

Teaching Sound Editing with Audacity and Makey Makey

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Introduction

This study is targeted towards young students who wish to learn about audio editing and design. We are conducting this study to engage and teach students the basics of audio editing. Some students may be pressured by the idea of tech and programming, but our project will show them other avenues in the tech side of education.

Our goal is to introduce both tech and non tech students to learn about recording and editing sound files through a fun and interactive horror story Mad Lib activity. We are developing this project as part of the Technology Ambassador Program (TAP) course we are enrolled in during Fall 2023. The TAP program is a program for anyone with an interest in Information Technology. The program lets students learn more about different technologies while creating outreach workshops to promote an interest in STEM in their community. The creation and implementation of these workshops will allow TAP students to develop better communication and leadership skills while also letting students be creative in designing their projects. The TAP program promotes the acquisition of research skills and encourages students to attend conferences to present their projects.

Methods

Our goal is to introduce both tech and non tech students to learn about recording and editing sound files through a fun and interactive horror story Mad Lib activity. Our project features narrative stories that feature sound effects activated by the reader pushing a button to produce a given sound effect. These buttons use Makey Makey technology to produce certain sounds given certain button input(s) and these inputs are implemented using Scratch. Our demo version includes 6 stories with already edited sounds which will use a Makey Makey to play the sounds, while our workshop will just give each story and let our audience create and edit their sound effects using Audacity. The workshop will also include a couple of examples of the step-by-step process of editing our demo sounds to assist the audience in creating/editing their sound effects.

We will use recording hardware like mics, soundproof booths, and computers to capture sound effects for provided stories for students to fill in. Editing software like Audacity or Garageband will be used to modify our audio, this will give them a chance to learn and get a deeper understanding of how sound waves and modifiers can do to a recording. Once complete, students will be walked through how to code their recordings into Makey Makey and allowed to integrate them into the stories. We wish to teach methods that students can use to record, edit, and export sound, as well as how to code that sound into programs like Scratch and Makey Makey. We will showcase our work at several venues:

- **Tap Expo (Target Audience: GGC college students), Super Saturday Series (Target Audience: Middle and High School Boys/Girls), and CREATE Research Symposium and conference setup (Target Audience: General).** During these events, we will demonstrate how to use a Makey Makey, with the use of a horror story. As the story is being told we will include sounds, activated by the

Makey Makeys to create an immersive experience. We will then give a brief explanation of how the audio clips we implemented were recorded and edited by us.

- **Classroom Workshops (Target Audience: GenEd college classes).** The classroom activity will start with a demonstration of our story and how Makey Makey can be used to insert sound clips. We will then go over how we went about recording and manipulating our audio and what applications we used to make it happen. Then we will turn it over to the students, split into groups, where they will have to edit pre-recorded sounds and apply them to their given story from their own devices.

In the general workshops, we will demonstrate one of our stories using Makey Makey to insert sound clips. We will then go over how we went about recording and manipulating our audio and what applications we used to make it happen. Then we will turn it over to the students who, split into groups, will have to edit pre-recorded sounds from their computers and apply them to their given story. Students who finish early will be allowed to interact with the equipment we used during our project.

Our results will be measured with a pre and post-activity survey. The surveys will have basic technology questions about the technology that is being used in our project along with general questions about age and education level.

Results

Once we conduct our workshops and demos, we will analyze the results from the previously mentioned surveys. For the Tap Expo, we will evaluate how the concept of sound manipulation is viewed through our presentation of edited sounds controlled by Makey Makeys. For the Super Saturday Series, we will be looking for student engagement, as well as how well middle schoolers can edit and play with sound. For the classroom workshop, we will get the chance to see results from young students and their ability to engage and develop their custom sounds. For the CREATE Research Symposium and Conference Set Up, our results will be tested on student engagement, creativity, and ability to record and edit the sound clips provided.

Discussion and Conclusion

Our goal is to introduce sound editing to the general public and use the novelty of Makey Makey to increase interest in Information Technology. Using stories as a requirement for certain abstract sound effects, we show the importance of being able to edit easily recorded audio to produce hard-to-record sounds/non-existent sounds. Our workshop uses open-source applications that do not require prior knowledge of IT-related concepts to ensure that our audience can follow along cohesively and explore the concepts taught on their own. Through this workshop, we hope to inspire a wide variety of people- young children to professional adults- to participate in more science/technological activities.

References

1. Making Noise: Using Sound-Art to Explore Technological Fluency: ACM Inroads: Vol 8, No <https://dl.acm.org/doi/10.1145/3095781.3017714>
2. Proceeding publication at CCSC: SE meeting, 2019, Auburn, AL. "Using Technology to Create Synthetic Instruments and Engage Students While Teaching Algorithmic Skills" by Alex Smyntyna, Khadijah Nixon, James Broome, Hieu Dinh, Anca Doloc-Mihu, Cindy Robertson

Acknowledgments

STARS Computing Corps - <https://www.starscomputingcorps.org/>
Georgia Gwinnett College - School of Science and Technology