

First Time Music Creators:  
A Glimpse Into High School Students' Reactions to Creating Music

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### Abstract

High school music classes in the United States are varied. Traditional band, orchestra, and chorus classes have been augmented by a variety of music classes and including classes that focus on the use of technology as a tool for music creation. Since 2005, these classes are being offered in more and more schools around the United States. The focus for many of these classes is to use music composition as a teaching tool. Research has been conducted on student composers of all age groups from elementary school through high school but mostly focus on the compositional process. This study sets out to explore the experience of some students who have taken one of these music classes, music composition with technology, at a high school in the United States.

*Keywords:* music technology, high school, student composers

### First Time Music Creators: A Glimpse Into High School Students' Reactions to Creating Music

High school music classes in the United States are varied. Separate courses have been created to provide a kind of music education that traditional band, orchestra, and chorus classes did not offer, a concentration on music composition and music creation using technology as the tool for creation (Dammers, 2009). With the influx of available technologies for both Apple and PC platforms, music technology integration in the music classroom increased almost exponentially after 2005 (Dammers, 2009). Several pioneer music teachers embarked on creating classes where the primary tool for music learning and creativity was technology. These classes were designed mostly because individual teachers had a strong desire to use technology in their classrooms (Dammers, 2012). Teachers have formed these technology based music classes as a means to serve students who do not perform in traditional ensembles such as band, orchestra, and chorus (Williams, 2011). More and more schools are adding technology-based music learning to their curricula (Cain, 2004; Dammers, 2012). This study sets out to explore the experience of some students who have taken one of these music classes, music composition with technology, at a high school in the United States.

## **Literature Review**

### **Technology in the Music Classroom**

More contemporary use of technology by music teachers has been thought of in two main categories: using technology to plan lessons and prepare materials for student learning, and for student use in the learning experience (Dorfman, 2008). Software, such as GarageBand and Music Ace, has played an important role in shaping many music classroom curricula (Martin, 2012; Wise, Greenwood, & Davis, 2011). Most notably of which is how music composition as a

pedagogical tool for learning the elements of music has been influenced by the availability of technology (Nielsen, 2013; Savage, 2005).

Technology integration in general music classes in the USA increased between 2002 and 2012 (Dammers, 2012). Since the addition of the free software GarageBand on the Macintosh computer in 2005, Digital Audio Workstations (DAW) for personal use became pervasive with free or low cost additions for Windows PCs soon afterwards. Bauer, Reese, and McAllister (2003) and Cain (2004) listed specific technology, hardware, and software used in the music classroom. With the influx of available multiple platform technologies, music technology integration in the music classroom increased almost exponentially after 2005 (Dammers, 2009).

Dammers (2009) focused on the changes teachers made to their curriculum due to the availability of music technologies and instructional communication technologies (ICT), although specific software and technologies was not part of his study. The increasing availability of technology and teachers' desire to teach with technology allowed them to create entire courses based on making and/or creating music using technology as the primary tool (Dammers, 2009). Dammers (2009) also explored the creation of technology-based music classes (TBMC), and what types of technology have been used in music classrooms.

### **Students In Technology Based Music Classes**

Separate courses have been created to provide a kind of music education that traditional band, orchestra, and chorus classes did not offer, a concentration on music composition and music creation using technology as the tool for creation (Dammers, 2009). More and more schools are adding technology-based music learning to their curricula (Cain, 2004; Dammers, 2012). Williams' (2012) survey examined the characteristics of the new Non-Traditional Music Student (NTMS) and formulated the following key descriptors:

1. in the 6<sup>th</sup>-12<sup>th</sup> grades,
2. a non-participant in traditional performing ensembles,
3. having a music life completely independent of school music,
4. may or may not play an instrument (if so, likely drums, guitar, or sing),
5. may or may not be able to read traditional music notation,
6. possibly unmotivated academically or having a history of discipline problems,
7. may be a special needs student, and
8. may aspire to a career in music recording or music industry. (p. 1)

Reimer (1989) pointed out that given today's technology, notation could now become a secondary skill, not a primary one, for student composers. It is no longer necessary to first learn an elaborate notation system to be able to create, save, edit, listen to music creations instantly, or produce notation for others to play from. Reimer (1989) asserted that students can be creators of sophisticated music and need not be limited by their sparse knowledge of standard notation. Given technology, students do not need to first learn music theory and standard music notation to create their own music (Reimer, 1989; Savage, 2007). Furthermore, and possibly more important, teaching music through composition might provide a new paradigm in which people experience music and could potentially transform music education (Reimer, 1989).

