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Makey Makey Music: Creativity in the Music Classroom

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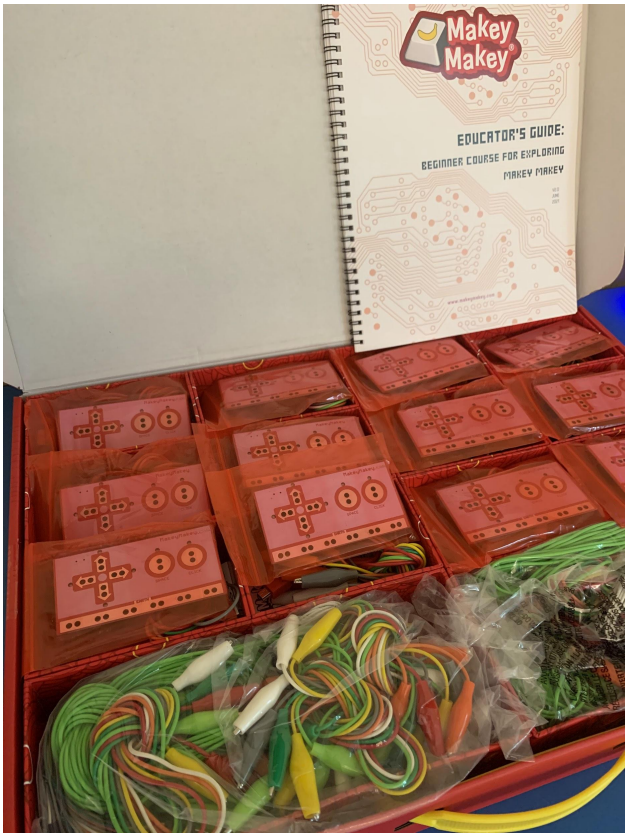

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Goals and Objectives

This interactive session will introduce applications to incorporate creativity and music through technology for elementary general music classes. By incorporating technology in the music classroom, students are able to make connections between music and other subject areas. Makey Makey is a device that allows students access to apply their personal interests, emotional expression, and creativity in music, resulting in positive and productive learning environments with social-emotional maturity. Key facets of experimentation and experiential learning reinforce academic concepts as well as critical thinking, which transfers to various scenarios in the school environment. Attendees will become familiar with the Makey Makey kit, learn four examples of inclusion and uses for creativity in the music room, and rotate through four stations to get hands-on guided experience from a learner's perspective. Attendees will receive access to a digital package including lesson plans and resources for implementation in their own classrooms.

Florida Standards

MU.5.C.2.2 Describe changes, using correct music vocabulary, in one's own and/or others performance over time.

MU.5.S.1.2 Compose short vocal or instrumental pieces using a variety of sound sources.

MU.5.S.1.4 Sing or play simple melodic patterns by ear with support from the teacher.

MU.5.S.3.2 Play melodies and accompaniments, using proper instrumental technique, on pitched and unpitched instruments.

MU.5.H.2.2 Describe how technology has changed the way audiences experience music.

MU.5.H.3.1 Examine critical-thinking processes in music and describe how they can be transferred to other disciplines.

MU.5.F.1.1 Create a performance, using visual, kinesthetic, digital, and/or acoustic means to manipulate musical elements.

ELA.5.C.3.1 Follow the rules of standard English grammar, punctuation, capitalization, and spelling appropriate to grade level.

ELA.5.C.5.1 Arrange multimedia elements to create emphasis in oral or written tasks.

SC.5.P.11.1 Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop)

SC.5.P.11.2 Identify and classify materials that conduct electricity and materials that do not.

SC.5.N.1.2 Explain the difference between an experiment and other types of scientific investigation.

Course Outline/Overview

Overview of the Creative Process

- Based on Webster's (1990) "Model of Creative Thinking in Music," discuss the rationale for creativity, as related to NAfME standards, student choice/voice, and representation of musical styles

What is Makey Makey?

- Product introduction with picture and video examples from the classroom

Student Examples & Lessons

- Human piano, to demonstrate conductivity
- Conductive materials exploration and improvisation
- Synesthesia, student drawings, and playing a familiar song
- Sampler (digital musical instrument) and recording software to compose and improvise

Stations

- Student station hosts will demonstrate each project and assist attendees, as well as share their personal experiences using Makey Makey in music class
- Attendees will rotate between the four stations to get hands-on guided experience with the Makey Makey kit and projects

Discussion and Q&A

Lesson Plans and Step-by-Step Guide in Implementing

LESSON 1: Introduction to Makey Makey & the Human Piano

When my class set of Makey Makeys arrived at school, I made sure to take the time with my students so they would be able to appreciate the delicate and many parts that go along with the devices. As a class, we identified the Makey Makey Board, and important components on it: Earth (what you must be touching in order to complete the circuit and make sound), and the following commands: Up/Down and Left/Right arrows, Space, and Click. We discussed how each of the commands correlates with the respective keys on a computer keyboard and mouse. Students also identified and learned to organize the many cables associated with the device: multicolor Alligator Cables that connect the Makey Makey to other objects, the red USB Cord that connects the Makey Makey to the computer, and the White Wires that are used for more advanced projects. After a "show and tell," students each unpacked their own boxes to identify the parts described. Once comfortable with each part, students carefully disconnected all cables and put all parts away in the box as they had found it.

See "Unpacking the Box" photos here

Once familiar with the parts, I showed the class how the Makey Makey connects to the computer. When the Makey Makey Board is connected to the computer through the red USB Cord, a red light on the Board illuminates. Then, one metal end of an Alligator Cable is connected to Earth on the Board, while the other metal end is held by a student. Other Alligator Cables connect to the Commands, with students holding the ends. I launched the Makey Makey Piano (https://apps.makeymakey.com/piano/) to demonstrate how the Makey Makey worked.

