetitive section begins. This sort of focus stabilizes the room, brings together the class, puts you all in the same mind-frame, and removes
- 2) It can be used as the exact opposite, a start-of-class energizer (or end-of-class warm down).
 - a. Run around during the verses, STOP on a dime when the repetitive section starts, and do it as a group. Then, when the section ends, explode again. This will burn off energy, but also get them "warmed up" for the rest of class. It's like Simon Says, and the variations of what you do during the verses is endlessly applicable and adaptable.

The best part about this exercise is that you can do it with any age group, for any class, and at any point *in* the class. It can be a treat, a warm-up, a focus exercise, whatever you like. It is

completely dependent on whatever music is being used that day, and so every class becomes unique. A tone is set, a mood.

The exercise also gets the students to feel involved, both physically through movement, and mentally through their collaborative music-sharing, and lets them bring their own music (and thus, a piece of themselves) into an institutional space. By actively engaging with the students and their musical choices, the instructor can build relationships through mutual understanding and respect of each other's musical tastes, as well as through the endorsement of classroom collaboration.

Finally, and perhaps best of all, you don't even need any equipment for this, save for a music playing device. So use your imagination, bring a song, and get to clapping!

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TECHNOLOGY FOCUSED WORKSHOPS

Microphones, Turntables, Sampling, and Digital Audio Workstations (DAW) (Less Experience Required)

Headphones as a DIY Microphone [Dan Tapper]

Material: 1/8" to 1/4" jack converter , Amplification or recording device such as guitar amp, mixing console or handheld audio recorder.

- a. For this experiment you simply have to plug the headphone jack into the audio input of a recording device. You may need a jack conversion plug if you do not have any devices with a 1/4" line input. Once the headphones are plugged in you can use them as a microphone by placing them close to your mouth or a sound source.

"Headphones and microphones are actually very similar. Both headphones and microphones contain a diaphragm. Both devices trade in vibrations, it's just that headphones vibrate the diaphragm to create sound while microphones monitor vibrations from sound in order to record it."

<https://djtechtools.com/2015/02/22/how-to-use-headphones-as-a-mic/>

Sampling from Records [Dan Tapper]

Material: Turntable, Audio interface

Turntables and records are very versatile and techniques such as sampling from records can be showcased and performed by students. A class could easily be spent instructing students to create a sample library from recorded snippets of records — these samples could either be direct recordings from the record or more experimental manipulated or glitch lock groove beats.

Creating a sample library allows students an insight into the creation of sounds provided with music technology packages and provides them with unique sound materials to include in their own work.

- a. Make sure that all students are familiar with the concept of sampling and how samples can be used to create music.
- b. A classic example to show or tell students about is the Amen Break that was recorded in 1969 on the song "Amen Brother," the B. side of The Winston's 1970 Grammy Award winning track, "Color Him Father." Played by George C. Coleman, this drum solo (or break) was then part of a compilation of such breaks for DJs compiled in part by Louis "Break Beat Lou" Flores. A short video for all audiences can be found here https://www.youtube.com/watch?v=v89CjsSOJ_c. Please note that, as is the case with this video, Mr. Coleman is African American while those videoed as if they were playing the beat are often Anglo.

Creating Synthesizers, Experimenting with Sound [Dan Tapper]

Materials: Little Beats Kit

This kit allows students to learn about sound and modular synthesis in an almost Lego like manner, snapping workshops together to create different methods of triggering and processing sounds.

- a. The basic kit comes with the units: Delay, Envelope, Filter, Keyboard, Micro sequencer, Delay, 2 * Oscillators, Power, Speaker, Signal splitter, Random generator

"Both kids and professional musicians can explore the science of sound, make sweet beats, and create instruments with this award-winning modular synthesizer. Co-designed with world-renowned electronic music maker KORG. Create amazing sounds right out of the box while learning the basics of analog synthesis. Combine the littleBits Synth Kit with other littleBits workshops to make expressive interfaces, or creations that span light, motion and sound! Includes a project booklet with step-by-step instructions for creating a wide array of sound circuits and projects, and the box transforms into a ready-to-use performance station that can connect to recording or live sound equipment." Little Bits — <https://sphero.com/products/synth-kit>

Through these simple components engaging and complex sounds can be made in a very hands on way. The Little Bits kit also provides an educational manual/guide that allows first time users to quickly start learning and making sounds.

Excerpt from Little Bits manual:

WHAT IS SOUND?

Sound is the vibration of air or another medium (like water). When you speak, sing, or clap, you create sound waves that radiate out into the environment. Every sound has its own "signature" that is called a waveform.

PITCH

Pitch is how a person perceives the frequency of a vibration. Every person perceives pitch differently and some have a better sense of pitch than others. Sound can generally be categorized as pitched or un-pitched.

PITCH VS. FREQUENCY

Frequency and pitch are similar, but not the same! Frequency can be measured scientifically, while pitch is dependent on individual perception. You can distinguish pitches as being "higher" or "lower."

Although everyone is different, humans can generally hear the frequencies between 20Hz and 20KHz.

AMPLITUDE

Amplitude relates to the change in the peaks of waveforms and is perceived as the loudness of a sound. The higher the amplitude of a waveform, the louder it sounds.

TIMBRE

Timbre (pronounced tam-ber) is what differentiates sounds of the same pitch. It is what makes a violin and a flute sound different... or your friends' voices!

HISTORY OF THE SYNTH

THEREMIN - first electronic musical instrument. Film score for **FORBIDDEN PLANET** see pg 23.

SWITCHED ON BACH see pg 13.

KORG MS-20 introduced.

Sounds were created digitally. Most famous was the Yamaha DX7, which used FM synthesis.

ROBERT MOOG and DON BUCHLA began producing the first commercial musical synthesizers.

Rebirth of analog modular synths.

Synthesis dominated by computer interfaces.

littlebits + KORG launch modular Synth Kit!

ELEMENTS OF A SYNTH

Korg's MS-20 synthesizer, first introduced in 1978, is still a coveted instrument to this day thanks to its thick, robust sound, its powerful, iconic analog filter, and its versatile patching options. Today, the sounds of the MS-20 have been reborn as the MS-20 Mini.

It is believed that it is important to employ both digital and physical music technology education at RPSM and that physical tools like Little Bits will allow students to learn and engage with concepts like synthesis in a creative and embodied manner.

Modifying Turntables to Experiment With Sound [Dan Tapper]

Materials: Crosley Turntable, Thrift store records, RCA to jack cable - to allow turntable to be input to a computer/interface and be recorded digitally, Tape, Glue, Toothpicks and paper clips — to cut grooves into records, Optional equipment: USB microscope

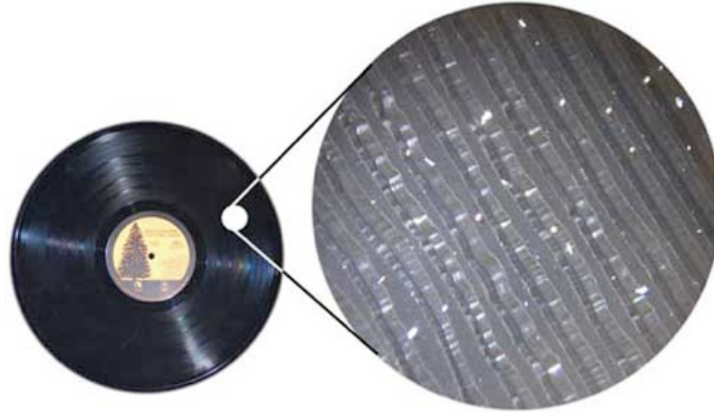
Workshops based on Nicolas Collins' book [Handmade Electronic Music](#) workshops from YSWN and the turntablist Graham Dunning.

