

THE DEVELOPMENT OF A HIGH SCHOOL MUSIC TECHNOLOGY CURRICULUM

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A CAPSTONE PROJECT PRESENTED TO THE COLLEGE OF THE ARTS  
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Major: Music Education

It is estimated that eighty percent of high school students are not involved in the band, choir or orchestra programs at their high school. Composition courses using music technology allow both the student enrolled in these traditional school music courses and students not enrolled in these traditional school music courses the opportunity to explore individual musicality and music creation through the use of technology. The purpose of this project was to explore different instructional approaches for music composition courses using technology. The following research questions were explored: Why should music departments offer music technology courses? What are selected school districts offering for music technology courses? What are those school districts using for curriculum materials? What are these school districts using as methods of evaluation to assess student work? How should teachers develop music technology curriculum? After consideration of these questions and a review of related literature, a sample music technology course curriculum was presented and implemented.

*Keywords:* music, technology, composition, curriculum development

### **Development of Music Technology Curriculum**

The purpose of this project is to explore different curricular instruction approaches in a music composition course using technology. This exploration will aid in the creation of a music technology course offered during the 2015-2016 school year at a suburban high school in Minnesota. For the purpose of this project, the music technology course is defined as a music composition class that utilizes sequencing software to facilitate student music creation. This course allows students not currently enrolled in the traditional school music performance ensembles the opportunity to create music and learn the fundamentals of music while meeting the benchmarks outlined by the Minnesota Department of Education (MDE) and the National Association for Music Education (NAfME). Hodson, Frankel, Fein and McCready (2011) describe the ideal music technology lab as a stand-alone classroom consisting of multiple computers pre-loaded with sequencing software, synthesizers and headphones or speakers.

The following questions will be answered in preparation for the creation of a music technology curriculum:

1. Why should music departments offer music technology courses?
2. What are selected school districts offering for music technology courses?
3. What are these school districts using for curriculum materials?
4. What are these school districts using as methods of evaluation to assess student work?
5. How should teachers develop music technology curriculum?

Upon consideration of the above questions, a sample curriculum for a music technology course will be presented.

### **Need for the Study**

A composition course using music technology will allow both the student enrolled in

traditional school music courses and students not enrolled in traditional school music courses the opportunity to explore individual musicality and music creation through the use of technology. The fundamentals of music will be taught while also teaching 21<sup>st</sup> century skills to students who are not currently serviced by the music program. This project will result in the development of curriculum for a music technology course starting the 2015-2016 school year.

The author's school district has total enrollment of 9,850 students. Ninety-four percent of the student population is white, 3% Asian, 1% black, and 1% Hispanic. There is a strong Scandinavian population in the community. Less than 10% of the students qualify for free or reduced lunch. Seventy-six percent of these students are native to the boundaries of the district while 24% are "open enrollment" students from outside the district's boundaries. Families "open enroll" into the district in search of specialized program availability, including Spanish and Chinese language immersion, academic rigor and access to educational technology. In addition, the district consistently ranks at or near the top of both math and reading state tests ("Fast Facts", 2014).

The district catchment area population is 39,984 people from 10 communities. These 10 communities are "bedroom communities" consisting of mostly residential housing, some retail and a few large corporate offices. Most residents work in professional, managerial or sales occupations with the three largest employers being UnitedHealth Group, Cargill and Supervalu. Seventy-two percent of adult residents hold a bachelor's degree or higher ("City-Data.com", n.d.).

Median home prices in the district range from \$330,588 to \$591,461 depending on the specific community. Median household income in the district range from \$58,492 to \$124,209 again depending on the specific community ("City-Data.com", n.d.).

Approximately 400 students are enrolled in the author's current high school music band, choir and orchestra performing ensembles. With a student enrollment of almost 2,800, approximately 85% of the student population does not participate in the music program. Though not serviced in this school, music is an important part of these students' daily lives. Many of these students are active musicians and composers, but are not able or willing to participate in the traditional performance ensembles.

### **Review of Literature**

The following is a review of literature related to the need for, creation of and instruction of music technology courses. Topics include addressing the needs of students not enrolled in traditional school performance ensembles, evaluations of current music composition and technology instructional approaches and an examination of two music technology composition textbooks.

According to Kratus (2007), the traditional delivery of music education may be less effective for our current students due to the dissimilarity between the music explored in a traditional performance class ensemble and the music experienced by the student at home. Not only are the students listening to different types of music, but they are also performing and practicing instruments that are not a part of the traditional school music ensembles. According to Kratus, the most popularly purchased instruments are the electronic keyboard and the electric guitar. Neither of these instruments plays a prominent role in traditional school music ensembles. In order to teach these students, educators should consider developing new courses or methods that utilize popular instruments like the keyboard and guitar. These instruments allow for music making and composition alone or with others outside of the traditional large school ensemble format. In addition, connecting with students musically and educationally using their own music

or music similar to the music they hear at home may allow more students to continue with and experience music in our schools.

Williams (2007) also discusses the educational barriers the traditional music performance ensembles create for the current student. In most performance ensembles, the focus is not on musicality or musical understanding, but on music performance in the large group setting. With this focus, most students do not attain a high level of individual music performance in the highest-level ensembles. In addition, the attrition rate for large ensembles is around 50% in most instances (Williams, 2011). Thus, the majority of students do not complete four years of music in high school, and many discontinue music studies after elementary school. Finally, according to Williams, the skills taught in traditional performance classes are often not the musical skills necessary for life-long enjoyment of music. Music creation, music evaluation and the use of keyboard and guitar may allow students to continue musical activities after formal education (Williams, 2007). He advocates for smaller class sizes, focused on student-centered learning where students can make their own musical decisions using instruments of interest to them. Traditional music notation should not be emphasized, as its use can be a barrier for some students. He suggests the creation of technology based music composition classes open to any interested student, regardless of training or background. These classes may also contribute to the life-long use of music by students (Williams, 2011).

Kuzmich and Dammers (2013) believe the traditional performance music ensembles deliver content to approximately 20% of all students. Their work described ways to reach the 80% of students who are not enrolled in the traditional music ensemble. The authors believe music education is for everyone, and that most teachers are concerned with the 20% of students who are talented enough, or committed enough to explore music in the traditional school

ensemble. The authors advocate the development of music technology courses that will allow students of all abilities and interest levels to experience the creation of music and learn about the fundamentals of music.

According to the Minnesota Academic Standards for the Arts (2008), all students are expected to, “Use electronic musical tools to record, mix, play back, accompany, arrange or compose music” (p.25) at a proficient level by the end of their senior year of high school. The NAfME (2014) core music standards for music technology state that a music technology student can “Generate melodic, rhythmic, and harmonic ideas for compositions or improvisations using digital tools” (p.1). In order to help students meet these state and national association expectations, a course in music technology could be developed and implemented at the high school level.

Tobias (2010) examines the curriculum of a high school songwriting with technology course. In addition he examines the student outcomes as a result of this course. He explores the different ways students engage with music during the class, how they reflect upon their work and how their musical activities in the songwriting in technology class relate to their musical activities outside of school. He finds students engaged with music as songwriters, performers, sound engineers and producers while also utilizing the creative process. Though these students may not understand the formal vocabulary for their musical knowledge, they explore the musical concepts of form, articulation, dynamics and phrasing. Experiences in the class are influenced by the music experienced outside of school and allow students to listen to music differently outside of the class.

McDaniel (2000) examines and describes an implementation of the Manhattanville music Curriculum Project (MMCP) in a high school setting. At the time, the majority of his state’s

students were not enrolled in traditional music classes. The completion of this project resulted in the development of a sixteen-week, seventeen-unit composition curriculum using sequencers for middle level students not enrolled in the traditional performing music ensembles. McDaniel describes the goals, lessons and evaluation plans for each of the units in his study. He finds most students enrolled in the music technology class or project are not from the traditional music ensembles. Through observations and assessments, he discovers students begin to understand musical concepts through the act of composition rather than being taught these concepts explicitly. In addition, the students in this course are able to compose music they are not able to play on their specific instrument. Thus, they were able to explore sound concepts without the limitations of their individual technique on their instrument.

Ruthman (2006) uses a qualitative method to explore the thoughts, opinions and methods of 6<sup>th</sup> grade students and their teacher during a ten-week composition course using computers, synthesizers and sequencing software. He observes students are most engaged during the exploration and composition components of the units and least engaged during the theory, notation and listening assignments.

Han (2011) examines three areas in his mixed methods research study. He explores the currently available music technology, focusing on software programs used in music composition. He also interviews six professional composers and educators to determine their compositional and pedagogical approaches to teaching music composition using technology. In addition, he examined his own compositional process using technology to create an original work. He finds many resources are currently available for composition using technology. The composer-educators all use similar methods for music creation. Also, he finds that the students were able to overcome their limited formal musical training by using technology in composition.

Guthman (2013) investigates how students in the Vermont MIDI project revise their compositions after evaluation by their educators. The students in this study are elementary, middle and high school students of different ability levels. In addition, she examines the revision process after comments from peers and self-evaluation. Her research suggests that students of different ages and ability levels revise their work in dissimilar ways. The most influential comments are from professional composers given in a one-to-one setting. The second most influential source of revision is from the individual student's own thoughts and opinions. The lowest amount of revisions occurs as a result of their teacher's suggestions. Students who work in groups demonstrate a large amount of interaction, but one student usually dominates the conversation and compositional outcomes.

Hodson, Frankel, Fein and McCready (2011) developed a series of composition lessons using music technology that are outlined in their book, *Making Music with Garageband and Mixcraft*. The authors begin with a one-chapter introduction to music technology and a discussion of some problems educators may face when developing a course in music technology at the high school level. Since university music education programs primarily focus on music performance, music theory and music history, the authors suggest many educators are unfamiliar with the need for incorporating creativity into the educational process. The authors also suggest many educators are unwilling or reluctant to design music technology courses due to inexperience with the technology and concerns about time and money. Some educators may believe the personal costs associated with the additional training, development and assessment may outweigh the benefits of designing and offering the course. Others may believe the financial burden of creating a music technology lab is beyond the school or music department's budget. Hodson, Frankel, Fein and McCready (2011) explain the importance of creativity education and

help the reader understand the relatively low cost of basic music technology course implementation (Hodson et al., 2011).

The introduction chapter continues with a discussion of sequencing software in general, and a more detailed overview of two popular sequencing programs, Mixcraft and Garage Band. The authors provide suggestions for how each program could be used to teach music composition and creativity in different educational settings: the one-computer classroom, the school computer lab, and the music technology lab. For each situation, the authors describe how individual students or groups of students could use the physical space and technology to create music. Positive and negative aspects of each classroom situation are highlighted, with the music technology lab suggested as the ideal classroom arrangement (Hodson et al., 2011).

