

Using Audio Plugins to Introduce Undergraduate Students to Advanced Experimental Music Making Practices

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ABSTRACT

It is common for undergraduate students to be introduced to experimental music-making practices by watching concerts or presentations given by the EMDM (Experimental Music Digital Media) department at LSU rather than in their regular course work. Most of these involve electronic devices built by EMDM graduate students, software coded by EMDM graduate students, or MaxMSP patches built by EMDM graduate students. These presentations could be intimidating to undergraduate students who would like to start making experimental music of some kind because it gives the illusion that to make experimental music one would need to be at the graduate level with knowledge of computer programming and electrical engineering.

The purpose of this study is to investigate if the use of audio plugins that utilize experimental music-making techniques could be a successful way to integrate students into the field of experimental music in a non-intimidating way. Most undergraduate music students use DAWs in their music-making process along with audio plugins in their regular course work, so the author's hypothesis is that experimental plugins will be a successful tool to introduce experimental music-making techniques in a familiar way that music students are already using.

Author Keywords

NIME, proceedings, EMDM, experimental music, electronic music, electroacoustic music

1. INTRODUCTION

1.1 Background

1.1.1 *How has music technology been studied in a classroom setting?*

The inclusion of digital music technology in educational settings has been studied over the past two decades. According to (Wise, 2011), today's students have deeply embedded the use of technology and especially the internet in their daily lives.[10] They learn new technologies before their parents and teachers; this reverses the usual hierarchical roles for education where students usually learn from

teachers what teachers have already learned before the students. In (Pensky, 2001) Pensky even goes as far as to call them "digital natives". Because of this, (Wise, 2011) suggests that music educators should aspire to improve the experience of musical learning by making the education process more relevant to young students.[8],[10] This study, (Wise, 2011) focuses on a few broad questions, but the most important one is: "is technology a new way of serving traditional goals in music education or does it at least offer music educators something new or different to the music education process?"

This study found that the use of new music technology in an education setting not only served traditional needs but also enhanced the learning experience in a dramatic way. The teachers reported that they worked hard to provide learning experiences that fit within their "digital native" reality and the reality of their world. The teachers were also aware of the individual learning needs of their students and designed the activities to suit those needs. This study also found that the teachers studied started to adapt their traditional educational practices to suit the new technologies used and will continue to expand the use of technology in their classrooms.

Similar results were found in studies [2], [9], and [1] where (Dobson, 2016) focused on college undergraduates and showed that collaboration promoted student's self-reflection on the choices they made around the use of music technology in music composition learning.[1] The (Dobson, 2016) study also showed that music technologies fostered meaning-making in the music and promoted exploratory creation.

All of these showed positive responses to integrating music technology in music education curricula.

1.1.2 *How has music re-mixing and re-composition been used in studies with music technology integration in the classroom?*

EarSketch is an online software which functions in multiple ways. It functions as a digital audio workstation, a coding environment, an audio loop browser, a sharing site, and an education curriculum.[5] It has been used widely in educational settings to teach both computer programming and music composition. According to (Parks, Yo, 2012), EarSketch aims to increase the participation in computing by fostering an engaging learning experience using a STEAM (science, technology, engineering, arts, and mathematics) approach.[7] EarSketch is captivating to students because it makes computing concepts more relevant by putting it into the paradigm of digital audio workstations and music producing.[6]

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In papers [5], [3], and [4], the focus is on using music re-mixing and re-composition in EarSketch to teach computational music re-mixing and increase student engagement in music education, the shared theme being music re-mixing or re-composition.

What all of these papers found was that using music re-mixing and re-composition was a compelling way to get students to engage more in learning EarSketch and computational concepts by making the education process more relevant to the student's established way of working with music technology.

This fits in quite well with the author's hypothesis that using audio plugins will also be relevant to the student's established way of working with music technology since the participants that will be in this paper's study will be students who are familiar with plugins and digital audio workstations.

2. STUDY DESCRIPTION

This study investigates if the use of audio plugins that utilize experimental music-making techniques could be a successful way to integrate students into the field of experimental music in a non-intimidating and engaging way.