Turntables are a great, tactile way to educate and think about sound. They are accessible and have a long history both in popular music and experimentalism. Turntables and vinyl records have a well known history making it likely that many participants will have come across this technology before either at home or in the media.

- The instructor outlines the function of a turntable and its interaction with a record, encouraging students to think about vibration captured physically as a groove.
- While it may seem self-explanatory, it is important to inform younger groups that there are two overarching uses of a turntable, as a way to play prerecorded music on vinyl (plastic) platters called records and as a musical instrument in popular music art forms such as hip hop and R&B. Anyone who can put a record on a spindle (the small protruding part that the hole of a record slips over) can play a record and anyone can be a turntable instrumentalist. However, the development and use of turntable instrumentalism (using it as an instrument) is a distinctly African American artform that developed along side hip hop. Turntables are set to spin at a set number of rotations per minute. "Long playing" records rotate at 33 & 1/3 rotations per minute; smaller "singles"

rotate at 45 rotations/minute. This is where calling records LPs comes from as with calling smaller singles 45s.

- c. A powerful way of displaying this is enlarging the records grooves using a USB microscope.

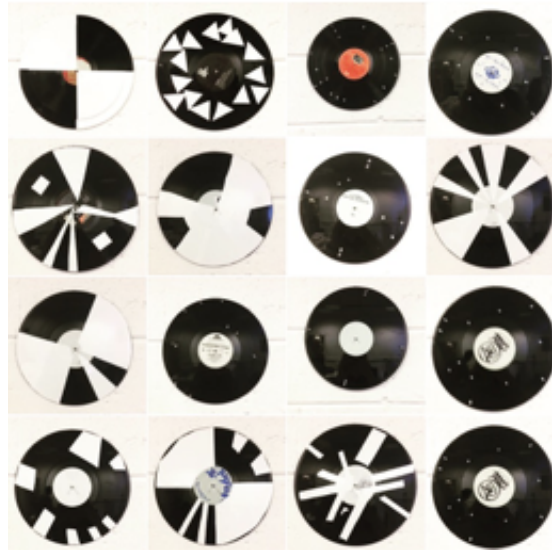


Record enlarged by USB microscope

- d. *Playing back the record, thinking about how the speed of the records rotation affects the sound's pitch.* Inexpensive, portable *Crosley turntables*, for example, provide a switch allowing playback at 33 $\frac{1}{3}$, 45 and 78 RPM and a rotary knob that allows each of these rotation speeds to be increased or decreased by a small amount. Students can easily change the record's playback speed by controlling these parameters or by gently placing their hands onto the record to slow it down. Should students not have considered "scratching" a record, such suggestions and demonstrations should be made at this step.
- e. The central locked groove of a record is often silent and can be repurposed into a simple beat sequencer by cutting small grooves or placing small objects that make the needle jump and skip. Introducing students to the turntables inner locked groove (the usually silent or "empty" loop at the end of each side of a record that keeps the needle/tonearm from running into the record label). This can be thought of as a 1.5 second loop depending on the rotation speed of the record.
- f. Encourage students to think about how the needle interacts with the record and how materials placed onto the record are vibrating the needle in a different way to the vinyl itself. One way to experiment to showcase this is placing different materials onto the surface of the record to see what different sounds the needles interaction with these objects might make.

Accessible materials include: paper, cellotape, cardboard. Students can also decorate the records using craft supplies to see how this alters the function of the record. An image example of this style of record alterations can be seen below in the following image: *Records created in a Mechanical Techno workshop led by Graham Dunning.* The workshop can be found on YouTube here:

<https://www.youtube.com/watch?v=wl1ZrEza7uY>



Records created in a Mechanical Techno workshop led by Graham Dunning.

<https://www.youtube.com/watch?v=w11ZrEza7uY>

Extensions

- Another example is Zammuto's project *Scratch*:
- https://www.youtube.com/watch?v=Wx0mV_8L0fw&feature=emb_title
- Records can also be modified outside of the central locked groove using techniques used by turntablists such as [Otomo Yoshihide](#), [Maria Chavez](#) and [Graham Dunning](#). A simple technique is placing or adhering textured material onto the record that can be played back as it vibrates the turntables stylus.
- A stylus can also be converted into a low fidelity microphone by removing it from the records surface and speaking, singing or tapping directly onto the body of the stylus with loud/close proximity sounds vibrating the stylus and outputting this signal through the record players speakers.

Microphone Experiments [Dan Tapper]

Materials: Handheld amplifier (Danelectro Honeytone), 9 volt battery, Piezo disc, Jack plug 1/4", crocodile clip (set of ten), other sensors (solar, photoresistor, induction coil)

This workshop builds on the more experimental aspects of Workshop A such as using a turntable stylus as a microphone. The main body of this workshop comes from the transduction of various signals into sound (how electronic signals/impulses waves become sounds). These methods come from my own experience, materials by Nicolas Collins and the composer and artist [Leafcutter John](#). This workshop requires no prior technical knowledge and is built around creating simple prototypes using sensors, battery powered handheld amplifiers, crocodile clips and jack plugs.

*Note. it is important that these workshops are only ever performed using handheld battery power amplifiers. These workshops with electrical components should Never be hooked up directly to the mains in any way. The batteries used in these projects are harmless allowing for play and experimentation that could be potentially deadly if hooked up to a mains power source in any way.

Part 1 - Building a contact microphone

Materials: piezo disc/contact microphones, crocodile clips, mono plug, handheld amplifier

- a. Introduce students to the piezo disc (piezo contact microphone) with a basic explanation of its function:
A piezo microphone will convert vibrations of a surface it is attached to into sound. More specifically, this microphone is created by placing a piezoelectric crystal between two metal plates that apply mechanical pressure in ways that force the electric charges in the crystal out of balance, creating the microphone (paraphrased from [Cesca Fleischer](#)).
- b. The piezo disc/contact microphone can easily be connected to a handheld amplifier by connecting crocodile clips to the piezo's positive and negative terminals and connecting these to a mono jack plug that can be input into the handheld amplifier.
**Note: Mono plugs (rather than stereo plugs) are simpler and easier to use.*
- c. At this point the piezo should act as a microphone amplifying vibrations that come across its surface. This DIY contact microphone can be used to amplify vibrations within objects by placing the microphone directly onto surfaces.

Some fun examples:

- . Amplifying the body of a table, converting this into a percussive device.
- . Amplifying the movement of water in a plastic container or bottle.
- . Amplifying the large metal surfaces which act as resonators and filters for sound.
- . Contact microphones can easily be waterproofed by covering them in electrical tape so that all electrical connections are covered. These waterproof contact mics act as hydrophones which can be placed into a liquid. Fizzy pop is particularly effective as a sound source.