After the introductory chapter, the following two chapters provide an in-depth introduction and basic tutorial covering many aspects of two titles of sequencing software, Mixcraft and Garage Band. The tutorials help the reader understand the features that each sequencing software has and helps the user manipulate the technical aspects of the software before creative music making can begin. In addition to the written tutorial, the authors provide tutorial files on a data CD packaged with the book to accompany each lesson (Hodson et al., 2011).

The remaining chapters contain lesson plans and teaching strategies to help an educator deliver music technology curriculum using either Mixcraft or Garage Band. In alternating chapters, the authors present the same curricular topic with instructions developed for each of the two sequencing programs. Though the lessons are different for each program, the topics covered are similar. The lessons begin with using pre-recorded loops to create musical compositions in basic musical forms. In the next lessons, students create and manipulate their own MIDI data to

create their own loops. In the next two lessons, live audio recording is explained and exercises are presented for student practice. The explanation of live-audio recording culminates with the creation of an original podcast for presentation. The next lessons guide students through the process of adding music and sound to video. Two chapters on mixing, mastering and multitrack recording follow before the presentation of two final projects which incorporate many of the skills presented in previous lessons (Hodson et al., 2011).

*Making Music with Garageband and Mixcraft* (Hodson et al., 2011) provides the reader with lesson plans including the national music standards covered, objectives of the lesson, an estimate of the amount of class time each lesson will take and the exact materials needed for successful implementation. Screenshots, technical instructions directly applicable to the specific software and embedded tips for success help to make this book helpful for an educator seeking lessons for a music technology curriculum. In addition, extensions are suggested for each lesson that could provide advanced students with additional challenges. Educators could use this material as the framework for a music technology course, but additional instruction and formative assessments may have to be developed in order for students to master the content and provide for a semester's worth of instructional material.

Freedman (2013) developed a music composition curriculum using technology in her book, *Teaching Music Through Composition: A Curriculum Using Technology*. This work contains lesson plan examples, projects and assessments that could be used in the development and implementation of various music technology courses. In the preface, the author describes the importance of music education for all students, not only for students in traditional performing ensembles. Freedman suggests traditional music appreciation classes and music history courses are not as relevant or engaging to the modern student as courses that provide students

opportunities to manipulate and create their own music. With the availability of inexpensive sequencing software, students may be able to learn the fundamentals of music using music technology software (Freedman, 2013).

Before presenting lessons, projects and assessments, the author uses an introduction chapter to explain the intended use of the book, which lessons apply to various music technology courses, software titles, the importance of peer feedback and tips for successful implementation. Throughout the introduction, Freedman encourages focus on music instruction and not on technology instruction, since the fundamentals of music can transfer across various technological platforms. The author also discusses the relative importance of standard music notation in music technology courses. Freedman suggests an understanding of standard music notation for professional musicians, producers and sound engineers, but notes that it may limit the creative ability of student musicians who may not be familiar with the intricacies of standard notation. Since standard musical notation is a way to record and save musical ideas for recreation at a later time, the author suggests that sequencing software may replace the need to learn traditional notation for many music students. Freedman (2013) encourages the reader to allow for both standard notation and other forms of recording student musical ideas.

*Teaching Music Through Composition: A Curriculum Using Technology* is divided into three parts. The first part serves as an introduction to music composition. Topics covered in part one include an introduction to music sequencing software, loops, composing drum patterns, writing melodies, and composing using MIDI regions. The second section offers lessons to develop basic musicianship. Topics in the second section include using sound effects, basic keyboard theory, remixing MIDI compositions, melodic and rhythmic dictation, melody creation, chord progressions, accompaniment patterns, countermelodies and bass line construction. In the

third section, the author presents lessons intended to develop advanced composition skills. Third section topics include advanced melody writing, composing for live instrumental performance, rondo form, advanced audio editing, and composing for video. Following these chapters, appendices include materials for rhythm reading and piano instruction.

The author's lesson plans list the student skills required, applicable national music standards, lesson objectives, materials needed, and procedure steps. In addition, suggestions for extensions for advanced students and modifications for struggling students are presented. Readers could use this book as a framework for a music technology class. Since Freedman designed the book to be used for multiple music composition offerings, a reader could choose from the lessons presented to create a course suited to his or her needs. In addition, Freedman suggests a sequence of lessons and chapters that could be used in different school music composition courses. Depending on the type of course being developed, some modifications to the lessons may be required and instruction plans formative assessments may need to be created.

Bula (2011) interviewed 307 music teachers to gather information about music technology and commercial music classes taught in secondary schools. The survey included questions about curriculum, resources and student demographics. The author used the survey feedback to help create a sample curriculum for a high school level music technology class. In addition, Bula reviewed textbooks and training resources related to music technology curriculum.

Of the 301 music teachers Bula (2011) surveyed, 41 offer a music technology class. These 41 teachers reported that an average of 38.71% of the students enrolled in their district's music technology class were concurrently enrolled in a traditional performance based music course. The remaining percentage of students included all non-traditional music students. 210 of

the 307 music teachers surveyed do not offer a music technology class in their district. Reasons for not offering the classes varied but 92.86% of teachers reported a lack of funding as the reason for not offering music technology classes. Of the teachers not offering a music technology class, less than 19% listed scheduling issues as a reason for not offering a class and 17.14% listed a lack of space or facilities as the reason. When asked what resources would encourage the addition of a music technology class, 232 teachers responded. Of those 232 teachers, 46.98% reported increased funding and 33.19% report additional training would motive them to add a music technology course (Bula, 2011).

Bula (2011) suggested a plan for implementing a high school music technology course. He began with the creation of a course proposal document one year before the anticipated starting year of the course. The author recommended that the course proposal include a course description, description of the target audience, list of learning outcomes and learning activities and a funding proposal. Once this course proposal is approved by the school administration, Bula recommended recruiting students for the course. Teachers from other disciplines could recommend students who show an interest in music, but are not involved in the traditional performance music offerings. Bula recommended that upon course availability and registration, the instructor begin attending training sessions, finding resources and creating lesson plans in anticipation of course instruction.

Using information he gathered from a survey of teachers and a review of related literature, Bula (2011) offered a sample curriculum plan for a high school level music technology course. Projects and assessments included a loop based composition, an analysis of form and song structure, a layering and balance project, the composition of an original song, creation of

harmony and bass lines, melody creation, automation and digital audio editing. The final project is the creation of a student created music composition portfolio on compact disc.

### **Selected Curricula**

The following section is a summary of existing curricula from three school districts in the United States. Course descriptions, instructional methods, essential questions, sample assessments and the specific materials used are included in the summaries.

The Darien Public Schools of Darien, CT offers a one semester, half credit music technology elective course for students in grades 9-12 at Darien High School. The purpose of the course is to provide a more in depth the arts education to students, and to offer musical experiences beyond those of the traditional performing ensembles. In addition, the course provides students with real-world application of the technologies currently used in the music industry. There is not a pre-requisite for the course, but the instructors recommend a basic knowledge of terminology and music notation (“DHS music technology”, 2006)

Learning takes place through lecture, hands-on-exploration and guided individual and group projects. Topics include sound production, recording and transmission, electronic music composition and arranging, live audio reinforcement, multi-track studio recording, editing mixing, mastering and legal and ethical issues regarding digital music and the recording industry.

The essential questions for the course are:

- How does the study of music provide essential ways to understand and express life experiences?
- How does the study of music develop deeper understandings of past and present cultures and prepare students for active participation in creating culture of the present and future?

- How does music develop imagination and creativity and help students to develop the full range of their abilities?
- How does music enable students to make informed aesthetic choices and prepare them for enjoyable recreation and leisure time?
- How does participation in music develop self-discipline and focus and develop the capacity to refine work that aspires to high quality standards (“DHS music technology”, 2006, p.6).

During the semester, students complete assessments including the creation of a resonator, written exams, a position paper on legal and ethical issues related to the music industry, a soldering project, a loop composition using GarageBand, individual and group recording projects and the composition of music for a film scene (“DHS music technology”, 2006).

The Public Schools of Edison Township, NJ, offers the high school level course, Introduction to Music Technology. This course aims to introduce music technology to all students regardless of prior musical knowledge or experience. In this program, the students use Pro-Tools Express, Sibelius, Auralia and Musition software for first-hand experience with music technology and music creation (“Introduction to music technology” 2012).

Course units include: Introduction to Music Technology and the Lab, Legal and Ethical Issues in Digital Music, Mash-Ups and Podcasts, The Science of Sound & Sound Transmission, Sound Reproduction, Electronic Composition, Pro-Tools a matching music to video and film.

During the semester long course, students complete assessments including written exams, writing a position paper on legal and ethical issues related to the music industry, creating a mash-up, creating a podcast, presenting a working resonator wave, a research paper, an arranging or

composition project and the creation of a score for video (“Introduction to music technology”, 2012).

Introduction to Music Technology, offered by the Chelmsford Public Schools in Chelmsford, MA, is open to students who have completed one or more years in the school’s music performance or music theory classes. The purpose of the class is to help students develop musically in 21<sup>st</sup> century environment (“Fine and performing arts Fine and performing arts / high school music curriculum”, 2013).

During the course, students complete assessments including the re-creation of a musical score, a Garage Band composition using MIDI loops, live audio recording of individual performance, and the creation of a commercial jingle. To complete these assessments, the students use Finale, Audacity and Garage Band software. In addition, the students work to answer the following essential questions: What is music? How does electronically generated music differ from traditional, acoustic music? what are the basic elements of music? What is electronic music’s place in society and culture? What is active listening? How can we create and respond to music using appropriate technology (“Fine and performing arts / high school music curriculum”, 2013)?

### **Curricula Development**

The following section is a summary of curricula development and design methods. Music curriculum course design, music technology instruction, rubric development for creative projects and backwards design unit planning are included in the summary.

Abeles, Hoffer and Klotman (1995) define a curriculum as “a set of planned experiences” (p.272). The authors offer seven guidelines to follow when developing curriculum for a music course. These seven guidelines are that curriculum should be:

1. Educational
2. Valid
3. Fundamental
4. Representative
5. Contemporary
6. Relevant
7. Learnable (p. 278-230)

Since there is a vast amount of music information and courses are often designed by groups of educators, these seven guidelines can help curriculum designers choose the material included in a course. The following section consists of a description of each guideline (Abeles et al., 1995).

First, the course must be educational. The educator should present material not covered in other classes and that material should be new information for the students enrolled. In an educationally valid course, students are exposed to information they would probably not experience without taking the course. In order to avoid presenting material the students know, a review of current curriculum and pre-requisite courses should be examined prior to new course design. Since there is not a music technology course or composition course currently offered at this author's high school, the information presented in the course will be new. In addition, even though many students have access to sequencing software and digital audio workstations, most students will not have access to the music foundations and music composition information outside of this course.