This study begins with an anonymous entrance questionnaire asking the students various questions that gather information about how much knowledge they have of experimental music, if they are interested in entering the field of experimental music, and if they think they are capable of learning how to compose experimental music. The author is assuming that the participating students have heard of their local department that studies experimental music and is aware to some extent of the department's involvement in experimental music performance. The Entrance questionnaire is shown below.

1. Have you ever attended an EMDM concert or any other concert at LSU that showcased electronic/experimental music?

O Yes O No
2. Have you ever seen the EMDM department's projects/methods or technologies used in creating their projects/compositions?

O Yes O No
3. To what extent are you interested in making experimental music?

O Strongly interested O Mildly interested O neutral O Not interested
4. Have you ever composed electronic music or any music in an experimental way?

O Yes O No
5. Do you listen to or follow any musical artists that make music in an experimental way?

O Yes O No O Maybe, I'm not sure.

6. Do you think that making electronic/experimental music is too hard to learn how to do?

O Yes O No

7. Which of these skills do you think are necessary to create electronic/experimental music?

O Computer programming O Music composition O Software

O Electrical/electronics knowledge O Digital Audio Signal Processing

8. Of the above responses in question 6, which of these skills do you think you are capable of learning?

O Computer programming O Music composition O Software

O Electrical/electronics knowledge O Digital Audio Signal Processing

Please write a short paragraph explaining if you compose music, how you go about composing music, the tools you use, and the genre you consider your music to be.

During the testing phase, each student will be stationed at a computer with the digital audio workstation Studio One 4 installed on it. The students will have a short pre-made multi-track music composition. Each computer will also have a plugin installed that was created by the author that utilizes experimental music-making techniques. This plugin uses a chaotic equation to perform wave-shaping on the audio. Each student will be asked to use at least one instance of the plugin in their re-composition and asked that the plugin be the focus of the composition's overall sound by automating the plugin's parameters. This will fall in line with the above mentioned studies that utilized music re-mixing and re-composition with EarSketch. The interface of the plugin is shown below in Figure 1.



Figure 1: Interface of the experimental plugin.

The last component of this study is to have each student fill out an exit questionnaire which will gather information such as if the composition process was enjoyable, if the process felt engaging, if the students are planning to begin composing experimental music, and if the students are more confident about their ability in composing experimental music. The exit questionnaire is shown below.

Question	Yes	No	Strongly Interested	Mildly Interested	Neutral	Not Interested
Have you ever attended an EMDM concert or any other concert at LSU that showcased electronic/experimental music?	3	0				
Have you ever seen the EMDM department's projects/methods or technologies used in creating their projects/compositions?	3	0				
To what extent are you interested in making experimental music?			0	2	1	0
Have you ever composed electronic music or any music in an experimental way?	3	0				
Do you listen to or follow any musical artists that make music in an experimental way?	2	1				
Do you think that making electronic/experimental music is too hard to learn how to do?	0	3				

Table 1: Entrance Questionnaire Results

1. How enjoyable was the composition process?

O Very enjoyable O Neutral O Not enjoyable

2. To what extent are you interested in making experimental music now that the study is over?

O Strongly interested O Mildly interested O neutral O Not interested

3. Do you plan on composing experimental music in your future projects?

O Yes O No O Maybe, I'm not sure

4. Do you plan on researching experimental music in your free time to find new methods you did not see in the study?

O Yes O No O Maybe, I'm not sure

5. Do you plan on looking for, listening to, or following any musical artists that make music in an experimental way?

O Yes O No O Maybe, I'm not sure

6. Do you now think that making electronic/experimental music is easier to learn how to do?

O Yes O No O Maybe, I'm not sure

7. Are you more confident in your ability to compose experimental music?

O Yes O No O Maybe, I don't know

8. Do you think that plugins were an effective way to introduce experimental music making techniques?

O Yes O No O Maybe, I don't know

On the back, please write a short paragraph explaining if your thoughts about experimental music have or have not changed and how much this study has influenced your thoughts.

3. CONCLUSIONS

3.1 Entrance Questionnaire

The combined results of the entrance questionnaire's most relevant data as defined by the author is shown above in Table 1.

Also included in the entrance questionnaire was an area for the participants to write a paragraph explaining if the participant composes music, how they go about composing music, the tools they use, and the genre they consider their music to be.