Part 2 - Different sensors as microphones

The sensors/methods stated below will convert signals outside of our range of perception (hearing) into audible sound. The steps in part 1 to build a contact microphone can be repurposed for use with a number of different sensors including:

- . Induction coils which allow electromagnetic sounds to be converted into sound
- . Small solar panels that allow light to be converted into sound.
- . Photo-resistors which act as a more focussed optical sensor than a solar panel to convert light into sound.

In addition, a number of other sensors such as pressure or capacitive touch could be used. The method for converting the output of these sensors into sound is the same as for the piezo contact microphone — connecting the positive and negative terminals of the sensor to a jack plug using crocodile clips and plugging this into a handheld amplifier.

Leafcutter John provides a great tutorial on how to combine a solar panel with a laser pointer to make an optical microphone that allows for quite precise sound recreation:

<https://www.youtube.com/watch?v=xfydcvVAKil>

A (simple) induction coil can also be made by hand through looping copper wire into a coil. Through connecting the ends of this coil to a jack plug and inputting this to a handheld amplifier localised electromagnetic sounds produced by technology can be heard. Mobile phones, computer hard drives, television sets and microwaves all provide strong electromagnetic outputs.

Resources:

Nicolas Collins, Hardware Hacking —

<https://www.nicolascollins.com/texts/originalhackingmanual.pdf>

Dan Tapper, VLF a Sound Artist's Guide —

https://issuu.com/dantappersoundart/docs/vlf_guide_4_upload

Liz Dobson, Making a Piezo Contact Microphone —

<https://yorkshiresoundwomen.com/resource/making-a-piezo-contact-microphone/>

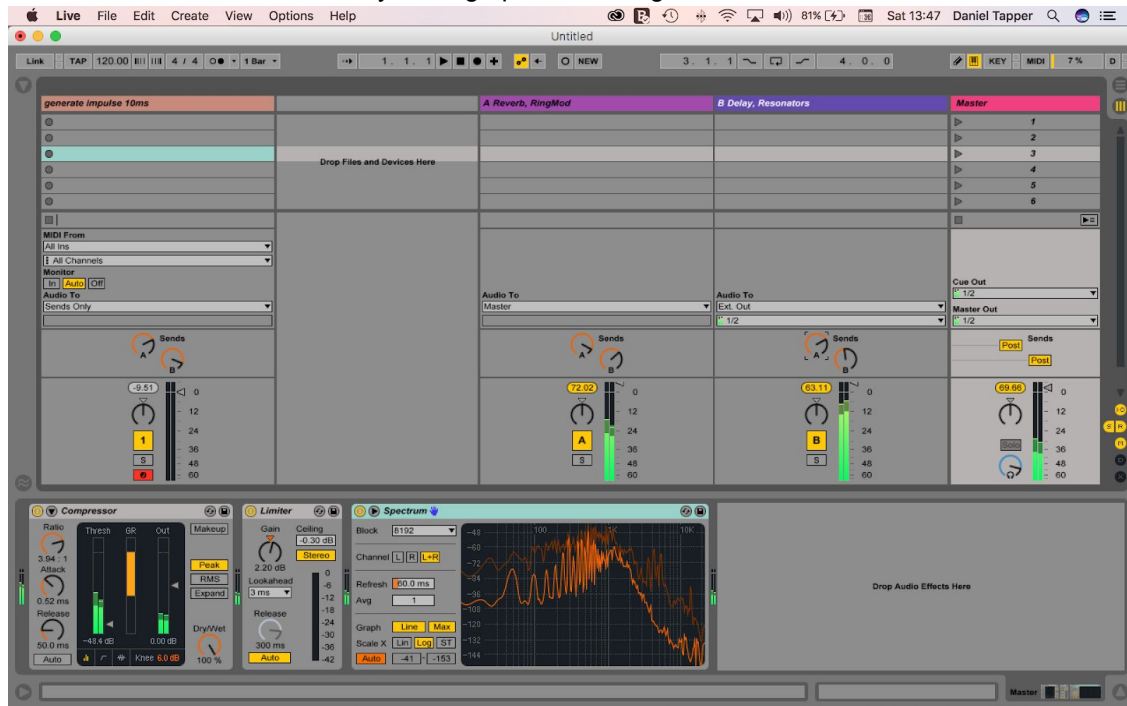
Advanced Workshops with DAW

a) No Input Mixers in a DAW [Dan Tapper]

Requirements:

- All students must use the same DAW (Logic Pro or Ableton Live recommended).
This can be performed on almost any DAW but for consistency of teaching keeping it to one platform is important.
- Provide a template for students that has the signal routing set up and places heavy compression/limiting on the output channel to avoid extreme feedback.
- Headphones are not recommended for this exercise.

Below is an example setup using a short 10ms sonic impulse as the seed of a self sustaining feedback chain created using sends within Ableton Live. Through placing different combinations of audio processing plugins on return channels “A Reverb, RingMod” and “B Delay, Resonators” the user begins to understand the inherent sound shaping capabilities of plugins such as compressors, ring modulators, delays, reverbs and much more. Through placing these plugins into a responsive system immediate sonic feedback is received and this generates a fast learning response. These systems are also extremely responsive with small changes to a channel's amplitude, pan or send amount creating vastly different sonic outputs. Performative and gestural sounds can be made from briefly turning up or unmuting channels.



- a. This initial exercise can be developed into students building their own instrument using plugins chained together.
- b. These instruments do not have to be based around the no input mixer model and can act as an audio processing chain on sounds generated from a VST instrument or microphone.
- c. It is likely that students will gravitate towards different sonic qualities — e.g impulse/rhythmic sounds, tonal/drone sounds, melodic/textural sounds etc.
- d. These can be shaped into an informal jam session where participants are encouraged to listen critically to the soundscape and only introduce sounds when they feel it is necessary, giving equal space for everyone's sonic gestures.

b) Slow it Down, Speed it Up [Dan Tapper]

A fascinating aspect of music technology is its potential to introduce artefacts of a digital process onto a sound. An easy and effective way of detailing this alteration is by using time stretch algorithms.

This simple technique can be used in any DAW or music software that has the ability to timestretch files.

1. Load or record a sound. Make note of how long the sound's initial duration is.
2. Apply a time stretch algorithm. Try stretching the sound as long or as short as the algorithm will let you.
3. Reapply this time stretch several times. Your sound file will now be extremely long and depending on the time stretch algorithm you are using the sound may be inaudible or low in frequency.
4. Use the time stretch algorithm to shorten this elongated sound to the same length as its initial duration.

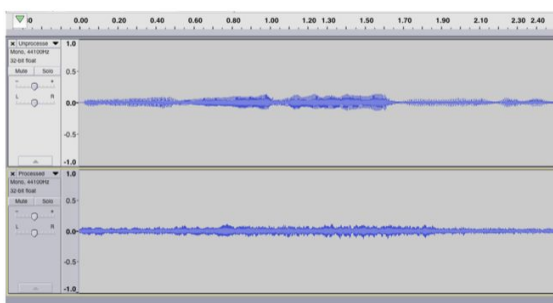
In Audacity stretching can be applied using the effect menu and the change speed effect. Each DAW has a slightly different way of stretching audio. For example in Ableton Live you can stretch sounds using warp markers (information on warping audio here:

<https://www.ableton.com/en/manual/audio-clips-tempo-and-warping/>) For this stretch to be handwritten to the audio track you need to consolidate the new audio. This can be done through the consolidate command which can be performed using the key command “⌘J” or right clicking on the audio file in the arrange view and selecting consolidate from the dropdown menu.