When the student holding the EARTH Alligator Cable touched the hand of any other student holding another Alligator Cable, it activated the corresponding key on the Makey Makey Board, and therefore on the computer, resulting in the sound of a piano key being played. Gasps of shock, confusion, and joy echoed through the room as the student holding EARTH continued to tap their classmates' hands and discover what kinds of songs they would be able to play. Even more mind-blowing to the students was when I prompted them as follows:

One student held EARTH, and one student held an Alligator Cable. All other students in the room came close and joined hands with the student holding the Alligator Cable, creating a circle around the room. When the student holding the EARTH Alligator Cable played the hand of the student all the way around the circle, the note still played! I explained that our bodies conduct

energy, and the message from EARTH got transferred through each student's body, around the circle, until it went to the corresponding Command and played on the piano.

See "The Human Piano" lesson photos here

LESSON 2: Conductivity

After the excitement and shock wore off, the next step was for students to discover what objects would work with the Makey Makey. I introduced key terminology from Makey Makey's lesson guides that would help students on their experiential journeys: conductor (a material that allows electrons to flow), insulator (a material that does not allow electrons to flow), prototype (an early or beginning model of an idea), and iteration (reworking ideas by making more versions).

Students were tasked to test different objects to find which ones were conductive. To do so, students connected Alligator Cables from the Makey Makey to objects such as marshmallows, gummy worms, and aluminum foil. If objects were conductive, the Makey Makey Piano would play; if objects were insulators, the Makey Makey Piano would not work. Below is a chart outlining some of the discoveries of the class:

Conductors	Insulators
marshmallows, Playdoh, gummy worms, aluminum foil, pencil graphite	masking tape, paper

The class concluded with the following discussion questions:

- How are the conductive items alike?
- What do the insulators have in common?
- What makes a conductor different from an insulator?
- What items did you not test that you think might be conductive?
- Why do you think the Alligator Clips and Alligator Heads are covered in plastic?

See "Conductivity" lesson photos here

LESSON 3: Drawings and Performing Songs

Upon discovering that pencil graphite was conductive, students drew their own artwork in response to music, aligning with a musicology lesson on synesthesia and the artist Kandinsky. While wanting to respect student's artistic choices, I reminded students that in order for the Makey Makey to work, they would need very dark marks from their pencil, and connection points for the Alligator Cables at the edges of the paper.

The following class, students connected the Makey Makey to their drawings, following color-coding directions on an instruction sheet. The instruction sheet had directions for "play-by-color," which if followed correctly, would allow students to play familiar songs such as Mary Had a Little Lamb, Jingle Bells, Hot Cross Buns, and the Itsy Bitsy Spider on the Makey Makey Piano. (This lesson took place in December, so Jingle Bells was a popular choice!) Students experimented and were successfully able to play the song of their choosing.

See "Drawings" lesson photos here

Find the instruction sheet here

LESSON 4: Audio Sampler and Recordings

After developing mastery with the Makey Makey Piano, I introduced the students to a new app: the Makey Makey Sampler (https://apps.makeymakey.com/sampler/). This app allows students to select from nine buttons that can each be customized with preset or student-recorded audio samples.

At first, I loaded the Makey Makey Sampler on my Interactive White Board to show students the layout, and how to access the preset sounds. Students were eager to try themselves, and after loading the website and connecting their Makey Makey, were able to improvise patterns of beats and sounds for the class.

Students not only showed proficiency in accessing the preset audio samples, but quickly discovered the recording tool. Without any teacher instruction, students began helping each other to record their own voices and sounds, name the sample and save it to the library, and include it in their improvisations.

(Funny story: After some time of independent experimentation, I got the class' attention to make some announcements. In the midst of the organized chaos, a recording had been made, and a student who should not have been touching the computer at that point set off the sampler which

loudly played "He's hitting me for no reason!" The entire class, including myself, erupted in laughter (no one was hurt, it was recorded from some students goofing off) but became an inside joke with the class, with students frequently re-recording that phrase whenever using the Makey Makey Sampler in the future.)

LESSON 5: Poetry Project

As my students became more and more comfortable with the Makey Makey and its two musical apps, I wanted them to be able to make connections to technology and music with other classes. The perfect opportunity presented itself when the fifth grade ELA teacher told me the students would be working on a poetry project.

We decided that students could enhance their original poetry with sounds and recordings on the sampler. In ELA class, students wrote original poems, and then created their visualization of it - some with imagery, many with borders, and decorated with brass fasteners. When it was time for music class, I brought the Makey Makey kits to the classroom, where students loaded the familiar Makey Makey Sampler. After spending some time sifting through the preset and self-recorded samples, students decided which sounds they wanted to use to enhance their poetry.

Students connected Alligator Cables to the back of the brass fasteners, so that when reading their poetry aloud, they could touch the top of the brass fastener and it would play their selected sound on the Makey Makey Sampler.

See "Poetry Project" lesson photos here

Resource List

Makey Makey Products

Teachers can mix and match from the products offered - using just one device or as many as they'd like for multiple students!

- https://makeymakey.com/pages/featured-products
- $19.95 Makey Makey GO
- $49.95 Makey Makey Classic
- $699.95 STEM Pack of 12 - Classroom Invention Literacy Kit

Resources

Lesson Ideas

- Makey Makey How-To Guides & Activities https://makeymakey.com/pages/how-to
- Makey Makey Workshops & Events https://makeymakey.com/pages/workshops

Teacher Support

- Makey Makey Educators Facebook Group https://www.facebook.com/groups/1586337712411 61
- Digital Innovation Leader of your school's leadership team
- PTSA & parent volunteers for additional funding & support