Participant 3 wrote:

"Typically when I compose, I try to find a certain sound or melody that I like and base everything else around it."

This is evident in the composition participant 3 made with the chaotic plugin. They put the plugin on one track, found a setting they liked and brought it in and out of the song like an effect, similar to the way one would use any other effect plugin such as reverb or delay.

The entrance questionnaire, along with their written responses, shows that two out of three of the participants already compose electronic music while one claims to not be a composer. It also shows that two of the three participants are mildly interested in composing experimental music. None of the participants indicated that they currently compose experimental music, so these participants turned out to be the exact demographic to yield meaningful data from. The results of the exit questionnaire will show why this experiment was successful.

3.2 Exit Questionnaire

The results of the exit questionnaire are shown below in Table 2.

The written portion of the exit questionnaire asked the participants to explain if their thoughts about experimental music has or has not changed and how much this study has

Question	Yes	No	Maybe	Strongly Interested	Mildly Interested	Neutral	Not Interested
To what extent are you interested in making experimental music now that the study is over?				2	1	0	0
Do you plan on composing experimental music in your future projects?	1	0	2				
Do you now think that making experimental music is easier to learn how to do?	2	1	0				
Do you think that plugins were an effective way to introduce experimental music-making techniques?	3	0	0				

Table 2: Exit Questionnaire Results

influenced their thoughts.

Participant 1 wrote:

“(the study) Hasn’t changed my views, but I liked the end result. Destination > journey in this case.”

This is an interesting response because although they liked the plugin/end result, they are no more interested in created experimental music than before, however the end result being desirable to this participant must mean that the plugin was effective in some way.

Participant 2 wrote:

”This plugin was very easy to use, yet it did so much. To start out with a normal composition and change its’ style through one single plugin was very cool and eye opening. I liked the mixed sound of regular instruments with the randomness/weirdness of the plugin. I will definitely play around with experimental music from now on.”

This is another great example of how the plugin’s ease of use contributed to a good experience in the study and allowed the participant to be introduced to experimental music-making techniques in a non-intimidating way.

Participant 3 wrote:

”My thoughts on experimental music have changed a little. I have always been a bit intimidated by the concept and never though about using plug-ins in this way to make experimental music. I am now definitely more interested in how these sorts of plug-ins can be made/used to compose experimental pieces. I definitely think it would be useful to use this kind of thing to introduce students to the topic, especially if they know nothing about it.”

This is compelling confirmation that the use of plugins helped ease the students into the experimental music-making process in a non-intimidating way.

Looking at the results in Table 2, all three participants unanimously agreed that using plugins was an effective way to introduce experimental music-making techniques. Two of the three participant’s written portion of the exit questionnaire showed that they are now more interested and inspired to create experimental music now that they have used plugins to do it. One of those two participants also said that they were intimidated by the thought of trying

to compose music experimentally and they are now more confident in their ability to do so now that the study is over.

3.3 Final Conclusions

This study has shown that at least for these three participants, the author’s original hypothesis, that experimental plugins will be a successful tool to introduce experimental music-making techniques in a familiar way that music students are already using, was in fact correct in these two concise ways:

1. Before the study, two participants were mildly interested in creating experimental music while one was neutral, after the study two were strongly interested while one was mildly interested. This means that after the study, all three participant’s were more interested in creating experimental music than they were before the study.
2. Two of the three participants in their written statements after the study, unprompted, wrote that the use of plugins specifically inspired in them interest to compose experimental music, meaning the use of plugins was in fact effective.

4. FUTURE WORK

To continue this research, the author plans to acquire significantly more participants to yield more meaningful data and be able to show a more exhaustive representation of music undergraduates. Acquiring 30-60 participants will hopefully yield more meaningful data. The author would also like to experiment with the chaotic plugin more thoroughly to make it as easy to use as possible while still achieving interesting musical and sonic results. In its’ current form, the plugin only has three parameters that are associated with the chaotic nature and all three parameters affect each other. It would be more desirable to achieve a state in the plugin where the parameters operate more independently making their effects more obvious which would make it even easier for the user. The easier the experience using the plugin, the more the participants can worry about being creative and making music as opposed to spending a lot of time trying to figure out how to use the plugin.

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