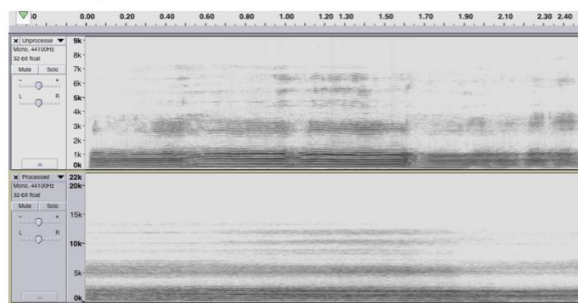
Applying a sound process to an extreme extent and then converting the processed audio back to its original length highlights the alterations the algorithm is performing on the initial sound file. These effects can be radical and can result in the creation of completely new sounds.

The image below details an unprocessed audio recording (top) and a time stretched audio recording converted back to its original length (bottom). The alteration that the time stretch algorithm has made to the sound is clear. The software used for this example was Audacity.

Waveform view



Spectrogram View



Other Audacity Uses:

- a. Audacity can be used to import RAW data from a variety of files and convert this into sound.
 - This allows for audio editing and effects to be applied to files such as images: <https://www.photoxels.com/have-some-audacity-databend-your-images/>
This can provide an interesting visual way to display audio processes and effects.
- b. Creating Virtual Music Ensembles
 - Benefits of virtual ensemble creation for remote settings
 - Technologies that support telematic/real-time performances - discuss issues with latency (audio-delay)
 - Technologies that support asynchronous performances (i.e. recorded one after the other)
 - Hardware requirements and accessibility issues for students; privacy issues (sharing faces/voices on social-media based music-sharing apps) for students
 - Create a project together in small groups
 - *some app suggestions: Acappella, Soundtrap, Bandlab, JamKazam, other DAW+video editing software
- c. Effective Incorporation of iPads for the Applied/Private Instrumental Music Classroom
 - Digital sheet music - organizing a digital music library
 - iPad notation software (arranging music, transcribing)
 - Remote teaching (videoconferencing technologies to support virtual/interactive learning)
 - Recording software for recording lessons and performances
 - Using online music-theory and ear-training tools (recommended apps)
 - External hardware/tools for iPads (i.e. mixers, MIDI keyboards, microphones, plug-ins)
- d. Exploring Spatial and Binaural Sound
 - Through creating binaural and spatial sound, students will learn about the human sound perception as well as functionalities of sound in space
 - Participants will record spatial and binaural sounds and learn to place it through an AR or sound-walk platform
 - Participants will learn about different ways of 'listening'

“NOISE,” Amateurism, and the Sense [Marko Djurdjić]

Listening and hearing has always been the *de facto* approach to the musical classroom: Listen to each other, listen to yourself, hear your mistakes, fix these mistakes then listen to yourself again and see if you can hear any other mistakes. Etc. Etc. Ad infinitum. Music is rarely a haptic or corporeal exercise, with most musical education focussing on theory, precision, and practice. Teaching one how to *feel* music isn't necessarily the easiest thing to do (at least, not in any measurable way), but music students are rarely given the opportunity to explore or experiment with improvisation, noise, and amateurish playing (or, purposely “*incorrect*” playing). And yet, when students are given the opportunity to play freely, with a complete disregard for style or tone or “taste,” some fascinating, primal emotions and experiences can be drawn out of these students.

The first time I heard the saying, “Practice makes perfect, but nobody's perfect, so why practice,” it came from Billy Joe Armstrong of Green Day fame. Apparently, he was quoting Kurt Cobain. In any event, it's a punk thing (probably). And this punky ethos (which is echoed in everything from Alex Cox' *Sid and Nancy* (1987), to Dinosaur Jr.'s lackadaisical attitude towards rehearsing, to Guy Picciotto, who wouldn't sing at band practice in order to save the intensity for the live show) illuminates a very important element in musical development: even if you can't play music very well (or at all), you can be passionate about it. And this is reassuring. Comforting. Liberating.

This is, in fact, AWESOME! And in exploring this principle, I was reminded of a rather telling experience with a different group of preschoolers at the same City of Toronto summer day camp, one with equal panache and noise attached to it.

Again, it was hot (it's the summer, it's always hot, and there's no air-conditioner), but this time, instead of the restlessness, the kids were so rambunctious, getting them to settle down was an outright impossibility. After some failed attempts at pleading and coercing and threatening (lightly, of course), the two other leaders and I just started yelling. Nonsensically and continuously, we just started walking around, in and amongst the bounding kids, yelling.

And then something great happened: one of the kids picked up a plastic drum with one of those all-too-short strings attached to a plastic mallet, and started indiscriminately banging on the drum. Hard. Furiously. The little Tasmanian devil. And so we started stomping around, sometimes to his drum, sometimes not at all. The kids started stomping around, too. I grabbed a rickety xylophone and started dragging a marker across the keys. I passed it to one of the kids. The concurred by slamming the butt-end of the marker into the same key over and over again. Another leader grabbed a small cymbal, and started smacking it against any and every surface of the classroom. They passed it to a kid as well. We started “making” instruments out of the various elements in the room. Board erasers were smacked together, Barbies were smacked together, anything and everything was smacked together. And the yelling. All that yelling!

We had turned into a cacophonous marching band of the beautiful and damned. The classroom could no longer hold our cacophonous might, so we paraded through the halls. Other kids told us to be quiet, but we didn't listen (remember, we are all four and five years old...). Other leaders closed their doors. We banged on them. We went outside. We marched around the field and to the front of the school. The ruckus continued like this for almost AN HOUR! By the end, we were all exhausted. The snacks and juice that followed were well deserved.

During our romp, I was constantly reminded of the terse, restrained piano lessons that happen in the very same centre, as after-school programs, during the regular school year. They are quiet, somber affairs, replete with sheet music, straight backs, and take-home assignments.

They are, in other words, structured. Something very unlike our little “show.” Which makes me think: why can’t a classical lesson be *both*?

The following exercise can thus be applied to more formal learning environments, and works well with older students, but can be adapted to younger ones as well (including preschoolers, of course). It will work better with beginners who aren’t as comfortable with their instruments, but can be applied to older students as a challenge or an experiment, and I believe it will open up the same sort of musical exploration and experimentation as the preschool “parade.”