### **Previous Research of Composition Students**

DeLorenzo (1989) explored creative music problem-solving behavior in the general music class setting by observing sixth-grade students in their music composition process. This study focused on the students composing using acoustic instruments and standard music notation. Student interviews were undertaken but DeLorenzo (1989) noted that students "were

often guarded in their responses; so the credibility of the information remained questionable” (p. 7).

A few studies examined the compositional process and thinking of student composers (Burnar, & Younker, 2004; Martin, 1996; Martin, 2002; Martin, 2012). Some studies looked at creativity in music education with the research focus on teachers not the students (Lum, Stromberg, & Xueyan, 2014; Odena & Welch, 2009). Rimkutė-Jankuvienė (2014) studied the use of what she called musical computer technologies (MCT) in the education of Lithuanian senior pupils, grades 9 – 11. Although this research focused on music technology use in music education, the survey was created for teachers and focused on the available hardware and software for teacher and student use and the use of these technologies in music education (Rimkutė-Jankuvienė, 2014).

This study was developed through the research question, “What are the experiences of high school students, who have never played an instrument or sung in a chorus, when creating music for the first time with technology?” It sets out to begin revealing and documenting the thoughts and attitudes of some high school students in the United States who have participated in music creation, possibly for the first time with technology. This information may be significant when developing new courses aimed at secondary students who do not participate in traditional band, orchestra, and chorus classes or for any student with interest in music creation with or without the use of technology.

### **Methodology**

This study is was undertaken as part of the requirements for a course being taken by the researchers at the University of North Texas, College of Information, for the program Distributed

PhD in Learning Technologies. The course examines qualitative research and therefore necessitated that the study be qualitative.

The purpose of this study was to explore the experience of some students who have taken a music composition class at a high school in the United States. Tracy (2013) remarked that qualitative research is excellent for studying perspectives or cultural activities that might otherwise be missed through quantitative methods. A qualitative study allows the researcher to explore participant's thoughts or feelings that may be difficult to extract through conventional research methods (Strauss & Corbin, 1998). A survey approach was taken for data collection so students could remain anonymous and, therefore, could be more honest and open with their responses. It was determined a survey would allow students an opportunity to relate their thoughts more freely than being interviewed (DeLorenzo, 1989). The downside to a survey approach to data collection is that it relies on self-reported data; students may respond with what they believe to be true or what they think the researcher is looking for as a response (Leedy & Ormrod, 2010).

### **Search for an Existing Survey Instrument**

An existing qualitative instrument was sought to use for this research project. Searches for instruments included those used for qualitative research of high school students in music, music creation, and creativity in general. Few studies exist in this domain that used K-12 students as the focus of the study and few studies exist that explore K-12 students that have little or no experience with music composition using technology or not.

Chin and Rickard (2012) study set out to develop and test a comprehensive analysis instrument, The Music Use Questionnaire (MUSE), to measure a participant's level of engagement in music. The study compiled several existing tools to create a single instrument in

the form of a questionnaire and cross-referenced results against other instruments for validity. The questionnaire had over 124 items in a Likert scale rating of 1 – 5. There were two separate studies with a total of 364 participants recruited in and around Monash University in Melbourne, Australia. Although the study was extensive, it did not focus on understanding qualitatively the experiences of participant but gathering information on the extent to which participants participated in music and what their musical preferences were. This instrument was appealing to use for this research but was rejected given the scope and time constraints of this research project and number of questions students would need to answer. In addition, the instrument, given the Likert-scale model, did not allow for qualitative research as necessitated by the course.

The most interesting and applicable instrument was from the Martin study of 1996 that set out to do qualitative research on the work of music students learning to compose. The study set out to observe upper secondary school students who had little or no prior experience with music composition within an educational setting. This extensive study used observation, interviews with students and staff and analysis of student music. Unfortunately, the study itself was not available as it was not published and could only be retrieved through the university in Singapore. Both University of North Texas and the university library of the National Institute of Education, Nanyang Technological University were extremely helpful in trying to track down a copy of the master's thesis that this study was used for but could not be obtained in a timely manner for this research project. Later research located Dr. Martin but not in time for this project to be completed for the required semester. Further inquiry with Dr. Martin may lead to future research.