Second, the course should be valid. The material presented in the course must conform to the standards of the overall music discipline. When designing a music course, the authors encourage curriculum designers to ask themselves, "Is what is being taught a legitimate portion

of the field of music? Would most trained musicians (performers, musicologists, teachers) recognize this content as a part of the field” (p.278)? Vocabulary, method of creation and notation should all match real-world musical situations. The material presented in this author’s music technology curriculum will conform to the standards of real-world musicians. Modern composers use technology to create music using standard musical forms drawn from music history. Traditional and non-traditional forms of music notation are used in the creation of music. The use of sequencing software and digital audio workstations is a fundamental component of modern music creation.

Third, the course should be fundamental. The core of the course should be focused on basic concepts of musicality. These include music analysis, music performance and music creation. Tangential information may be interesting, but the bulk of information presented should be rooted in the basics of the subject area. The current course design will focus on basic music concepts. Melody, harmony, rhythm and form will be discussed and practiced. The technology will be utilized to facilitate the learning of fundamental music knowledge instead of focusing on learning the technology.

Fourth, music presented should be representative of all music related to the course. Abeles et al. (1995) discourage focusing on a select genre while teaching music. Music from different periods and genres can be used to help students develop a complete understanding of music. For example, in the concert band setting, students should not perform primarily the marches of John Philip Sousa. Though this music is important, it does not represent the breadth of music available. In a music technology course, this author will present examples of music from different time periods and genres to allow for a representative sample of music. Melodic

construction can be analyzed by studying simple folk tunes. Many current pop pieces are examples of verse-chorus form. Bach chorales can be used to exemplify harmonic progressions.

Fifth, curriculum developers should strive to include contemporary music in courses. Abeles et al. (1995) state, “A course should not stop with music written in a style that is fifty or a hundred years old” (p. 279). The current music technology course will incorporate contemporary popular music and music composed for film and television to exemplify compositional techniques used by modern composers. In addition, re-mixes of current music will be created.

Sixth, the information included in a course must be relevant. Material and topics should be presented to help students understand why the musical information is important to their daily lives or current situation. In this author’s music technology course, the information presented will be directly applicable to the process of music composition. Each compositional technique will be applied to student-created compositions after an initial presentation. This way, students can experience how the information can relate directly to the compositional process.

Finally, the course should present learnable information. Abeles et al. (1995) stress the importance of presenting musical information for students that is at their level. All students should be able to understand the basics of the information presented. In the author’s music technology course, information will be presented to the students at an introductory level. The students will demonstrate their new knowledge and apply any prior knowledge through composition. Though the students could demonstrate vastly different compositions at different musical levels, the compositions will demonstrate an understanding of the basic musical concept taught.

In his book, *Music Learning Today: Digital Pedagogy For Creating, Performing And Responding To Music*, Bauer (2014) outlines different ways technology and music composition

can be used to teach music concepts. He begins with a discussion of two common approaches to music composition. Some educators teach using only standard music notation while others stress the importance of allowing students to notate music in other ways, or not use notation at all. Proponents of standard music notation believe notation is musically valid because most composers, musicians and educators recognize standard music notation as an integral component of musical literacy (Bauer, 2014). This musical validity argument corresponds with Abeles et al.'s (1995) second of the seven guidelines presented in *Foundations of Music Education*. Other educators wish to include as many students as possible in the music education experience and believe music fundamentals can be taught, explored and demonstrated without an understanding of traditional music notation (Bauer, 2014).

Bauer (2014) continues by listing and discussing guidelines presented by the Music Composition Online Mentoring Program (Music-COMP). These guidelines are:

1. As composition, like other forms of musicianship, is an aural art, students need to listen to and discuss music to build an aural vocabulary.
2. Start at a point that is appropriate for the developmental (maturational, technical and conceptual) level of students. Be sure to provide sufficient review so that students understand the prerequisite knowledge required.
3. Start with small projects that are highly structured, gradually allow room for more variation and student direction in compositional activities (p. 61).

The author explains the first guideline helps students learn to audiate. The more time students spend listening to and discussing music, the more experience they will have with the music and compositional language. With more familiarity, students may be able to manipulate sounds more easily since they have a higher likelihood of being able to dictate the music they hear in their

minds. The second guideline is similar to the seventh guideline of Abeles et al.'s (1995) seven guidelines for curriculum design. The information presented should be learnable by the student population serviced by the course (Abeles et al. 1995). The information should be at the student level, not too simplistic or complicated. The third guideline allows students the opportunity to practice specific concepts in a controlled setting before allowing compositional freedom (Bauer, 2014).

Bauer (2014) next discusses the role of peer and instructor feedback in the compositional process. This feedback is essential in helping form an understanding of how to revise their compositions. He lists teacher to student, student to student and class to student feedback as ways to help students understand their compositional strengths. The author recommends short and specific feedback that will not overwhelm the student with corrections to make. In addition, Bauer stresses the importance of self-assessment and self-feedback in the compositional process. Students should take the time to reflect upon their own work and make changes based on this reflection throughout the process (Bauer, 2014).

Brophy (2014) presents suggestions for designing and implementing assessments for creative musical products. He defines creative musical products as compositions, improvisations and arrangements of previously created works. Components for assessment, and rubric design are presented (Brophy, 2014).

The five musical components Brophy presents for assessment include melody, rhythm, structure, theoretical components and aesthetic components. These five categories can be included or not included in the assessment of a product based on the instructional focus of the product. Melodic components for assessment include the range, opening and closing notes, scale used and melodic motives. Rhythmic assessments include note and rest values used, rhythmic

patterns and rhythmic motives used in the composition. Structural components can include the form of the composition, the structure of the phrases and the organization of the phrases.

Aesthetic components for assessment include dynamics, articulations, and other items related to the composition's overall effect. These are objective components that can be observed by the instructor as either present or not present in a composition (Brophy, 2014).

The creative use of the five previously listed categories or the level of creativity present in the composition should not be judged or assessed by the instructor. When creating assessments of musical composition for students, Brophy (2014) recommends placing attention on the creative product and the musical skills that are a part of creating that product, not the creative process itself. The creative process is different for each individual, and assessment of the creative process is not a part of national or state standards. In addition, the author suggests it is very difficult to validly assess student creativity in the music classroom given the small amount of observation possible (Brophy, 2014).

Brophy (2014) recommends a guided approach for introducing students to composition. In this approach, students are presented with limitations and parameters to work within. This allows the students to make musical decisions without being overwhelmed by the choices presented. Prior to introducing a creative project for student completion, Brophy (2014) suggests the instructor determine which of the five categories will be assessed. Next, the instructor should indicate the student composition's minimum length by determining the number of measures or length in time of the student composition. Then, the instructor decides the context of the composition. Examples could include a string quartet, pop song, or work for solo voice. Once these steps are complete, the instructor should decide the number of lesson periods needed to complete the assessment task and the format of the final product. For example, the project's

format could be recorded audio, a score in traditional notation or a score using non-traditional notation. Finally, an assessment rubric should be designed (Brophy, 2014).

Brophy (2014) suggests the assessment rubric best suited for student composition is the multi-level, multi-criterion, analytic rubric design. This rubric lists the criteria for assessment on the left side, with the achievement level categories along the top. A description of student achievement at each level for each criterion is included in the rubric design. Since not all criteria are assessed at all achievement levels, the analytic design is used. This design allows some criteria to be assessed at less than all the achievement levels. This is helpful if the criteria is assessed at two levels, present or not present, instead of the usual four levels (Brophy, 2014).

Wiggins and McTighe (2005) have created a curriculum development format based on the principles of backwards design. The authors define backwards design as, “An approach to designing a curriculum or unit that begins with the end in mind and designs toward that end” (p. 338). During this three-stage process, the curriculum developer identifies the desired results of instruction, creates the tools to collect evidence of student understanding and plans the learning experiences for students. The purpose of the process is to identify curricular goals, determine what meeting the goal looks like, and to create a plan for student instruction (Wiggins & McTighe, 2005).

During the first stage, the curriculum developer identifies the desired results of instruction. First, established goals are determined and listed. These established goals are program, district, state or national standards. Next, the developer lists the understandings the students will have at the end of the unit or course. Wiggins and McTighe (2005) identify six facets of understanding to be demonstrated by students after successful instruction. These aspects of understanding require students to explain, interpret, apply, exhibit perspective, empathize, or

show self-knowledge. Next, the curriculum developer will create the essential questions to be answered during the course or unit. These questions can be overarching or topical and should help students understand the course or unit's curricular goals. Finding the answers to these essential questions should not be simple. The answers may require deep thought, investigation and skill building. In addition, the answers to these questions should be transferable knowledge (Wiggins & McTighe, 2005).

The curriculum developer creates assessments during the second stage of Wiggins and McTighe's (2005) understanding by design process. The purpose of these assessments is to allow students the opportunity to demonstrate understanding of the goals developed in stage one. In addition, the instructor can evaluate the instruction process utilized in preparation for the assessment. These assessments can be traditional paper and pencil tests, student performances or student created products. The assessments can be either formal or informal, and they do not have to be only the end of unit exam. The authors recommend focusing on the six facets of understanding and the essential questions developed in stage one (Wiggins & McTighe, 2005).

During the third stage, the curriculum developer plans the daily and weekly learning activities that will occur during the unit or course. These activities may be based on the six facets of understanding used during stage one and stage two. The authors present characteristics of quality daily instruction. These characteristics were collected from workshop participant responses. The characteristics include having clear goals, using hands-on teaching methods, focusing on the problem, explaining real-world application, giving feedback, student reflection time, and providing a safe environment for students (Wiggins & McTighe, 2005)

### **Music Technology Curriculum**

A music technology curriculum for a course titled “Music Technology” is included in the following section. Some projects and units are based on material presented in Freedman’s (2013) *Teaching Music Through Composition: A Curriculum Using Technology*. Some of these projects include the creation of MIDI drum beat patterns using piano roll notation and the melodic dictation exercises presented in unit two and described in Appendix B. In addition, the ringtone creation assessment presented in unit five, described in Appendix E, and the composition for visual art assignment presented in unit six and described in Appendix F are inspired by Freedman’s (2013) work, though changes have been made to the assignment requirements and assessment rubrics. Other assignments and assessments are based on information presented in Hodson, Frankel, Fein and McCready’s (2011) *Making Music With Garageband And Mixcraft*. These include piano chord manipulation formative assessment in unit two as described in Appendix B and the silent movie sound effect assignment presented in unit seven and described in Appendix G. In addition, concepts and ideas gathered during the exploration of selected curriculum section have been adapted and included.