- a. In order to introduce a *haptic* (or, physical/bodily) approach to the musical classroom, it becomes necessary to remove some of the more dominant senses (particularly when it comes to musical instruction). This can be done in any number of ways: wearing bulky gloves; blindfolding your students (if they are comfortable with it; it also works better in a larger group so that it doesn’t look like you’re just blindfolding a single pupil, alone); or putting on noise cancelling earmuffs. By removing one (or more than one) of these senses, students are forced to explore other faculties and approaches to playing music: vibrations; positioning (sitting vs. standing vs. lying down vs. kneeling); bass tones and their role in “felt” sound; the shapes of instruments; the physical feel of instruments; etc.
- b. The exercise is simple and quick: after “taking away” one of their senses, record the student improvising for one minute. It can be filmed or sound-recorded, but get it on tape. If you have more than one student, do it for all of them, and avoid guiding them. Give up control, and let them choose their own approach, limitations, and direction. Then, end the exercise, and get on with your “classical” instruction.
- c. Once the class starts winding down, sit with the student(s) for 5 or so minutes and discuss what they experienced. Ask for details, and ask pertinent, even probing, questions:
 - how did it feel “losing” one of their senses?
 - What did they gain from it?
 - Was there a point to it?
 - What was easier to play, whatever they wanted with gloves on, or a practiced piece with all their digits intact?
 - Did you feel lost? Did you feel liberated?
 - Was it fun, or were you worried about how you would sound? Did that matter? Etc.
 - This is also a perfect opportunity for instructors to introduce their students to differently abled artists, to discuss ability and ableism in music, or to explore how the senses influence our musical habits (practicing, listening, etc.).
- d. This exercise doesn’t have to happen every week, but it’s a fun, quick activity that can open up some deep discussions about what music means to us, how we approach it, and why we teach it the way we do.
- e. As for the recordings, what you do with them could vary greatly based on your class and how you want to approach them. You can play them in succession, layer them all one on top of the other and make a musique concrete piece, or give them to the students to experiment with as they see fit. It may seem like it’s just noise, but you can discuss what they hear on the recordings:
 - is their tone? Melody? What is dissonance? What *is* noise? What does it mean to play “poorly” vs. play “properly”? Does that even exist? Play a bunch of these noise recordings in a row, then play them Ornette Coleman, or the Beatles’ “Revolution 9,” or a Public Enemy instrumental. Use these comparisons to further

accentuate that “noise” is relative, and that *pure sound* is just as important as a song or a melody. Just remember: never—*ever*—turn that racket down.

f. Expansion on the workshop: ENCORE

- Performing a “noise” concert with preschoolers or very young beginning musicians;
- An improvised performance at the beginning or end of a recital with the “removed senses” approach, thus subverting what an audience may expect from practiced, dedicated music students. It would disrupt them, put them at unease, and worry them into thinking, “what’s my kid been DOING all this time?” These experimental, “noisy” exercises would undoubtedly be illuminating, experiential, and *fun*, and I would love to meet with any interested parties at RPSM, in order to discuss how jarring, unconventional, and uninhibited approaches to musical instruction can be implemented in their programs.

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MULTI SESSION WORKSHOPS

Tech for Beginners [Natasha Walsh]

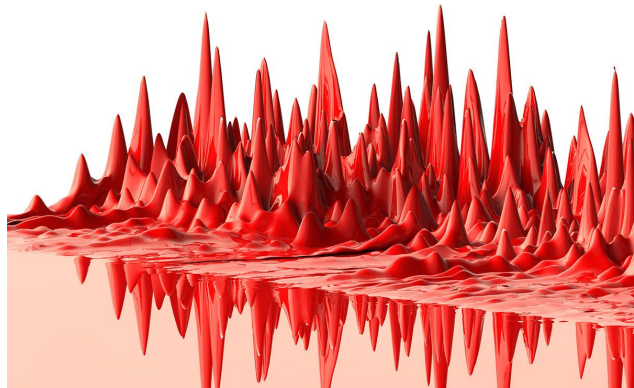
Two Events of a week of hour-long sessions that cover the basics of teaching music with technology. Several leaders available for time to practice with individualized attention. In line with a study of the effectiveness of one-week technology workshops, this would span a period of several months to gather data after time had passed to incorporate learned strategies from the first workshop into the second.

1. **App Adapt:**
A two-hour session that briefly introduces a variety of Android/iOS music technology apps geared toward children.
- 2 **Understanding Available Ministerial Supports**
A luncheon Q&A session with a governmental guest speaker(s) (perhaps an MPP) with knowledge on financial support available to community music schools.

Open Source and Collaborative Composition through Interactive Visualization Tools [Michaela Pnacekova]

Music Visualization

Visualizing music as 3D form



In this workshop, students/teachers will learn to use different interactive music visualization tools in order to create a collaborative sound and vision project that can be released and used for other students/teachers to join or use in their class using Creative Commons. The goal is to learn that all sound can be music and that sound can be made as an interactive visual art experience. The workshop is planned as 8 sessions that can be spread according to the curriculum and split into smaller sections.

Workshop Objectives:

- Participants will explore and learn to use music / sound visualization tools in different media such as VR, iPads, tablets, computers, and analog tools such as pen and paper
- Participants will learn how to elaborate graphic notation of sound into an interactive tool
- Participants will learn the basics of collaborative composition
- Participants will acquire the knowledge of Creative Commons for the purpose of collaboration and sharing
- Participants will learn about privacy data and ethics in digital media

Other aims of the workshop are:

- To learn to collaborate on musical composition together
- To learn about visualization tools of sound
- To learn about Creative Commons

Suggested tools:

- VR: <https://www.wearvr.com/apps/intone>
- Touch based: <https://www.mazetools.com/>, <http://singingfingers.com/>
- Simple visualizers: <https://www.renderforest.com/music-visualizer-videos>
- List of other free music visualizers:
<https://moviemaker.minitool.com/moviemaker/music-visualizer.html>
- <https://inspirationfeed.com/music-visualizers/>
- Traditional music notation: <https://flat.io/>
- Collaboration tool: <https://www.artsmesh.com/>,
<https://www.a-bahn.com/projects/soundhunters>
- Looping: <https://www.yatatoy.com/loopimal>, <https://beepbox.co>
- Paper and pencil / animation tool on an iPad or tablet: (For inspiration: <https://vimeo.com/74431122>, <https://csismn.com/>)

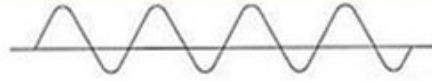
Schedule and Description of Activities:

Session	Content
Session 1 (1 hour)	Participants will also divide into 5 groups according to aspects of music (harmony, melody, form, rhythm, and timbre). Within the groups, participants will decide on their roles.