### **Development of the Survey**



The researchers met with known researchers in the field of music technology education including Dr. V. J. Manzo, Assistant Professor Interactive Media & Game Development and Music, Worcester Polytechnic Institute, Worcester, MA and Dr. Richard Dammers, Chairperson of the Department of Music/Instrumental Music Education, Rowan University in Rowan, N.J. Doctors Manzo and Dammers gave valuable insights into the possible avenues to take for completion of a qualitative research study and subsequently helped with the survey question development and test of the survey.

The survey was aggregated to a Google Form. The form link was made available to anyone with the link and not to those associated with the Google email address it was created from. Care was given to ensuring that no identifying data would be collected from the participant. Only a data and time stamp for completion would be retrieved from the completed survey along with the survey answers.

**Demographics.** The first section of the survey instrument focused on the respondent demographics. In particular, the research was looking to hone in on the grade level, gender, and ethnicity. This would provide a starting point to better gauge the backgrounds and perspectives of the respondents. Due to the lack of previous research with high school students who have taken high school music technology classes, this provided an opportunity for a great deal of new information to be collected about the respondents.

**Historical music participation.** The second portion of the survey focused on the respondent's historical music participation. Beyond mere demographic information, this section also allowed respondents an opportunity to share any previous musical background (or lack thereof), as well as the type of instrument or vocal course previously taken, and the grade level that the respondent's participation occurred. Due to the lack of available research, this provided

an opportunity to view the engagement potential for respondents from their elementary through high school years. According to Chin and Rickard (2012), “little attention has been directed at benefits of various forms of music reception, or at the influence of differing levels of engagement with music” (p.429). The questions focused on the grade level and whether the respondent played an instrument in the school band, orchestra, or sang in a school chorus. Additionally, questions also focused on the potential for a lack of previously participating in a school band, orchestra, or chorus, and instead focusing on outside musical instruments, such as guitar or piano.

**Course participation.** The final section of the survey focused on respondent participation in the course. This covered why students took this course, what was it like to create music, and more importantly, what was it like to use technology to create music. For some, creating music was nothing new; however, for those completely new to music composition, this added an additional variable to consider: the creation of music using technology for the first time. Since this research is focused on students’ perceptions of their engagement with music in the course and how the respondents felt about sharing their music in the class, the following questions were also integrated into the survey to better gauge the respondent experience in the music technology course: Did the class have an impact on the respondents’ music creation experience after the class? Was there anything about using the technology that was significant about their experience creating music? The survey was separated into three distinct sections: demographic, history of music participation, and questions about participation in the course. Several questions were provided for respondents that were more open-ended to allow the

respondent a greater opportunity to share their experience on musical composition, whether this fostered a continued interest in composing, and how the course affected their perspectives on music and composition overall.

### **Research Site**

A high school music program that offers a music technology class was selected for its accessibility to the researchers and potential cooperation for participation in this study. The school principal and district administration was contacted for permission to conduct the study. A complete package was sent to the district administration and superintendent for approval of the study. The package included a copy of each of the UNT IRB Full Board Review Application, the UNT Informed Consent completed template, a draft of the email to be sent to parents and students to request participation in the study, and the survey questions. Permission was granted by the district to conduct the study with the conditions that students names and the district name would be confidential in all reports about the study and only students who have already completed the course and are not currently enrolled in a music technology course at the school would be eligible to participate in the study.

### **Participants**

Potential participants were selected purposefully, based on their participation in a specific one-semester music technology course at the study site, a high school in the United States. Students were selected from a specific music technology class list of three consecutive semesters, the courses taken in 2014 fall-semester, 2015 spring-semester, and 2015 fall-semester. A total of 184 students completed the course in the three semesters selected. Forty (40) students were omitted from the list for inclusion in the study and were not sent emails, as they were either currently enrolled in another music technology course at the study site and were not allowed by

the school's district administration to participate in the study or they graduated and the district and researchers had no contact information. One hundred and twenty four (144) students were identified as potentially eligible to participate in the study. Emails addresses for the students and their parents were retrieved from the study site.