This semester long course is taught in a standard school computer lab using Dell Optiplex 790 computers. Mixcraft 7, a digital audio workstation (DAW) sequencing and looping program, is used for many of the projects. M-Audio KeyRig 49 USB keyboards are available for note entry. Students use their personal cell phones or school issued Apple iPad for sound recording. Standard stereo headphones are provided for students, but students may choose to use their own headphones or earbuds.

By the end of the course, the students will be able to answer the following essential questions:

1. What are the elements of music and how do musicians use these elements?
2. How does a musician create music using technology?
3. How does a musician respond to or critique music?

### **Unit One**

The course begins with a basic introduction to musical form using popular music. Before any formal instruction, the students experience the creation of music using technology. After introductions and a quick course outline, the first day of class begins with a composition activity using the Incredibox.com website. Students use this website to create and record a piece with a clear beginning, middle, and end. The students are encouraged to layer the sounds they choose, gradually adding more layers before removing layers at the end. When complete, this composition is saved and sent to the instructor via the school's learning management system (LMS) and posted to a class discussion board for peer evaluation.

The second assignment in unit one is an analysis of form. Individual students choose a piece of music they enjoy listening to, provide a link to a recording of that piece and complete an analysis of the form. The analysis product is a diagram of the student's own creation. It may be a picture, a list, a drawing or an audio file. The finished product is presented in class and submitted to the instructor for evaluation.

The initial use of the DAW, Mixcraft 7, is during our third assignment of unit one. The students experiment freely with the software for two class periods while creating a composition of their choice. The composition requirement is 2-3 minute composition with a clear beginning, middle and end that is created using the Mixcraft software. No teacher instructions are given to the students regarding use of the software, but tutorial materials are made available to the student on the school LMS. Work on this assignment is an opportunity for students to learn the

program's capabilities on their own at their own pace. When the project is complete, the students submit their composition to the instructor via the school LMS and post a recording as an .mp3 file on the class discussion board.

In the formal performance task for unit one, students demonstrate their ability to manipulate the Mixcraft software and demonstrate their understanding of AABA form through the creation of a composition using the pre-recorded material (loops) available in the software. Students also complete a written evaluation of their composition and the composition of a peer using established criteria. Each section of the AABA form will be 16 measures long and must include at least drums, bass and one other instrument. Digital effects will be added to alter the loops from their original state. When complete, the composition is uploaded to the LMS for instructor evaluation and posted as an .mp3 file to the class discussion board.

## **Unit Two**

In the second unit, students explore MIDI editing and composition using Mixcraft. For the first formal assessment for this unit, the students create five drum-set patterns using MIDI editing. For this component, students record individual drum sounds in real-time using the metronome and MIDI keyboard controllers. The students are provided with drum set patterns in standard music notation and recordings of each completed drum set part. The instructor explains the conversion of standard rhythmic notation to the MIDI piano roll notation system and an introduction to recording using the software. After each layer of the drum set part is recorded, sound effects and quantization are added and the layers are merged into a single MIDI track. These five drum set patterns are submitted to the instructor via the school's LMS for evaluation (Freedman, 2013).

The second assignment is the recording of four major scales using the MIDI keyboard controllers. The instructor presents the WWHWWWH whole and half step pattern for major scale creation and shows the students the pattern on the MIDI keyboard controller. The students use this information to create four scales, C-Major, G-Major, D-Major and F-Major. These scales are recorded as quarter notes ascending. The students record in real-time with the metronome into the DAW software. After quantizing their recordings and adding digital effects, the students add a drum pattern from the previous assignment to accompany the four major scales. The completed project is submitted to the instructor via the school's LMS for evaluation.

The third assignment in unit two is a student created chord progression using C-Major diatonic chords. After an explanation of major, minor and diminished chords and how they are created from the major scale, the students individually record the C-major scale as whole notes ascending using the MIDI keyboard controllers and the DAW. Under each note of the major scale, the students record the diatonic chord associated with that scale degree. The students label each chord in their composition using correct Roman numerals. Once this is completed, the students rearrange, delete and copy the chords to create a 16-measure chord progression using these diatonic chords. The students follow standard rules for chord progressions by consulting the provided chord progression flowchart. Not all chords will be used and some may be repeated. Once this is completed, the students add a drum-set pattern under the chord progression. The finished product is submitted to the instructor for evaluation using the school LMS.

The next assignment in unit two is a melodic dictation assignment. The students are provided with .mp3 recordings of five famous melodies all in C-major. The students listen to the recordings and re-create the melodies heard by entering notes into the DAW using the MIDI keyboard controllers. After each melody is dictated, the students add diatonic chords under the

melody to create a harmonic progression. A drum set pattern is added for rhythmic accompaniment and effects will be added to each track prior to submission.

The final formal assessment in unit two is the creation of a 16-measure melody with harmonic accompaniment in C-Major, G-Major or D-Major. The starting and ending notes of each phrase are given for the student and the harmonic progression chosen will follow the chord progression flowchart. The students quantize their composition and add digital effects to each track. The final composition is submitted to the instructor as an .mp3 file for evaluation. In addition, the compositions are posted to the class discussion board for peer evaluation.

### **Unit Three**

Live-recorded sound is the focus of unit three. During this unit, students experiment with recorded sound manipulation. Then, students explore the mixing and mastering capabilities of the Mixcraft DAW through the mixing and mastering of live-recorded audio tracks. Students complete a composition that tells a story using only student-recorded sound. Next, students record themselves reading a book excerpt and adding music as an accompaniment. Finally, students create a beat-box style rhythmic pattern using student created or recorded sound.

The first activity in unit three allows students to manipulate recorded sound. The instructor provides the students with a recording of the alphabet recited backwards. Their assignment is to cut, trim and re-arrange the sounds to reproduce the alphabet recited forwards. This assignment is submitted as an .mp3 file to the instructor for evaluation.

For the second activity, students are provided with 12 live-recorded tracks of a punk band recording session. The students import the tracks into the Mixcraft DAW to mix and master the tracks for a studio produced sound. Students set panning, EQ levels, volume levels and experiment with send tracks for digital effects. Some of the tracks must be trimmed for timing.

When complete, the students share their projects with the class via the class discussion board.

This activity is replicated with three additional sets of live recorded tracks.

The next activity in unit three is a sound story composition project. The students use recorded sound to tell a two to three minute composition that tells a story. Personal cell phones and school issued iPads are used to record the sounds. These sounds are collected in a sound library on their desktop computer. The sound story composition is mixed and mastered using techniques from previous assignments in unit three. Once completed, the sound story composition is posted to the class discussion board with a short explanation of the story depicted.

The first formal assessment of unit three is the recording of an audio book excerpt. Students record themselves reading a passage from a favorite book. The recorded audio is manipulated using digital effects and trimmed and edited for clarity. Appropriate pre-recorded or student created music is imported into the DAW software to accompany the reading. Digital effects are added to the tracks and the project is mixed and mastered using techniques from the previous assignments in unit three. The completed project is uploaded to the school's LMS as an .mp3 file for instructor evaluation.

The second formal assessment of the live-recorded sound unit is the creation of a 16-measure beat-box style drum pattern using student-recorded sounds. Different vocal syllables are recorded using personal cell phones or school issued iPads. The users will manipulate these sounds using the DAW software. Drum patterns from unit two are re-created or a new drum pattern is created. Digital effects are added to the tracks and a final mix is created using techniques learned in previous unit three assignments. The beat-box pattern is submitted to the school LMS as an .mp3 file for assessment and is shared with other students on the class discussion board.

**Unit Four**

In this unit, the formal assessment is to create three different re-mixes of MIDI files from a selection provided by the instructor. These selections are popular pieces from various recent musical eras. Due to the variety of selections, students should be able to find three pieces they would like to re-mix. Students will select and import these MIDI files into the Mixcraft DAW software. Musical components of the files will be labeled with descriptions of their musical function. Each section of the pieces are labeled according to their formal function. Students may change the sounds associated with the imported tracks, alter the arrangements, add digital effects or add instruments and sound to the MIDI files to create an original re-mix version of the original file. The final compositions are submitted as .mp3 file and as Mixcraft .mx7 files for instructor evaluation. In addition, the compositions are posted to the class discussion board for peer evaluation.

**Unit Five**

In this unit, the students compose a thirty second cell phone ringtone composition. Musical elements of repetition, sequence and rhythmic diminution are addressed in instruction. Before composition, students examine and describe the features of effective ringtones and create a list of common features found in their favorite examples. Student composed MIDI sounds, live audio recordings and imported sounds or music are used in this composition. Digital effects and a final mastering is completed before submission. The final compositions are submitted to the instructor for evaluation. In addition, the ringtones are made available on the course discussion board for peer evaluation and download.

**Unit Six**

During unit six, students study the relationship between visual art and music. Students examine how famous composers have used visual art as an inspiration for music. Successful and effective compositional techniques are determined through group evaluation and conversation. The performance task for this unit is to select a piece of visual art and compose a three to four minute composition in balanced binary form influenced by that visual image. The image is imported into the Mixcraft DAW. Students use live-recorded audio, student created MIDI sounds, and imported audio to aurally depict the visual image. Digital effects are added to the tracks and the mixing and mastering techniques utilized in unit three are applied to the final composition. The final composition is submitted as a movie file to the instructor for evaluation. In addition, the compositions are posted to the course discussion board with a short composer created description of the piece and the techniques used to depict the visual art.

**Unit Seven**

In this unit students examine the relationship between video and music. Students examine how composers have composed music for video. The students determine which techniques are effective and describe why. The first performance task is to add prescribed sound effects to a 3-minute silent film. In addition, the students add imported music that sets the mood for the piece and is appropriate for the film's era. The second performance task is the creation of a musical soundtrack for a 3-4-minute movie trailer selected by the student. Students use created MIDI sounds, live-recorded audio, and imported audio in their compositions. Digital effects are added. In addition, at least three "sound events" coincide with events in the video. This composition is uploaded to the school's LMS for instructor assessment and is posted to the class discussion board for peer evaluation.

## **Results**

The following section contains the results of the curriculum implementation process. A description of the pre-implementation stage and the initial implementation are included. In addition, student success and future development plans are discussed.

### **Pre-Implementation**

Initial curriculum development work began in October of 2014 with the submission of a formal course proposal document (Appendix H). This proposal was presented to the building principal and the high school music department chair. After building level approval was granted, the course proposal was presented to the school board by the district's Director of Curriculum and Instruction. In December of 2014, the school board voted to approve the proposal and provide funds for initial implementation.