TIMBRE



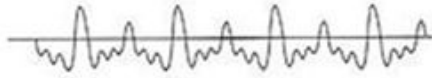
Tuning fork



Flute



Voice

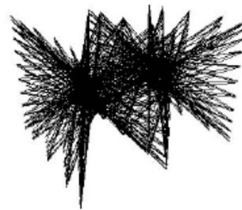


Violin

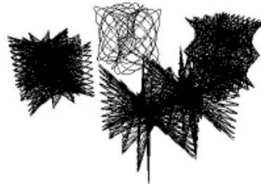


HARMONY

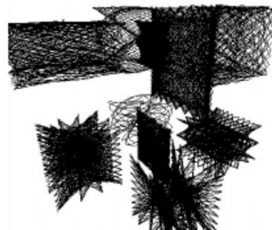
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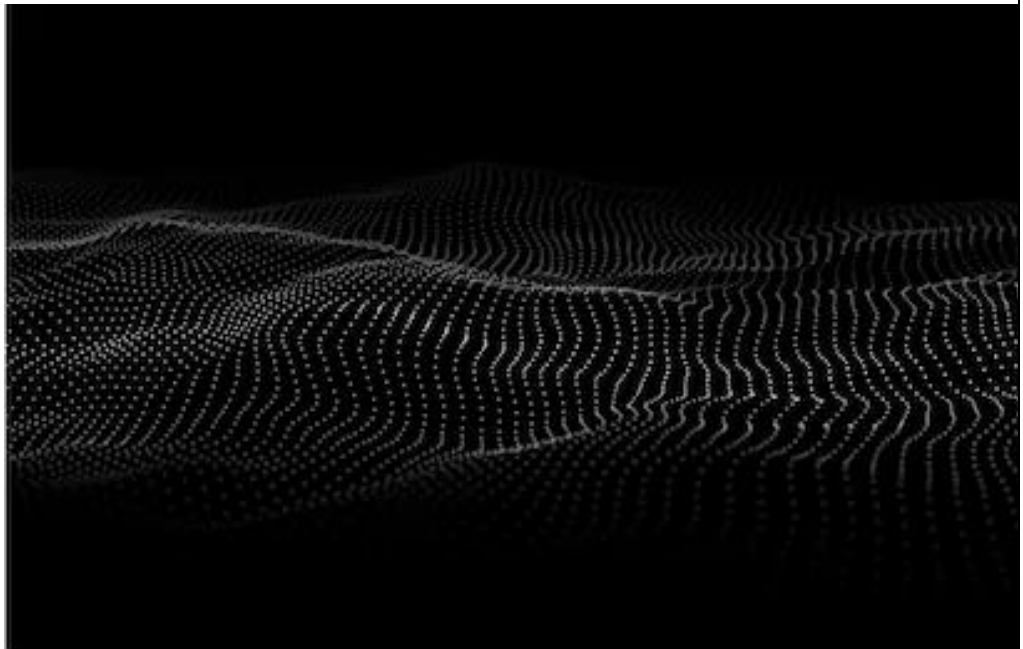
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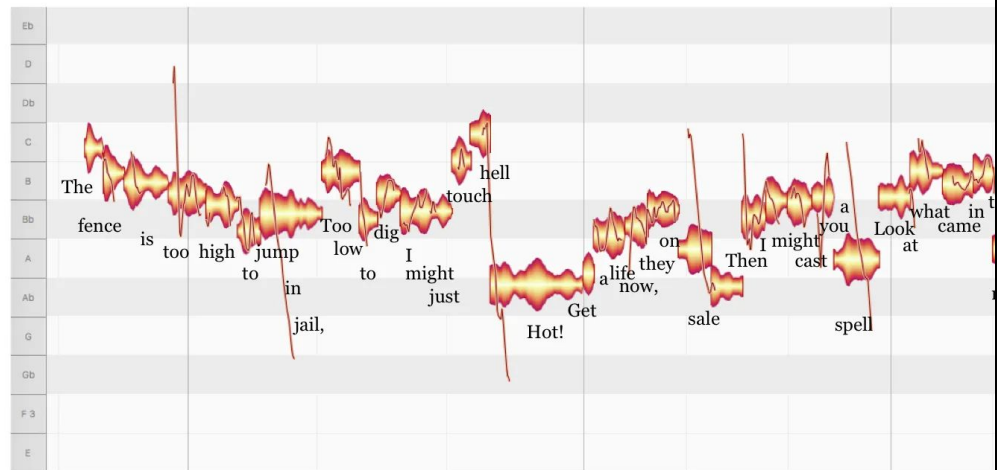


RHYTHM



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MELODY



Session 2 (3 hours)

Groups of 3 - 4 participants will research different visualization tools and their potential to use them collaboratively and in the scope of Creative Commons (they will be able to access the tools we have researched and will also be supported to suggest any tools we might not be aware of)

	<p> 🎵 Ode to Joy 0.225% of the top melodies begin with this sequence of notes. Harmonized 1358 times. </p> <p> Click to expand and listen. Shift click on a note to zoom in, or on the inner white circle to reset. </p>
Session 3 (1,5 hours)	As a whole group, they will decide what the style, tone, mood of the project will be, so they have all the same vision.
Session 4 (2,5 hours)	In groups, participants will decide how they want to create / record their sounds. (recorded found sounds, voice, musical instruments).
Session 5 (2 hours)	Participants will record / create the sounds / scores in their groups.
Session 6 (2 hours)	Participants will start to collaborate with other groups, get feedback, re-think, change . They will choose a common visualization tool they would like to show their composition in.
Session 7 (3 hours)	Collaborative work among all participants.
Session 8 (1 hour)	Presentation of the project on a selected open access platform to be used as part of Creative Commons.

iPad/Mobile-Technology Projects for the Flipped Music Classroom [Chris Taeyoung Kim]

Materials: Considering availability and accessibility of technologies at RPSM, we will be experimenting with iPad devices and several free or otherwise affordable apps on the iPad. All iPad devices should have internet connectivity (Wi-Fi) and access to sound/audio.

A 'flipped' classroom or learning approach is a pedagogical practice that moves away from direct, teacher-led instruction to individual learning spaces, where learning takes form through individual experimentation, engagement with digital tools and technology, and collaborative learning efforts. We believe that utilizing a flipped classroom model in all music education settings (classroom, ensemble, small-group, one-on-one) can increase student engagement levels and creative output.

Over the course of three two-hour sessions, participants will discover interactive and unique iPad apps (respectively, Chrome Music Lab, Incredibox, Playground, Isle of Tune) that can help 'flip' their classroom, which can help increase student-centered learning and musical engagement from students. Participants will actively engage in the creating and making of music through small-group collaborative creation/composition/improvisation projects with the iPad/mobile apps, and present final products with the larger group. Participants will also be provided with iPad/mobile app-specific lesson plans and ideas suitable for various music classroom settings (private instrument instruction, general music classroom, ensemble - band, choir).

Intended Audience: This workshop is intended for music educators interested in utilizing emerging digital tools in their classrooms. The resources from this workshop is suitable for private/applied, group/classroom, as well as ensemble-based classroom settings. Moreover, as the apps utilized for this workshop are not complex in nature and do not require prior knowledge of musical notation or theory, it is well-suited for musicians at early/beginner levels. Recommended for teachers who teach students aged 6-12. However, the resources can be suitable for students at all levels (K-12), as teachers will be able to modify learning goals and project depth according to level, age, and grade. While student assessment/evaluation opportunities are not the focus of this workshop, the learning goals and typical uses of apps will be discussed.

The technologies and tools chosen for the workshop have been curated towards accessibility, ease of use, consideration of time, etc. The tools can be modified according to availability and audience preference. The structure of this workshop is in the format of a 'three-part lesson-plan': a discussion/introduction, the experimentation/action, and the consolidation/wrap-up. Teachers can utilize the direct format and content of this workshop/lesson into their own classroom.

