DubMix Learn Coding with Music

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WHAT IS TAP?

Technology Ambassadors Program (TAP) focuses on increasing interest in students who go on **pursuing an IT major/minor**, as well as sparking interest to **non-IT major students.**

The goal of this **award-winning program** is to increase the number of **students in the IT field**, particularly those **underrepresented in computing**.

TAP will enhance technical and social skills to the fullest by giving exciting opportunities to **engage with peers** and build strong **connection with the community.**

PROJECT GOALS

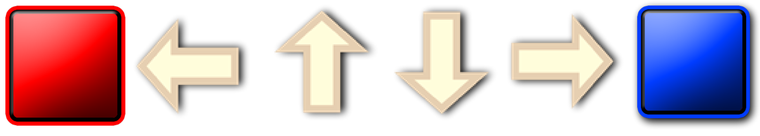
The goal of this project is engage young individuals to **develop interest in coding** through the **rhythm of music,** motivate people to **experience technology** that benefits their future, and get to **jam to music while actively learning how to code.**

PROJECT DESCRIPTION

DubMix is the workshop based around having students **create their own music track with basic coding.**

EarSketch will give students **hands on experience** of **introductory programming,** such as creating comments, variables, settings for loops, and calling functions.

Students will be experiencing the **Unity 2D rhythm game** that implements **EarSketch** as an additional asset.



TECHNOLOGIES

EarSketch

EarSketch is a free online software that creates music with code.

Students learn **basic concepts and skills of programming** through the process of making music.

Unity is the **game-engine** for developing 2D and 3D games.

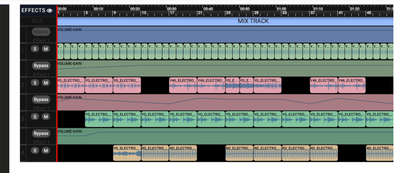
Supports simple **drag and drop** function and scripting in **C#**.

Our **rhythm game** for the project was designed using **Unity**.

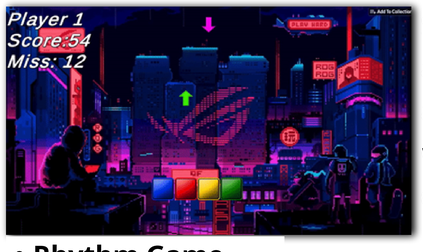
WORKSHOP

```
from earsketch import *

init()
setTempo(90)
# Variables set to sound track
strings = Y17_STRING_1
horns = Y03_HORNS_1
crash = Y03_CRASH_1
scify = Y17_SCIFY_1

# How to use fitMedia:
# fitMedia (SOUND_CLIP_HERE, LAYER, start_measure, stop_measure)
fitMedia(strings,1,1,5)
fitMedia(scify,1,5,9)
fitMedia(horns,2,3,5)
fitMedia(horns,3,4,5)
fitMedia(crash,3,4,5)

setEffect(1,VOLUME,GAIN, -12)
setEffect(2,VOLUME,GAIN, -20)
setEffect(3,VOLUME, GAIN,-15)

setEffect(1,DISTORTION,DISTO_GAIN,10)

for measure in range(10,15):
    if(measure % 2 ==0):
        setEffect(1,PAN,LEFT_RIGHT,-50,measure, 50, measure+1)
    else:
        setEffect(1,PAN,LEFT_RIGHT,-25,measure, 25, measure+1)

finish()
```

• **Code Example**



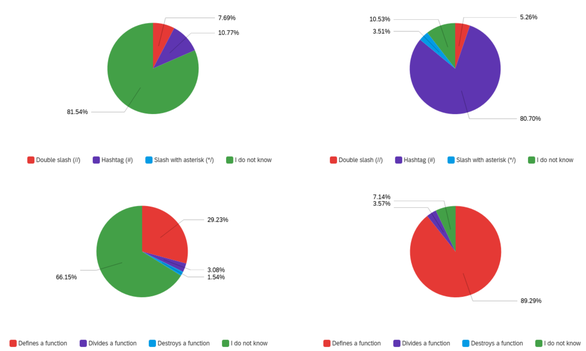
Even with the **simple codes** students learn in the workshop, **Earsketch** can create **studio-quality music.**



• **Rhythm Game**

Students play our **rhythm game** and learn how **programming** allows them to bring their **ideas, works, and creativity** to the **digital world**.

DATA



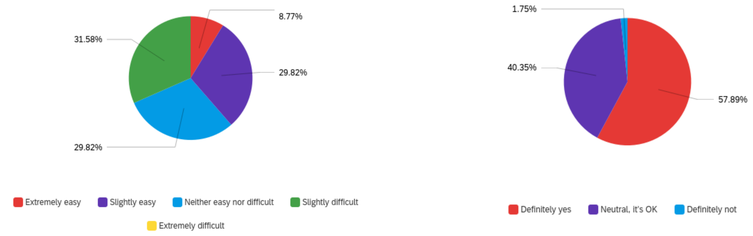
How do you **comment** in Python?

Purple: Correct
Green: I don't know

How do you **define a function** in Python?

Red: Correct
Green: I don't know

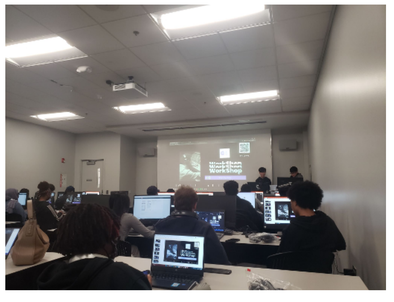
More than 90% of students showed improvements in their knowledge in programming after the workshop.



WHAT'S NEXT?

Initiating from the study showing some **musicians turn out to be good coders**, we will research further to find the **connection between music and coding**.

The results will indicate whether the synchronous education program of **programming and music** will be effective or not.



ACKNOWLEDGMENT

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