DubMix: Learn Coding with Music

Jin Lee

Georgia Gwinnet College

ylee18@ggc.edu

Richard Rodas Georgia Gwinnett College

[rrodas@ggc.edu](mailto:larst@affiliation.org)

# INTRODUCTION

   The Technology Ambassadors Program (TAP) is focused on commitment to service-learning. This program addresses a need to increase the number of students who go on pursuing an IT major/minor, especially those underrepresented in computing. You get to work on exciting projects, build peer-to-peer connections, and enhance your technical skills. The goal of TAP Project is to introduce the idea that whether you have little to no experience, you can create and discover new things to make and share.

1. **Abstract**

DubMix is a rhythm game created by Georgia Gwinnett College (GGC) Informational Technology students Richard Rodas and Jin Lee. The two are involved with GGC’s TAP Program (Technology Ambassador’s Program) whose main focus is to increase interest in students who go on pursuing an IT major/minor, as well as sparking interest to non-IT major students. In order to appeal to students from middle school to college, we used the keyword Music as a concept for our project. Students will be able to learn basic programming skills while producing their music track on EarSketch, and as students play with our rhythm game, they will learn how programming helps them to visualize their creativity. With a huge collection of sample libraries, EarSketch allows students to produce music regardless of genre. Designed using Unity, DubMix lets the students experience a rhythm game with songs created from EarSketch. Players will be able to test their cognitive functions by pressing buttons in a sequence dictated on the screen. This research was conducted in order to increase curiosity for the IT field to both non and current IT students. Our hypothesis is that students will be able to understand the basics of coding in Python. The materials we used are EarSketch and a game project built in Unity. We anticipate that the final results would be the student being able to understand the basics of Python coding.

# 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 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.

## **Methods**

* + 1. DubMix is a workshop based on having students create their own music track via coding. In order to appeal to students from middle school to college, students will be able to learn to create a music track through coding on EarSketch. Using a huge collection of samples library, students can produce their own unique track regardless of genre. DubMix lets the students experience a rhythm game with songs created from EarSketch. Players will be able to test their cognitive functions by pressing buttons in a sequence dictated on the screen. Throughout the class workshops, students would be able to learn the basic concepts of Python. The educational aspect will take place in EarSketch. EarSketch will give the students hands-on experience with introductory programming concepts such as: creating comments, creating variables, setting loops, and calling functions. In addition to programming, students will also receive experience working in a DAW (Digital Audio Workstation) and producing their style of music. The students will later have the option of playtesting our game created in Unity, giving them a sense of the game development aspect of programming. The game would have a selection of tracks with a single-player and co-op mode for each track. When a track is selected, the rhythm game begins! The player must press up, down, left, or right in a sequence dictated on the screen on time. If pressed on time, they earn points, but otherwise they lose a point.

## 

# Results

* + 1. In the pre-survey, most of the questions answered, "I don't know," indicating that most students were not experienced with programming before. After the workshop, "I don't know" responses significantly decreased; most of the students gained the confidence to answer the questions, and more than 80% of students could answer the conceptual questions correctly. Students quickly implemented the programming skills on EarSketch to produce their style of music, and they were engaged in experiencing new technologies. More than half of the students answered, "Definitely yes" to the question asking if they enjoyed learning new technologies, and the other half answered, "it was okay." We also received feedback from students; some of the concepts we taught in the workshop were difficult for some students who are new to programming. For loops and while loops, for instance, were not the topic that students could fully understand in an hour-long workshop.

# Figures

# If-else Pre-Survey

# 

# \*Correct answer is Purple

# If-else Post Survey

# 

# \*Correct answer is Purple

# Python Case Sensitive Pre-Survey

# 

# Python Case Sensitive Post-Survey

# 

# \*Correct answer is Red

# Increment Pre-Survey

# 

# Increment Post-Survey

# 

\*Correct answer is Green

# ACKNOWLEDGMENTS

Special thanks to our professors from TAP, Dr. Rahaf Barakat and Dr. Cengiz Gunay, who served as our mentors throughout the entire development of DubMix. They have supported us in our project by improving our teamwork, communication, presentation, and technical skills. Also, thanks to Georgia Gwinnett College Technology Ambassador Program committee, and the school of Science and Technology for allowing us to design this outreach project for many GGC non-IT/IT major students and children of 18 years of age and younger.

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