When the study received UNT Institutional Review Board (IRB) approval, the researchers deployed requests for participants. Emails were sent simultaneously to the 144 qualified potential subjects and their parents requesting participation in the study and included a PDF of Informed Consent for the parents and student subjects. A follow up email was sent one week after the first email to the same qualified potential subjects and their parents encouraging them to return the informed consent and participate in the study.

### **Distribution of the Survey**

Those that return the signed parent and student Informed Consent forms were added to a separate list. Emails were sent to both parents and students, reiterating that their participation was voluntary, confidential, and could be discontinued at any time without the researchers knowing who completed the survey and who did not. A link to the Google Form was included in the email.

### **Data Collection**

Tracy (2013) remarked that qualitative research is excellent for studying perspectives or cultural activities that might otherwise be missed through quantitative methods. A qualitative study allows the researcher to explore participant's thoughts or feelings that may be difficult to extract through conventional research methods (Strauss & Corbin, 1998). A survey approach was taken for data collection so students could remain anonymous and, therefore, could be more honest and open with their responses. The downside to a survey approach to data collection is

that it relies on self-reported data; students may respond with what they believe to be true or what they think the researcher is looking for as a response (Leedy & Ormrod, 2010). Data were gathered with all reasonable efforts made to avoid conflicting and unethical situations within the research dynamic.

Data were gathered with all reasonable efforts made to avoid conflicting and unethical situations within the research dynamic. The Google Form reminded participants they that could opt out at any time and that all their answers would be anonymous, none of the researchers or anyone seeing their answers would know who submitted the survey answers. Those students that completed the survey had their anonymous answers recorded directly to Google Form Survey.

### **Data Analysis**

The survey and interpretation was at the core of this study's effort to examine the students' perceptions of a music composition class, keywords and themes were extracted from the survey responses. Survey answers were read, analyzed, and coded by the researcher who was not associated with the school, students, or any music program as to avoid researcher bias. Data were coded using key terms that resonated from each of the survey question responses. Tracy (2013) described coding as the active process of identifying data as belonging to some type of phenomenon, in this case a relationship. Exemplars (Tracy, 2013) were discovered in the analysis and interpretation of the data.

The table in Appendix B displays the summarized findings by question; numbers in parenthesis indicate the number of similar responses.

### **Results**

The perspectives of children are of interest to researchers because they offer specific and unique insights (Thomson, 2009). This study was designed to analyze a music technology class

based on students' perceptions of creating music, their participation in the class, and what helped them to succeed in the class.

The general perspective of the researchers was that after taking the class students are more compelled to continue to compose music. The respondent's collected data shows a higher propensity among the surveyed students to be inclined to compose music whether or not they had done so prior to the class. The structure of the class gives students the freedom, time to work, encouragement, and positive feelings to make them want to continue. They revealed learning music composition but also: organization, mixing, an appreciation for music, better listening skills, and the confidence to experiment. Students communicated that the class taught them not to let boundaries inhibit their creativity; one needs to explore and experiment to learn.

It is the general consensus of the researchers that many of the skills students expressed they learned are not just fundamental to music but to many other life skills. It appears that many of the lessons taught in the Music Composition class have value beyond the explicit confines of a music setting. More in-depth study is recommended to explore a parallel between these transitional skills and a music composition class, and what benefit outside of learning to compose music could a class like this have on a larger student population. One of the limitations to this theory may be the student's expression of prior music knowledge and computer skills that are necessary, in their opinion, to succeed. Another aside that was gleaned from this study is that a good instructor can encourage students beyond their comfort level.

As anticipated by the researchers, there was a difference in experiences of students who have had some music experience in elementary or middle school from those that had limited or no experience. There seems to have been little difference between these two groups with regard to students' experience with using music technology for creating music. However, this research

is not aimed at answering or proving any particular theory. It is meant to gather information and notice what the students are saying and how they are responding to the questions.

### **Discussion**

There are a variety of challenges that emerge when researchers choose to study topics that involve children. The social and emotional relationships of the child cannot be ignored (Greig, Taylor, & MacKay, 2012). The researcher's responsibility for the child's well being should always be paramount. Understanding the nature of childhood, being sensitive to differences, and the avoidance of harm necessitates the need for informed consent (Greig, et al., 2012). Many issues relevant in doing research with children are common in working with participants of any age (Thomas & O'kane, 1998) but dealing with children is more challenges. Researchers must not only take into account the development stage of children but also allow for the reactions and interactions that are typical in young people.