Learning Objectives: Following this session, participants will be able to:

- Flip their music classroom using iPad/mobile apps for collaborative music creation and sound experimentation
- Understand and discuss the benefits of a flipped classroom, including emerging interactive technologies for mixing/layering sounds and game-based music creation tools
- Understand the technical aspects (how-to) of the various iPad/mobile apps
- Create collaborative music compositions utilizing the technologies and resources provided
- Present and share final group sound creation
- Obtain a culmination of the resources (including lesson plans for various disciplines, instruments and levels) made available to the participants

Required Tools:

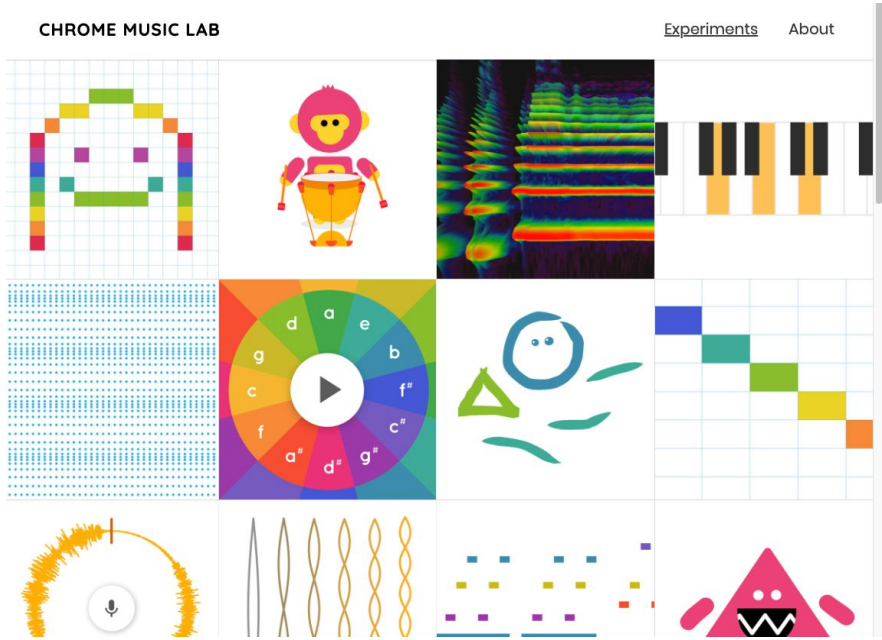
iPad per participant that can access (available at RPSM):

- Chrome Music Lab (free; browser-based)
- Incredibox (\$5.49; iOS app)
- PlayGround (free; iOS app)
- Isle of Tune (\$2.99; iOS app)

Internet Connectivity (Wi-Fi)

Access to Sound/Audio – recommend headphones/earphones for each participant (available at RPSM)

Schedule and Description of Activities:

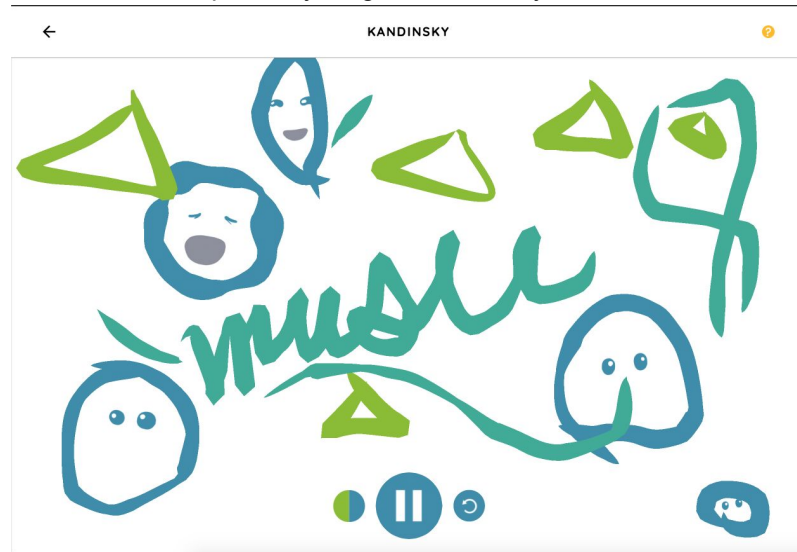
Session	Content
Session 1 (2 hours)	<p>Introduction to Flipped Classrooms/Flipped Learning</p> <ul style="list-style-type: none">• What is a flipped classroom?• What are the benefits of bringing this approach into the classroom?• Examples of flipped learning approaches in music classroom with technologies <p>Flipped Approach #1: Experimenting with Chrome Music Lab [CML]</p>  <p><u>What is/How-to-use/What you can teach musically with CML:</u></p> <p>CML is a free music creation website/tool that students can experiment with music in creative, hands-on, and interactive formats. CML is accessible across all devices on a web browser, and can be used in classrooms to explore music and its curricular connections to science, math, art, and more. Each experiment in CML can help introduce an element of music (i.e. rhythm, melody, harmony, tone). In this way, students can learn musical concepts through organic experimentation</p>

on CML. CML can be an effective tool with its intuitive nature that encourages experimentation. The pre-formatted sounds on CML will allow instant success in students' compositions, thereby providing beginning musicians confidence and immediate gratification in their improvisation and composition abilities.

We will use three platforms/tools from CML in this workshop:

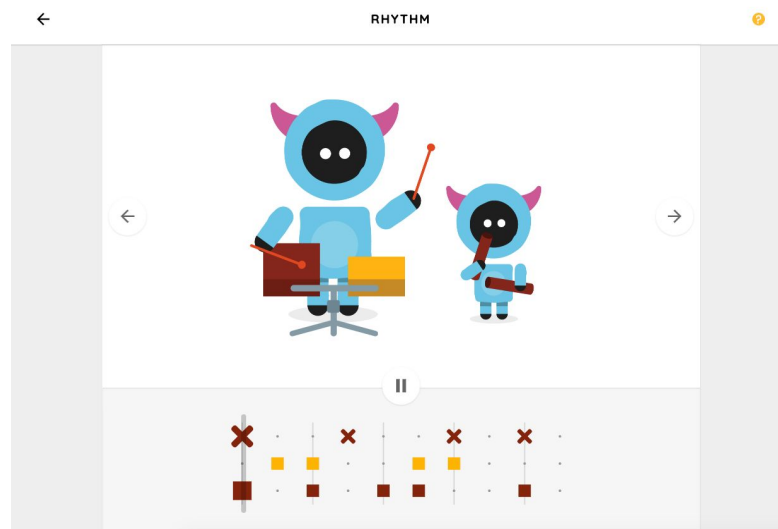
1. [Kandinsky](#)

Kandinsky allows students to 'paint' sounds on the screen. Different shapes will create different sounds (i.e. circles create vocal sounds and triangles create percussive sounds). Participants will organically experiment in connecting sounds to image, and discover features like the different sounds, pitch, layering, and harmony.