Prior to student class registration in February of 2015, I wrote a course description for the school's registration materials. To promote the new course, I created a short promotional video, with help from the school's video production club, highlighting the new music technology course. This video was played on the student announcements prior to and during the registration period. In addition, I asked my instrumental and vocal music colleagues to speak with any students who might be interested in music technology. I reminded each colleague that this course is not intended to take students out of the traditional music performance ensembles, but is intended as an option for students who are no longer interested in participating in traditional performance music courses.

After registration was complete, and the course gained the required enrollment, I began researching and developing the music technology curriculum presented in the previous sections. In addition, I contacted high school music teachers in our conference to find information about

their music technology programs. Of the five high schools in our conference, two offered music technology courses. One is offering a newly established course and the other has been offering music technology courses for over thirty years.

### **Implementation**

The music technology curriculum presented in the previous section was first implemented in September of 2015. Fifteen students initially registered for the course, but due to course scheduling conflicts, thirteen remained after the first two weeks of school. Of the thirteen students enrolled in the class, one is female and twelve are male. Most are junior and senior students. Two of the thirteen are involved in one of our school's traditional performance ensembles, one in band and one in choir. The remaining thirteen have not been involved in traditional music ensembles at the high school level. Two students have taken formal piano lessons and one is taking formal guitar lessons. None of the students had previously worked with the Mixcraft DAW, but most had experimented with GarageBand, Fruity Loops or Reason.

Each class period begins with a short instructional session. During this time, I either introduce concepts, outline requirements for the current assignment, or answer musical and technical questions. In addition, I occasionally use the opening minutes for students to share their work with the rest of the class. After this opening instructional time, students are free to work on their current projects. In order to gain experience with the Mixcraft DAW and to help troubleshoot any problems, I complete the assignments and projects concurrently with the students. I project my computer screen in the front of the room so students can see my work process. If I discover a useful piece of information related to the software, I announce this discovery to the class. When a student has difficulty or a question, I assist at his or her computer station. In addition, students occasionally ask their classmates for help or feedback.

**Successes**

The music technology course has been well received by students. Most students arrive to the computer lab before the scheduled class start time to assemble their workstation and begin working. In addition, most students continue working on their projects after the class period ends. Most wait until after the bell to save their work, put away their keyboards and clean their workstation. These students are using their passing time between classes and forgoing their social opportunities with peers to complete more work in the music technology course. During the class period, I rarely witness any students exhibiting off task behavior. Occasionally a student will use the internet to find information about music technology, or a compositional technique, but each student is focused on the current project during class time.

Some students complete their projects by the assignment's due date, while others continue working past the due date, letting the end of one project and the beginning of the next project overlap. It is common for students in the class to be working on different projects, especially during the first few class periods of a new unit. Since I am interested in their best work, I allow individual students to submit assignments and projects when the student feels the work meets the standards set in the assessment rubric. Usually I receive all assignment or project submissions within two to three class periods of the assigned due date.

Since this was the initial offering of the course, and I haven't previously worked with student composers in a class setting, I didn't know what to expect from students, especially students with little formal music training. Overall, I have been impressed with the quality of student compositions. Most students meet or exceed the expectations set in the project rubrics and sometimes submit two different works for each project. Due to the rubric construction and

the objective criteria, a student is able to create a very different composition than his or her classmates, while still meeting all requirements.

Due to interest in this new music technology course, a student led composition club has been formed. This club meets two mornings per week and allows all students, regardless of music technology course enrollment the opportunity to create music using technology. The club members work on their chosen projects and share their compositions with each other. In addition, students have requested a second level of the music technology course be offered in subsequent semesters.

### **Future Adaptations**

In response to student suggestions and student interest, I will be adding additional components to the next offering of this music technology course. These components include live audio recording, additional mixing and mastering work, additional music theory, and the creation of custom virtual instruments.

Students will record small ensembles or solo instrumental and vocal performances using provided microphones. Microphone varieties, microphone selection and placement will be discussed. The recorded tracks will be mixed and mastered using the Mixcraft 7 DAW. This project will allow students to experiment with different microphone placements and provide a real-world experience. This unit may run concurrent with the traditional music ensembles' solo and ensemble contests in April. In addition, the additional mixing and mastering work will incorporate more advanced settings and effects.

Some students have requested additional music theory instruction. Voice leading, extended chords, and chord voicing will be discussed and incorporated into formative and

summative projects. In addition, phrase structure and cadence types will be introduced and utilized in composition.

Virtual instruments are software created instruments that are customizable by the user. The students can set all parameters for the sounds these instruments produce and students can control them just like a real instrument sound in the DAW. A composition project using all virtual instruments could allow students to create completely unique compositions.

## References

- Abeles, H. F., Hoffer, C. R., Klotman, R. H., (1995). *Foundations of music education* (2<sup>nd</sup> ed.). New York, NY: Schirmer Books.
- Bauer, W. I. (2014). *Music learning today: Digital pedagogy for creating, performing and responding to music*. New York, NY: Oxford University Press.
- Bula, J. A. (2011). *Technology-based music courses and non-traditional music students in secondary schools*. Retrieved from ProQuest Dissertations & Theses Full Text (AAT 998182818).
- Brophy, T. (2014). *Assessing Music Learning*. Unpublished manuscript, University of Florida, Gainesville, United States.
- City-Data.com. (n.d.). Retrieved from <http://www.city-data.com/>
- DHS music technology. (2006). Retrieved from <http://www.darienps.org/dpsmusic/DHSMusicTechnology.pdf>
- Fast Facts. (2014). Retrieved from <https://www.minnetonka.k12.mn.us/newsroom/Publications/Fast%20Facts.pdf>
- Fine and performing arts / high school music curriculum. (2013). Retrieved from <http://www.chelmsford.k12.ma.us/Page/676>
- Freedman, B. (2013). *Teaching music through composition: A curriculum using technology*. New York, NY: Oxford University Press
- Guthmann, S. E. (2013). *Cycles of revision: A study of music compositions by students involved in the Vermont MIDI project (music-COMP)* Retrieved from ProQuest Dissertations & Theses Full Text (ATT 1446721905).

- Han, J. (2011). *Digitally processed music creation (DPMC): Music composition approach utilizing music technology* Retrieved from ProQuest Dissertations & Theses Full Text (ATT 909975455).
- Hodson, R., Frankel, J. T., McCready, R., & Fein, M. (2011). *Making music with GarageBand and Mixcraft [With DVD]*. Boston, MA: Delmar Cengage Learning.
- Introduction to music technology. (2012). Retrieved from <http://www.edison.k12.nj.us/cms/lib2/NJ01001623/Centricity/domain/52/curriculum%20guides/art/music/Introduction%20to%20Music%20Technology.pdf>
- Kuzmich, J., Jr. (2013). Using technology for improvisation and composition in traditional ensembles. *School Band & Orchestra*, 16, 22-24.
- Kratus, J. (2007). Centennial series: Music education at the tipping point. *Music Educators Journal*, 94(2), 42-48.
- McDaniel, W. L. (2000). *Sequencing in the public school: A model curriculum utilizing computer technology to facilitate student composition*. Retrieved from ProQuest Dissertations & Theses Full Text (ATT 251076022).
- Minnesota Department of Education. (2008). Minnesota k-12 academic standards in the arts. Retrieved from <http://education.state.mn.us/MDE/EdExc/StanCurri/K12AcademicStandards/Arts/index.html>
- NAfME. (2014). Core music standards (music technology). Retrieved from <http://www.nafme.org/wp-content/uploads/2014/06/Core-Music-Standards-Technology-Strand1.pdf>

- Ruthmann, S. A. (2006). *Negotiating learning and teaching in a music technology lab: Curricular, pedagogical, and ecological issues*. Retrieved from ProQuest Dissertations & Theses Full Text (ATT 250914316).
- Tobias, E. (2010). *Crossfading and plugging in: Secondary students' engagement and learning in a songwriting and technology class*. Retrieved from ProQuest Dissertations & Theses Full Text (ATT 305212166).
- Wiggins, G., & McTighe, J. (2005) *Understanding by design*. Alexandria, VA: ASCD.
- Williams, D. A. (2007). What are music educators doing and how well are we doing it? *Music Educators Journal*, 94(1), 18-23.
- Williams, D. A. (2011). The elephant in the room. *Music Educators Journal*, 98(1), 51-57.

## APPENDIX A

<b>UNIT ONE</b>
<b>Exploring Software and Composition Using Recorded Loops</b>
<b>Grade Level: 9-12</b>
<b>STAGE 1 - DESIRED RESULTS</b>
<p><b>Standards (Established Goals):</b></p> <ul style="list-style-type: none"> <li>• MU:Cr2.1.T.1a – Select melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr3.2.T.1a – Share compositions or improvisations that demonstrate a proficient level of musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.</li> <li>• MU:Re9.1.T.1a – Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.</li> </ul>
<p><b>Essential Learnings (Understandings):</b></p> <ul style="list-style-type: none"> <li>• Pre-recorded loops can be arranged to create electronic music.</li> <li>• Music can be organized into different formal structures.</li> <li>• Music can be evaluated using criteria.</li> </ul>
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are the elements of music and how do musicians use these elements?</li> <li>• How does a musician create music?</li> <li>• How does a musician respond to or critique music?</li> </ul>
<p><b>Students will <u>know</u> or <u>be able to</u>:</b></p> <ul style="list-style-type: none"> <li>• Key Terms – tracks, regions, MIDI, Loop, Audio track, mute, solo, measure, form, MP3, WAV.</li> <li>• Navigate the Loop Library.</li> <li>• Split loops.</li> <li>• Use Markers.</li> <li>• Add digital effects.</li> </ul>