The need to obtain informed consent is a necessity but can be problematic (Thomas & O'kane, 1998). Informed consent development and solicitation is not a simple process or one that can be undertaken lightly. Tymchuk (1992) defines informed consent as the process whereby someone voluntarily agrees to participate in a research project based on full disclosure of pertinent information. This study requires consent from a wide range of gatekeepers: students, parents, school administrators, and district administrators. Once approval for all the various entities is received, the process of obtaining informed consent begins. Engaging young people in taking papers home, having them signed, and returning them is a feat unto itself. Compounding the challenge was that no student who is currently participating in a music technology class could participate in the study so the primary means of communicating to the student and parents was via email. Sufficient time should be allocated to meet with participants and their parents or

guardians to explore the topic of the research and the potential ways in which their children may be involved (Laws & Mann, 2004). Due to limited time, the study will move forward with the number of responses available by a specified date.

### **Suggestions for Future Research**

There are few studies on the music compositional process of K-12 students especially interviewing them or using a questionnaire. Using K-12 students is a daunting task, starting with the amount of effort it takes to gain access to students, writing to the district administration followed by an interview, the vast amount of detailed paperwork needed to apply for university IRB approval; the effort to contact students, get Informed Consent forms signed and returned, and then email students the link to the survey. However, there is a gap in the literature that can be valuable in informing educators about how students, especially those with limited music backgrounds or of a particular socioeconomic status, feel about making music using technology as high school students. It might be of interest to study longitudinally the progress of these students who learn music for the first time using technology in secondary school and how they interact with or create music later in life.

Dr. Jeffrey Martin has a series of studies (1996, 2002, & 2012) focusing on student composing. The 1996 study, as previously noted, may have information and an instrument that might be useful in future research. Contacting Dr. Martin about this topic and possible future research is worthwhile.



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## Appendix A

### First Time Music Creators:

#### A Glimpse Into High School Students Reactions to Creating Music

#### Survey Script

This qualitative study will use a survey. The following questions for the survey were developed out of the research question: What are the experiences of high school students, who have never played an instrument or sung in a chorus, when creating music for the first time with technology? The link to the Google Form with these questions will be sent to students who have chosen to participate by returning the Informed Consent.

The questions below were developed with the guidance and advice of the follow music education and music technology experts:

- Dr. V. J. Manzo, Assistant Professor Interactive Media & Game Development and Music, Worcester Polytechnic Institute, <http://www.wpi.edu/academics/facultydir/vjm.html>  
[vj@wpi.edu](mailto:vj@wpi.edu)
- Dr. Rick Dammers, Associate Professor of Music Education and Chairperson of the Department of Music/Instrumental Music Education, Rowan University,  
<http://www.rowan.edu/colleges/cpa/music/assets/facultyinfo.cfm?id=64>

#### **To appear on the Google Form**

The study, *First Time Music Creators: A Glimpse Into High School Students Reactions to Creating Music*, is meant to gather information from students about their experiences in a class like the Introduction to Electronic Music class at Greenwich High School.

This survey is completely anonymous. No one will know who made these comments. This survey has been approved by the Greenwich Public Schools, Superintendent William McKersie.

There are three sections with a total of 24 questions: and will take about 20 minutes to complete.

Thanks so much for your time and honesty. This research can make a difference for the future of music technology education.

*Required answers are marked with an \**

Tell us about yourself (please select one answer for each question):

1. \*What grade are you in?
  - a. 9
  - b. 10
  - c. 11
  - d. 12
  
2. \*Are you
  - a. Male
  - b. Female
  - c. I would rather not answer
  
3. \*Ethnicity
  - a. American Indian or Alaska Native
  - b. Asian
  - c. Black or African American
  - d. Latino/Latina

- e. Native Hawaiian or Other Pacific Islander
  - f. White/Caucasian
  - g. I would rather not answer
4. \*Are you currently receiving free or reduced lunch at Greenwich High School?
- a. Yes
  - b. No
  - c. I don't know
  - d. I would rather not answer

Tell us about your elementary and middle school music experience (please complete with a short answer):