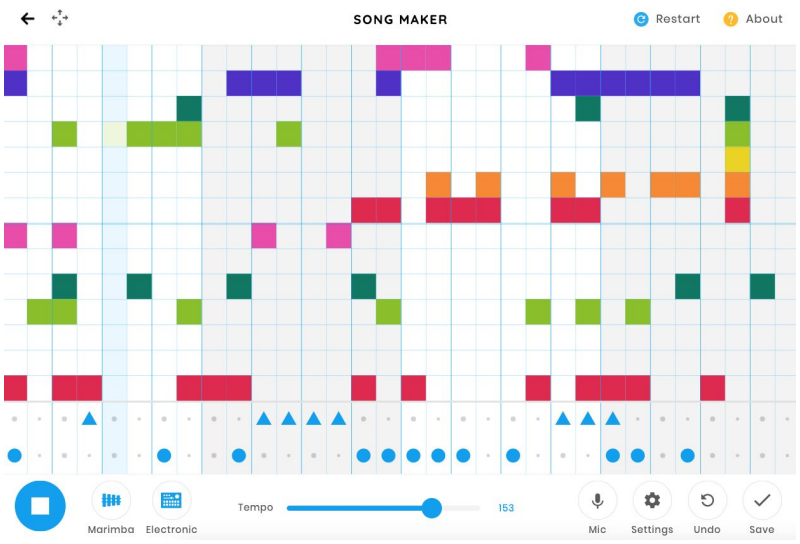


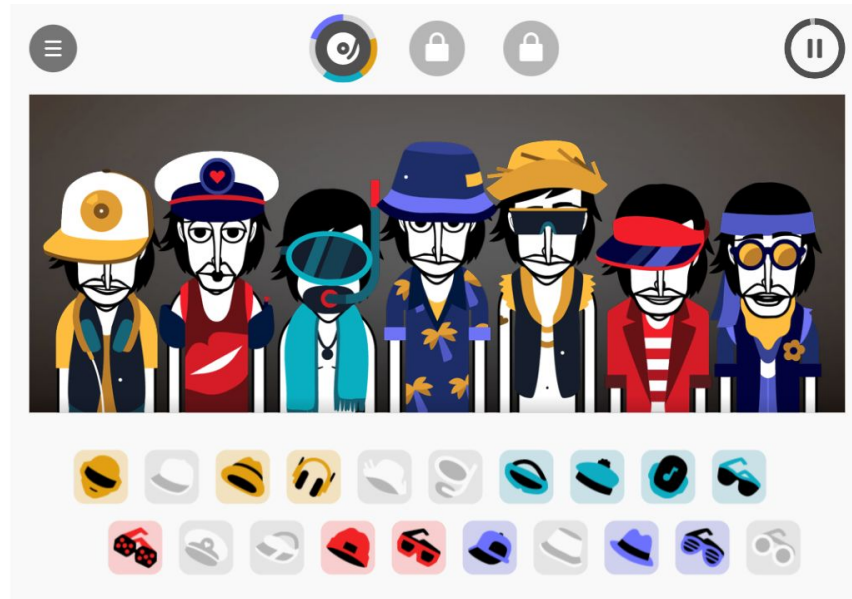
2. [Rhythm](#)

Rhythm shows two characters playing percussion instruments playing in metres of 3, 4, 5, and 6 (different tempo). Each sets of characters has a different metre and different instruments. Sounds can be added by clicking on the grid, and the sounds are played in a loop.

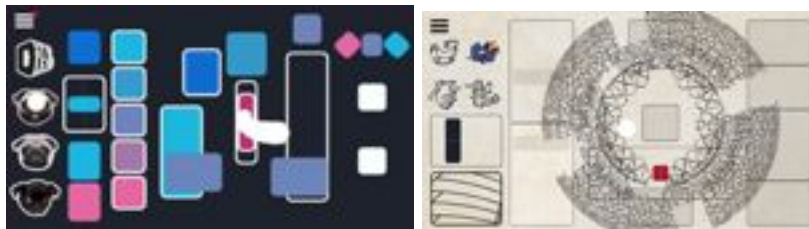


3. [Song Maker](#)

	<p>In Song Maker, participants can click notes (represented by colours) into the grid. Intuitively, the higher on the grid, the higher the notes, and lower on the grid, the lower the notes. The bottom two rows are saved for a rhythmic pattern. One can change the instrumentation and tempo of the loop, and can also use the mic feature to record notes into the app. The scale, length of the song, range of notes, and time signature can also be modified through the settings.</p>  <p>After experimenting with the above apps on CML, participants will collaborate in creating an improvised group sound/jamming on CML. This will be followed by an informal 'presentation' of final work to the rest of the group.</p> <p>Consolidation</p> <ul style="list-style-type: none"> • Present other lesson plans/examples to use CML in multiple classroom settings • Q & A/Reflection - discuss participants' musical decisions and collaboration efforts. What kind of learning ensued and how can learning be effective in your own classrooms?
<p>Session 2 (2 hours)</p>	<p>Discussion: Interactive Technologies for Mixing/Layering Sounds</p> <ul style="list-style-type: none"> • Examples of commonly used apps (i.e. GarageBand) • Discuss benefits of apps that use unique, audio-visual interfaces (with emphasis on aural and tactile learning) • Discuss collaborative opportunities for sound mixing <p>Flipped Approach #2: Incredibox & PlayGround-Organic Remix <u>What is/How-to-use/What you can teach musically with Incredibox & PlayGround:</u> Incredibox is an iOS game/music creation app using interactive 'beatboxers'. Participants can choose the 'outfits' for the beatboxer characters by dragging the article onto the characters, which produce different types of sounds: beats, effects, melodies, and voices. Participants will make musical choices on layering and remixing rhythms, beats, and melodies. Similar to CML, the pre-formatted sounds on Incredibox will allow instant success and gratification in students' sounds.</p>



In PlayGround-Organic Remix, one can create music beats by swiping and tapping fingers on the musical shapes. Created in collaboration with DJs, producers and beatmakers, PlayGround allows a DJ experience on a unique, interactive and fascinating interface. Users can play, remix, record, and share sounds, with BPM (beats-per-minute; tempo) modification, as well as a 2-player mode for 'jamming'. Can be an excellent app to allow students to visualize combining and layering sounds to show the relationship between aural and tactile. Multiple 'maps' available for different sounds, instrumentation, and patterns.



After experimenting with Incredibox and PlayGround, participants will collaborate in combining elements of the two apps to create a group sound-mix. This will be followed by an informal 'presentation' of consolidated work to the large group.

Consolidation

- Present other lesson plans/examples to use apps in multiple classroom settings: next steps of sharing/exporting mix to collaborative DAWs (i.e. SoundTrap) to further mix
- Q & A/Reflection - discuss participants' musical decisions and collaboration efforts. What kind of learning ensued and how can learning be effective in your own classrooms?

Session 3
(2 hours)

Discussion: Game-based Music Creation Apps

- Benefits of game-based learning for music education and sound creation
- Provide examples of emerging technologies in this area

Flipped Approach #3: [Isle of Tune](#)

What is/How-to-use/What you can teach musically with Isle of Tune

Isle of Tune is a street/road construction simulation game for the iPad that creates unique compositions by building a musical city. You can build roads and add street elements (trees, houses, lampposts, bushes), and when you drive the car down the street, each object the car passes makes rhythmic or melodic sounds.

Students can create original music or recreate familiar melodies, and share their finished sounds/visuals.



After experimenting with Isle of Tune, participants will create a tune/musical city in small groups. The final creations can be uploaded to the server to be shared/presented to the large group.

Consolidation

- Present other lesson plans/examples to use app in multiple classroom settings
- Q & A/Reflection - discuss participants' musical decisions and collaboration efforts. What kind of learning ensued and how can learning be effective in your own classrooms?
- Brief presentation of other emerging mobile/iPad apps that was not discussed in workshop (Musyc, Groove Pizza, Singing Fingers, Sketch-a-Song Kids, Bandimal, Loopimal)
- Final thoughts/survey/feedback of workshop

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