<b>STAGE 2 - ASSESSMENT EVIDENCE</b>	
<b>Authentic Assessments (Performance Tasks)</b>	
<b>Formative Assessment Option:</b> <ul style="list-style-type: none"> <li>• Incredibox.com composition.</li> <li>• Form Analysis Assignment</li> <li>• Free composition with beginning, middle and end.</li> </ul>	<b>Summative Assessment:</b> <ul style="list-style-type: none"> <li>• AABA Composition – Students will create a composition using pre-recorded loops in AABA form that incorporates digital effects. This composition will be presented to the class and submitted to the instructor.</li> </ul>
<b>Other Evidence:</b> <ul style="list-style-type: none"> <li>• Music Listening and Composition Log – Students will complete an online journal entry describing their compositional process.</li> </ul>	
<b>STAGE 3 - LEARNING PLAN</b>	
<b>Summary of Student Learning Experiences</b>	
<p>The course begins with a basic introduction to musical form using popular music. Before any formal instruction, the students experience the creation of music using technology. After introductions and a quick course outline, the first day of class begins with a composition activity using the Incredibox.com website. Students use this website to create and record a piece with a clear beginning, middle, and end. The students are encouraged to layer the sounds they choose, gradually adding more layers before removing layers at the end. When complete, this composition is saved and sent to the instructor via the school's learning management system (LMS) and posted to a class discussion board for peer evaluation.</p> <p>The second assignment in unit one is an analysis of form. Individual students choose a piece of music they enjoy listening to, provide a link to a recording of that piece and complete an analysis of the form. The analysis product is a diagram of the student's own creation. It may be a picture, a list, a drawing or an audio file. The finished product is presented in class and submitted to the instructor for evaluation.</p> <p>The initial use of the DAW, Mixcraft 7, is during our third assignment of unit one. The students are to experiment freely with the software for two class periods while creating a composition of their choice. The composition requirement is 2-3 minute composition with a clear beginning, middle and end that is created using the Mixcraft software. No teacher instructions are given to the students regarding use of the software, but tutorial materials are made available to the student on the school LMS. Work on this assignment is an opportunity for students to learn the program's capabilities on their own at their own pace. When the project is complete, the students submit their composition to the instructor via the school LMS and post a recording as an .mp3 file on the class discussion board.</p> <p>In the formal performance task for unit one, students will demonstrate their ability to manipulate the Mixcraft software and demonstrate their understanding of AABA form through the creation of a composition using the pre-recorded material (loops) available in the software. Students will also complete a written evaluation of their composition and the composition of a peer using established criteria. Each section of the AABA form will be 16 measures long and must include at least drums, bass and one other instrument. Digital effects will be added to alter the loops from their original state. When complete, the composition is uploaded to the LMS for instructor evaluation and posted as an .mp3 file to the class discussion board.</p>	

Adapted from *Understanding by Design, Unit Design Planning Template* (Wiggins & McTighe, 2005)

## Music Technology

### Unit 1

#### AABA Composition Using Loops

**Assignment Overview:** Students will create a composition using pre-recorded loops in AABA form that incorporates digital effects. This composition will be presented to the class and submitted to the instructor.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Form</b>	The composition is in AABA form with the sections labeled.	The composition is in AABA form.	N/A	The composition is not in AABA form.
<b>A Section</b>				
<b>Loops</b>	The section contains at least one drum, one bass and one other loop. In addition, at least one user created loop has been added.	The section contains at least one drum, one bass and one other loop.	The section is missing one of the required three loops.	The section is missing more than one of the required three loops.
<b>Measures</b>	N/A	The section is at least 16 measures long.	The section is between 12 and 15 measures long.	The section is less than 12 measures long.
<b>Digital Effects</b>	N/A	Digital effects have been added to at least two of the included loops to alter them from their original state.	Digital effects have been added to one of the included loops to alter it from the original state.	Digital effects have not been added.
<b>B Section</b>				
<b>Loops</b>	The section contains at least one drum, one bass and one other loop. In addition, at least one user created loop has been added.	The section contains at least one drum, one bass and one other loop.	The section is missing one of the required three loops.	The section is missing more than one of the required three loops.
<b>Measures</b>	N/A	The section is at least 16 measures long.	The section is between 12 and 15 measures long.	The section is less than 12 measures long.
<b>Digital Effects</b>	N/A	Digital effects have been added to at least two of the included loops to alter them from their original state.	Digital effects have been added to one of the included loops to alter it from the original state.	Digital effects have not been added.
<b>Comments:</b>				

## APPENDIX B

<b>UNIT TWO</b>
<b>Composition Using MIDI</b>
<b>Grade Level: 9-12</b>
<b>STAGE 1 - DESIRED RESULTS</b>
<p><b>Standards (Established Goals):</b></p> <ul style="list-style-type: none"> <li>• MU:Cr1.1.T.1a – Generate melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr3.2.T.1a – Share compositions or improvisations that demonstrate a proficient level of musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.</li> <li>• MU:Re9.1.T.1a – Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.</li> </ul>
<p><b>Essential Learnings (Understandings):</b></p> <ul style="list-style-type: none"> <li>• The MIDI/Matrix editing window/Piano Roll is a visual representation of rhythmic patterns.</li> <li>• MIDI tracks can be created and manipulated using a MIDI controller keyboard and the software.</li> <li>• Music can be evaluated using established criteria.</li> </ul>
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are the elements of music and how do musicians use these elements?</li> <li>• How does a musician create music?</li> <li>• How does a musician respond to or critique music?</li> </ul>
<p><b>Students will know or be able to:</b></p> <ul style="list-style-type: none"> <li>• Key Terms- Merge, MIDI, Arm-Track, Metronome, Controller, Quantize, Trim, melody, Dorian mode, keyboard controller, real-time.</li> <li>• Use a MIDI keyboard controller to create MIDI tracks in real-time.</li> <li>• Manipulate student-created MIDI tracks using the matrix editing window (piano roll).</li> <li>• Explain the piano roll's rhythmic and melodic notation system.</li> </ul>

<b>STAGE 2 - ASSESSMENT EVIDENCE</b>	
<b>Authentic Assessments (Performance Tasks)</b>	
<b>Formative Assessment Option:</b> <ul style="list-style-type: none"> <li>• Major Scales Recording</li> <li>• Diatonic Chord Progression</li> <li>• Melodic Dictation</li> </ul>	<b>Summative Assessment:</b> <ul style="list-style-type: none"> <li>• Recording Drum Tracks – Students will re-create drum tracks in real time using a MIDI keyboard controller and the Mixcraft software.</li> <li>• Melody in C-Major – Students will create an 8 bar melody in C-Major using a MIDI keyboard controller and the Mixcraft software.</li> </ul>
<b>Other Evidence:</b> <ul style="list-style-type: none"> <li>• Vocabulary Quiz – Students will define key vocabulary related to the software and MIDI composition.</li> <li>• Rhythmic and Melodic Notation Quiz – Students will be able to match aural rhythmic and melodic sounds to their respective visual representation in piano-roll notation.</li> <li>• Music Listening and Composition Log – Students will complete an online journal entry describing their compositional process.</li> </ul>	
<b>STAGE 3 - LEARNING PLAN</b>	
<b>Summary of Student Learning Experiences</b>	
<p>In the second unit, students will explore MIDI editing and composition using Mixcraft. As the first formal assessment for this unit, the students create five drum-set patterns using MIDI editing. For this component, students will record individual drum sounds in real-time using the metronome and MIDI keyboard controllers. The students are provided with drum set patterns in standard music notation and recordings of each completed drum set part. The instructor explains the conversion of standard rhythmic notation to the MIDI piano roll notation system and an introduction to recording using the software. After each layer of the drum set part is recorded, sound effects and quantization are added and the layers are merged into a single MIDI track. These five drum set patterns are submitted to the instructor via the school's LMS for evaluation (Freedman, 2013).</p> <p>The second assignment is the recording of four major scales using the MIDI keyboard controllers. The instructor presents the WWHWWWH pattern for major scale creation and shows the students the pattern on the MIDI keyboard controller. The students use this information to create four scales, C-Major, G-Major, D-Major and F-Major. These scales are recorded as quarter notes ascending. The students record in real-time with the metronome into the DAW software. After quantizing their recordings and adding digital effects, the students add a drum pattern from the previous assignment to accompany the four major scales. The completed project is submitted to the instructor via the school's LMS for evaluation.</p> <p>The third assignment in unit two is a student created chord progression using C-Major diatonic chords. After an explanation of major, minor and diminished chords and how they are created from the major scale, the students individually record the C-major scale as whole notes ascending using the MIDI keyboard controllers and the DAW. Under each note of the major</p>	

scale, the students record the diatonic chord associated with that scale degree. The students will label each chord in their composition using correct Roman numerals. Once this is completed, the students will rearrange, delete and copy the chords to create a 16-measure chord progression using these diatonic chords. The students will follow standard rules for chord progressions by consulting the provided chord progression flowchart. Not all chords will be used and some may be repeated. Once this is completed, the students will add a drum-set pattern under the chord progression. The finished product will be submitted to the instructor for evaluation using the school LMS.

The next assignment in unit two is a melodic dictation assignment. The students are provided with .mp3 recordings of five famous melodies all in C-major. The students will listen to the recordings and re-create the melodies heard by entering notes into the DAW using the MIDI keyboard controllers. After each melody is dictated, the students will add diatonic chords under the melody to create a harmonic progression. A drum set pattern will be added for rhythmic accompaniment and effects will be added to each track prior to submission.

The final formal assessment in unit two is the creation of a 16-measure melody with harmonic accompaniment in C-Major, G-Major or D-Major. The starting and ending notes of each phrase are given for the student and the harmonic progression chosen will follow the chord progression flowchart. The students will quantize their composition and add digital effects to each track. The final composition will be submitted to the instructor as an .mp3 file for evaluation. In addition, the compositions will be posted to the class discussion board for peer evaluation.

Adapted from *Understanding by Design, Unit Design Planning Template* (Wiggins & McTighe, 2005)

**Music Technology**  
**Unit 2**  
**Recording Drum Tracks**

**Assignment Overview:** Students will re-create drum tracks in real time using a MIDI keyboard controller and the Mixcraft software.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Drum Pattern 1</b>				
<b>Sound</b>	N/A	Each drum sound is replicated with the correct corresponding MIDI drum sound. (bass drum reproduced by a bass drum sound, snare drum reproduced by a snare drum sound.	Some sounds are replicated correctly. (1-2 errors)	Few sounds are replicated correctly. (3 or more errors)
<b>Rhythm</b>	The rhythm is performed and recorded accurately and in time with the metronome.	The rhythm is performed and recorded accurately, but may stray from the metronome.	The drum pattern is performed and recorded with some rhythmic errors (1-2 errors) and may stray from the metronome.	The drum pattern is performed and recorded with many rhythmic errors (more than 3 errors) and may stray from the metronome.
<b>Drum Pattern 2</b>				
<b>Sound</b>	N/A	Each drum sound is replicated with the correct corresponding MIDI drum sound. (bass drum reproduced by a bass drum sound, snare drum reproduced by a snare drum sound.	Some sounds are replicated correctly. (1-2 errors)	Few sounds are replicated correctly. (3 or more errors)
<b>Rhythm</b>	The rhythm is performed and recorded accurately and in time with the metronome.	The rhythm is performed and recorded accurately, but may stray from the metronome.	The drum pattern is performed and recorded with some rhythmic errors (1-2 errors) and may stray from the metronome.	The drum pattern is performed and recorded with many rhythmic errors (more than 3 errors) and may stray from the metronome.