1. When you were in elementary school (grades K-5), did you play an instrument?
  - a. If yes, what instrument did you play?
  - b. For which grades? Check all that apply: K, 1, 2, 3, 4, 5
2. When you were in elementary school (grades K-5), did you sing or both?
  - a. For which grades? Check all that apply: K, 1, 2, 3, 4, 5
3. When you were in middle school (grades 6 – 8), did you play an instrument in band or orchestra?
  - a. If yes, what classes/ensembles?
  - b. For which grades? Check all that apply: 6, 7, 8
4. When you were in middle school (grades 6 – 8), did you sing in the chorus?
  - a. If yes, which grades? Check all that apply: 6, 7, 8
5. When you were in middle school, did you take music class other than band, orchestra, or chorus?

- a. If yes, what classes?
  - b. For which grades? Check all that apply: 6, 7, 8
6. Since starting high school (grades 9 – 12), did you or do now you play an instrument in a group, ensemble or solo outside of school?
- a. If yes, which one or ones?
  - b. How long have you played?
7. Since starting high school, did you or do now sing in a group, ensemble or solo outside of school?
- a. If yes, how long have you been singing?

Tell us about your experience composing/creating music (please complete with a as long an answer as you like):

1. Did you ever compose music before you took Introduction to Electronic Music at Greenwich High School in or out of school?
  - a. If yes, how? How did you capture what you wrote to remember it or for others to play/sing or hear it?
2. Did you ever use music software to create music before you can to Greenwich High School?
  - a. If yes, which software (if you remember)?
  - b. What grade were you in?
  - c. Was it in school or at home or both?
3. Why did you take the Introduction to Electronic Music class at Greenwich High School?
4. What was it like to create music in the Electronic Music class at Greenwich High School?
5. What was it like to use the software?



6. What aspects of the software best helped you create music with the software?
7. What about the class made it possible to create music?
8. Now that you have taken the Electronic Music class at Greenwich High School:
  - a. What kind of skills do you think someone needs in order to compose music?
9. What was the most important thing you learned about music or music composition in the Electronic Music class at Greenwich High School?
10. Of all the music making activities, what was your favorite thing to do in the class?
11. Now that you have completed the class, do you compose music outside of class more often now than you did before taking the class?
12. What comments would you give to someone who doesn't play an instrument or sing that is interested in composing music?
13. Is there anything else you would like to tell us about your music composition experience?

Appendix B

Table of Questions with Responses Coded by Similarities

Q3	Q4	Q6	Q8	Q9	Q10	Q10 Part 2	Q11	Q12	Q13	Q15
To find out more about myself	Awesome	Just alright	Quantizing feature	Freedom	Music background needed (4)	Be patient (2)	Complexity	Create original beats	Continue to compose (5)	Favorite class
Looked interesting (3)	Engaging	Fun	Cut & Paste	Teacher (2)	Patience	Don't be afraid to experiment	Organization	Everything	Do not compose (4) of the 4 (2) would like to	Fun
Other students liked it (2)	Great teacher	Likeable software	Thousands of sounds	Environment	Basic understanding of electronic music	Take the class (3)	Music has layers	Giving feedback		More sincere input wanted
Learn how to compose	Fun (4)	Doesn't allow for much creativity	Easily accessible instrument	Midi keyboard	Open mind	Should be familiar with singing and instrumental music	Simple	Listening to music (2)		Awesome teacher
Always wanted to make my own music	Pretty cool	Initially difficult	Plugins	Peers	Naturally good ear	More organizational than playing keyboard	Placement of melodies	Experimenting (2)		Non judgmental environment
Expand on knowledge	Nervousness	Easy after familiarity (2)	EQ & panning parts	Atmosphere	Computer experience	Only basic music skills needed		Creating from scratch		Knowledge teacher
Fun (2)	Relaxing	Easy	No restrictions	Step-by-step process	Recommendation	Great teacher	A lot goes into each piece of music	Compose (2)		Loved it
To try it (2)	Interesting	Initially Challenging	Keyboard	Time to work	No skills needed (2)	Very Fun	Not easy	Drum beats		Great teacher
	Enjoyable	Primitive		Open-Mindedness		Basic Mac skills needed	Lack of piano knowledge a hindrance	Explore		Would like to continue with a second class
	Helpful	Boring					How to make a track sound good			
					Tempo		Mixing			
							No boundaries			
							No wrong songs			