<b>Drum Pattern 3</b>				
<b>Sound</b>	N/A	Each drum sound is replicated with the correct corresponding MIDI drum sound. (bass drum reproduced by a bass drum sound, snare drum reproduced by a snare drum sound.	Some sounds are replicated correctly. (1-2 errors)	Few sounds are replicated correctly. (3 or more errors)
<b>Rhythm</b>	The rhythm is performed and recorded accurately and in time with the metronome.	The rhythm is performed and recorded accurately, but may stray from the metronome.	The drum pattern is performed and recorded with some rhythmic errors (1-2 errors) and may stray from the metronome.	The drum pattern is performed and recorded with many rhythmic errors (more than 3 errors) and may stray from the metronome.
<b>Drum Pattern 4</b>				
<b>Sound</b>	N/A	Each drum sound is replicated with the correct corresponding MIDI drum sound. (bass drum reproduced by a bass drum sound, snare drum reproduced by a snare drum sound.	Some sounds are replicated correctly. (1-2 errors)	Few sounds are replicated correctly. (3 or more errors)
<b>Rhythm</b>	The rhythm is performed and recorded accurately and in time with the metronome.	The rhythm is performed and recorded accurately, but may stray from the metronome.	The drum pattern is performed and recorded with some rhythmic errors (1-2 errors) and may stray from the metronome.	The drum pattern is performed and recorded with many rhythmic errors (more than 3 errors) and may stray from the metronome.
<b>Drum Pattern 5</b>				
<b>Sound</b>	N/A	Each drum sound is replicated with the correct corresponding MIDI drum sound. (bass drum reproduced by a bass drum sound, snare drum reproduced by a snare drum sound.	Some sounds are replicated correctly. (1-2 errors)	Few sounds are replicated correctly. (3 or more errors)
<b>Rhythm</b>	The rhythm is	The rhythm is	The drum pattern	The drum pattern

	performed and recorded accurately and in time with the metronome.	performed and recorded accurately, but may stray from the metronome.	is performed and recorded with some rhythmic errors (1-2 errors) and may stray from the metronome.	is performed and recorded with many rhythmic errors (more than 3 errors) and may stray from the metronome.
<b>Comments:</b>				

**Unit 2**  
**Melodic Composition in C-Major**

**Assignment Overview:** Melody in C-Major – Students will create an 8 bar melody in C-Major using a MIDI keyboard controller and the Mixcraft software.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Melody</b>	<p>The antecedent (question) phrase is present and does not end of scale degree one.</p> <p>The consequent (answer) phrase is present and does end on scale degree one.</p> <p>Each phrase is longer than 4 measures and each are of equal length.</p> <p>The C-Major scale is used.</p>	<p>The antecedent (question) phrase is present and does not end on scale degree one.</p> <p>The consequent (answer) phrase is present and does end on scale degree one.</p> <p>Each phrase is 4 measures long.</p> <p>The C-Major scale is used.</p>	<p>The antecedent (question) and consequent (answer) phrase are both present, but one of the phrases ends on an incorrect note.</p> <p>Each phrase is 4 measures long.</p> <p>The C-Major scale is used for most of the melody. (2 or less incorrect notes)</p>	<p>The phrases are incomplete or not present.</p> <p>AND/OR</p> <p>Both Phrases end on incorrect notes.</p> <p>AND/OR</p> <p>Both Phrases are not at least four measures long.</p> <p>AND/OR</p> <p>The C-Major scale is not used (3 or more incorrect notes)</p>
<b>Drum Pattern Accompaniment</b>	A newly created drum pattern is present.	One of the 5 previously created drum patterns is present.	N/A	A drum pattern accompaniment is not present.
<b>Digital Effects</b>	N/A	Digital effects are present in the melody line.	N/A	Digital effects are not present in the melody line.
<b>Comments:</b>				

## APPENDIX C

<b>UNIT THREE</b>
<b>Live Audio Recording</b>
<b>Grade Level: 9-12</b>
<b>STAGE 1 - DESIRED RESULTS</b>
<p><b>Standards (Established Goals):</b></p> <ul style="list-style-type: none"> <li>• MU:Cr1.1.T.1a – Generate melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr3.2.T.1a – Share compositions or improvisations that demonstrate a proficient level of musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.</li> <li>• MU:Re9.1.T.1a – Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.</li> <li>• MU:Cn11.0.T.1a – Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.</li> </ul>
<p><b>Essential Learnings (Understandings):</b></p> <ul style="list-style-type: none"> <li>• Live audio can be recorded and manipulated using the Mixcraft software.</li> <li>• Audio recordings can be arranged to create rhythmic patterns.</li> <li>• Music accompaniment can enhance dramatic reading.</li> </ul>
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are the elements of music and how do musicians use these elements?</li> <li>• How does a musician create music?</li> <li>• How does a musician respond to or critique music?</li> </ul>
<p><b>Students will <u>know</u> or <u>be able to</u>:</b></p> <ul style="list-style-type: none"> <li>• Key Terms – Compression, reverb, import.</li> <li>• Record live audio using a microphone and Mixcraft software.</li> <li>• Manipulate recorded audio to create new arrangements.</li> <li>• Import audio to create effects.</li> </ul>

<b>STAGE 2 - ASSESSMENT EVIDENCE</b>	
<b>Authentic Assessments (Performance Tasks)</b>	
<b>Formative Assessment Option:</b> <ul style="list-style-type: none"> <li>• Alphabet Recording</li> <li>• Mixing and Mastering</li> <li>• Sound Story</li> </ul>	<b>Summative Assessment:</b> <ul style="list-style-type: none"> <li>• Audio Book Excerpt - Students will record themselves reading a passage from a favorite book. Digital effects will be added to the audio and an accompaniment musical track will be added underneath the spoken audio.</li> <li>• Beat Box Rhythm – Students will record vocal audio clips and arrange them into a 16 measure rhythmic passage using the Mixcraft software.</li> </ul>
<b>Other Evidence:</b> <ul style="list-style-type: none"> <li>• Vocabulary Quiz – Students will define key vocabulary related to audio recording and audio manipulation in Mixcraft.</li> </ul>	
<b>STAGE 3 - LEARNING PLAN</b>	
<b>Summary of Student Learning Experiences</b>	
<p>Live-recorded sound is the focus of unit three. During this unit, students will experiment with recorded sound manipulation. Then, students will explore the mixing and mastering capabilities of the Mixcraft DAW through the mixing and mastering of live recorded audio tracks. Students will complete a composition that tells a story using only student-recorded sound. Next, students will record themselves reading a book excerpt and adding music as an accompaniment. Finally, students will create a beat-box style rhythmic pattern using student created or recorded sound.</p> <p>The first activity in unit three allows students to manipulate recorded sound. I will provide the students with a recording of the alphabet recited backwards. Their assignment is to cut, trim and re-arrange the sounds to reproduce the alphabet recited forwards. This assignment will be submitted as an .mp3 file to the instructor for evaluation.</p> <p>For the second activity, students will be provided with 12 live-recorded tracks of a punk band recording session. The students will import the tracks into the Mixcraft DAW to mix and master the tracks for a studio produced sound. Students will set panning, EQ levels, volume levels and experiment with send tracks for digital effects. Some of the tracks must be trimmed for timing. When complete, the students will share their projects with the class via the class discussion board. This activity will be replicated with three additional sets of live recorded tracks.</p> <p>The next activity in unit three is a sound story composition project. The students will use recorded sound to tell a two to three minute composition that tells a story. Personal cell phones and school issued iPads will be used to record the sounds. These sounds will be collected in a sound library on their desktop computer. The sound story composition will be mixed and mastered using techniques from previous assignments in unit three. Once completed, the sound story compositions will be posted to the class discussion board with a short explanation of the story depicted.</p> <p>The first formal assessment of unit three is the recording of an audio book excerpt.</p>	

Students will record themselves reading a passage from a favorite book. The recorded audio will be manipulated using digital effects and trimmed and edited for clarity. Appropriate pre-recorded or student created music will be imported into the DAW software to accompany the reading. Digital effects will be added to the tracks and the project will be mixed and mastered using techniques from the previous assignments in unit three. The completed project will be uploaded to the school's LMS as an .mp3 file for instructor evaluation.

The second formal assessment of the live-recorded sound unit is the creation of a 16-measure beat-box style drum pattern using student-recorded sounds. Different vocal syllables will be recorded using personal cell phones or school issued iPads. The users in the will manipulate these sounds using the DAW software. Drum patterns from unit two can be re-created or a new drum pattern could be used. Digital effects will be added to the tracks and a final mix will be created using techniques learned in previous unit three assignments. The beat-box pattern will be submitted to the school LMS as an .mp3 file for assessment and will be shared with other students on the class discussion board.

Adapted from *Understanding by Design, Unit Design Planning Template* (Wiggins & McTighe, 2005)

**Music Technology**  
**Unit 3**  
**Audio Book Excerpt**

**Assignment Overview:** Students will record themselves reading a passage from a favorite book. Digital effects will be added to the audio and an accompaniment musical track will be added underneath the spoken audio.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Book Excerpt</b>	The student recorded book excerpt is at least 60 seconds long.  Each word can be understood.  In addition, dramatic effect is created through the use of character voice or other vocal dramatization.	The student recorded book excerpt is at least 60 seconds long.  AND  Each word can be understood.	The student recorded book excerpt is between 45 and 59 seconds long.  AND/OR  1-3 words are pronounced incorrectly or are unclear.	The student recorded book excerpt is less than 45 seconds long.  AND/OR  More than 3 words are pronounced incorrectly or are unclear.
<b>Accompaniment Music</b>	The imported accompaniment music is present and audible but does not interfere with the student recorded audio. In addition, the music is stylistically matched to the book excerpt and adds to the overall performance.	The imported accompaniment music is present and audible but does not interfere with the student recorded audio.	The imported accompaniment music is present and audible, but distracts from the student recorded audio.	The imported accompaniment music is not present or inaudible.
<b>Digital Effects</b>	N/A	Digital effects have been added to the student recorded audio to enhance the presentation. These effects do not distract from the recorded audio.	Digital effects have been added, but distract from the recorded audio.	No digital effects have been added to alter the student-recorded audio.
<b>Comments:</b>				

**Music Technology**  
**Unit 3**  
**Beat Box Rhythm**

**Assignment Overview:** Students will record vocal audio clips and arrange them into a 16 measure rhythmic passage using the Mixcraft software.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Syllables</b>	More than 4 live-recorded syllables are used and manipulated in the composition.	4 live-recorded syllables are used and manipulated in the composition.	2-3 live-recorded syllables are used and manipulated in the composition.	Less than 2 live-recorded syllables are used and manipulated in the composition.
<b>Rhythm</b>	N/A	The pattern is in duple time and uses repetition throughout the composition.	The pattern is in duple time but does not use repetition.	The pattern is not in duple time and does not use repetition.
<b>Digital Effects</b>	Digital effects have been added to at least 3 of the live-recorded syllables.	Digital effects have been added to 2 of the live-recorded syllables.	Digital effects have been added to 1 of the live-recorded syllables.	Digital effects have not been added to the live-recorded syllables.
<b>Measures</b>	N/A	The composition is 16 measures long	N/A	The composition is less than 16 measures long.
<b>Comments:</b>				

## APPENDIX D

<b>UNIT FOUR</b>
<b>MIDI Re-Mix Project</b>
<b>Grade Level: 9-12</b>
<b>STAGE 1 - DESIRED RESULTS</b>
<p><b>Standards (Established Goals):</b></p> <ul style="list-style-type: none"> <li>• MU:Cr1.1.T.1a – Generate melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr2.1.T.1a – Select melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr3.2.T.1a – Share compositions or improvisations that demonstrate a proficient level of musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.</li> <li>• MU:Re9.1.T.1a – Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.</li> </ul>
<p><b>Essential Learnings (Understandings):</b></p> <ul style="list-style-type: none"> <li>• MIDI files can be edited and manipulated using Mixcraft software.</li> <li>• Personal choices can influence the sound and structure of a previously composed selection.</li> <li>• Components of music serve different roles.</li> <li>• Music can be organized into a formal structure.</li> </ul>
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are the elements of music and how do musicians use these elements?</li> <li>• How does a musician create music?</li> <li>• How does a musician respond to or critique music?</li> </ul>
<p><b>Students will know or be able to:</b></p> <ul style="list-style-type: none"> <li>• Key Terms – Chorus, Verse, Bridge, Melody, Harmony, Bass Line, Rhythm, marker, import, MIDI</li> <li>• Label formal structure of a composition.</li> <li>• Label musical elements of a composition.</li> <li>• Manipulate MIDI files to create an original re-mix of an existing composition.</li> </ul>

<b>STAGE 2 - ASSESSMENT EVIDENCE</b>	
<b>Authentic Assessments (Performance Tasks)</b>	
<p><b>Formative Assessment Option:</b></p> <ul style="list-style-type: none"> <li>Vocabulary Quiz – Students will define key vocabulary related to MIDI, formal structure and musical elements.</li> </ul>	<p><b>Summative Assessment:</b></p> <ul style="list-style-type: none"> <li>MIDI Re-Mix Project – Students will find and import an existing MIDI composition into the Mixcraft software. Students will label and describe the formal and musical components of the original composition. Students will alter the MIDI files to create an original re-mix of the composition.</li> </ul>
<p><b>Other Evidence:</b></p> <ul style="list-style-type: none"> <li>Music Listening and Composition Log – Students will complete an online journal entry describing their re-mix compositional process.</li> </ul>	
<b>STAGE 3 - LEARNING PLAN</b>	
<b>Summary of Student Learning Experiences</b>	
<p>In this unit, the formal assessment is to create three different re-mixes of MIDI files from a selection provided by the instructor. These selections are popular pieces from various recent musical eras. Due to the variety of selections, students should be able to find three pieces they would like to re-mix. Students will select and import these MIDI files into the Mixcraft DAW software. Musical components of the files will be labeled with descriptions of their musical function. Each section of the pieces will be labeled according to their formal function. Students may change the sounds associated with the imported tracks, alter the arrangements, add digital effects or add instruments and sound to the MIDI files to create an original re-mix version of the original file. The final compositions will be submitted as .mp3 file and as Mixcraft .mx7 files for instructor evaluation. In addition, the compositions will be posted to the class discussion board for peer evaluation.</p>	

Adapted from *Understanding by Design, Unit Design Planning Template* (Wiggins & McTighe, 2005)

**Music Technology**  
**Unit 4**  
**MIDI Re-Mix Project**

**Assignment Overview:** Students will find and import an existing MIDI composition into the Mixcraft software. Students will label and describe the formal and musical components of the original composition. Students will alter the MIDI files to create an original re-mix of the composition.

	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Musical Components</b>	All of the melodic, harmonic, bass line, and rhythmic components are labeled correctly.	Some of the melodic, harmonic, bass line and rhythmic components are labeled correctly. (1-2 errors)	Few of the melodic, harmonic, bass line and rhythmic components are labeled correctly. (3 or more errors)
<b>Formal Components</b>	The formal components of the composition are labeled correctly. (Ex: ABA, Verse, Chorus, Bridge, etc...)	Some of the formal component are labeled correctly. (1-2 errors)	Few of the formal components are labeled correctly. (3 or more errors)
<b>Re-Mix</b>	The original file has been modified through the use of digital effects, different sounds, altered arrangement, modified MIDI sounds, or added live-recorded sound to create a re-mix version of the original file.	N/A	The original file has not been altered in a way that allows the listener to perceive a marked difference between the original and the re-mix.
<b>Comments:</b>			

## APPENDIX E

<b>UNIT FIVE</b>
<b>Cell Phone Ringtone</b>
<b>Grade Level: 9-12</b>
<b>STAGE 1 - DESIRED RESULTS</b>
<p><b>Standards (Established Goals):</b></p> <ul style="list-style-type: none"> <li>• MU:Cr1.1.T.1a – Generate melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr2.1.T.1a – Select melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr3.2.T.1a – Share compositions or improvisations that demonstrate a proficient level of musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.</li> <li>• MU:Re9.1.T.1a – Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.</li> </ul>
<p><b>Essential Learnings (Understandings):</b></p> <ul style="list-style-type: none"> <li>• Musical elements can add urgency and tension to a composition.</li> <li>• MIDI and Live Audio Recorded Sound can be used together to create digital compositions.</li> </ul>
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are the elements of music and how do musicians use these elements?</li> <li>• How does a musician create music?</li> <li>• How does a musician respond to or critique music?</li> </ul>
<p><b>Students will know or be able to:</b></p> <ul style="list-style-type: none"> <li>• Key Terms – repetition, sequence, diminution, tonic, dominant.</li> <li>• Incorporate both live recorded audio and MIDI sounds into a composition.</li> <li>• Use musical elements to create tension.</li> <li>• Evaluate music using given criteria.</li> </ul>

<b>STAGE 2 - ASSESSMENT EVIDENCE</b>	
<b>Authentic Assessments (Performance Tasks)</b>	
<p><b>Formative Assessment Option:</b></p> <ul style="list-style-type: none"> <li>Vocabulary Quiz – Students will define key vocabulary related to the musical elements.</li> </ul>	<p><b>Summative Assessment:</b></p> <ul style="list-style-type: none"> <li>Cell-Phone Ringtone Project - students will compose a 30 second cell-phone ringtone composition. This unit will introduce the musical elements of repetition, sequence, and rhythmic diminution. The students will use self-composed MIDI melodies and rhythms and live audio recordings in this composition.</li> </ul>
<p><b>Other Evidence:</b></p> <ul style="list-style-type: none"> <li>Music Listening and Composition Log – Students will complete an online journal entry describing their compositional process.</li> </ul>	
<b>STAGE 3 - LEARNING PLAN</b>	
<b>Summary of Student Learning Experiences</b>	
<p>In this unit, the students will compose a thirty second cell-phone ringtone composition. Musical elements of repetition, sequence and rhythmic diminution will be addressed in instruction. Before composition, students will examine and describe the features of effective ringtones and create a list of common features found in their favorite examples. Student composed MIDI sounds, live audio recordings and imported sounds or music may be used in this composition. Digital effects and a final mastering will be completed before submission. The final compositions will be submitted to the instructor for evaluation. In addition, the ringtones will be made available on the course discussion board for peer evaluation and download.</p>	

Adapted from *Understanding by Design, Unit Design Planning Template* (Wiggins & McTighe, 2005)

**Music Technology**  
**Unit 5**  
**Cell Phone Ringtone Project**

**Assignment Overview:** Students will compose a 30 second cell-phone ringtone composition. This unit will introduce the musical elements of repetition, sequence, and rhythmic diminution. The students will use self-composed MIDI melodies and rhythms and live audio recordings in this composition.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>MIDI</b>	The ringtone includes more than 2 student created MIDI tracks.	The ringtone includes 2 student created MIDI tracks.	The ringtone includes 1 student created MIDI track.	The ringtone does not include student created MIDI track.
<b>Recorded Audio</b>	The ringtone includes more than 2 examples of student recorded live audio.	The ringtone includes 2 examples of student recorded live audio.	The ringtone includes 1 example of student recorded live audio.	The ringtone does not include an example of student recorded live audio.
<b>Musical Elements</b>	A sense of tension and urgency is present due to the use of sequence, repetition or rhythmic diminution.	The composition includes the use of sequence, repetition or rhythmic diminution.	N/A	The composition does not include the use of sequence, repetition or rhythmic diminution.
<b>Length</b>	N/A	The ringtone is between 30 and 45 seconds.	The ringtone is between 20 and 29 seconds long.	The ringtone is less than 20 seconds OR more than 46 seconds long.
<b>Comments:</b>				

## APPENDIX F

<b>UNIT SIX</b>
<b>Composition for Visual Art</b>
<b>Grade Level: 9-12</b>
<b>STAGE 1 - DESIRED RESULTS</b>
<p><b>Standards (Established Goals):</b></p> <ul style="list-style-type: none"> <li>• MU:Cr1.1.T.1a – Generate melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr2.1.T.1a – Select melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr3.2.T.1a – Share compositions or improvisations that demonstrate a proficient level of musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.</li> <li>• MU:Re9.1.T.1a – Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.</li> <li>• MU:Cn11.0.T.1a – Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.</li> </ul>
<p><b>Essential Learnings (Understandings):</b></p> <ul style="list-style-type: none"> <li>• Visual art has been and can be an influence on musical composition.</li> </ul>
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are the elements of music and how do musicians use these elements?</li> <li>• How does a musician create music?</li> <li>• How does a musician respond to or critique music?</li> </ul>
<p><b>Students will know or be able to:</b></p> <ul style="list-style-type: none"> <li>• Musical Works – Selected from: Pictures at an Exhibition, A Rake’s Progress, La Mer, Hunenschlacht, Isle of the Dead.</li> <li>• Key Words – balanced binary form, tonic, dominant, modulation, cadence</li> <li>• Incorporate both live recorded audio, imported audio and MIDI sounds into a composition.</li> <li>• Evaluate music using given criteria.</li> </ul>

<b>STAGE 2 - ASSESSMENT EVIDENCE</b>	
<b>Authentic Assessments (Performance Tasks)</b>	
<p><b>Formative Assessment Option:</b></p> <ul style="list-style-type: none"> <li>Vocabulary Quiz – Students will define key vocabulary related to the musical elements.</li> </ul>	<p><b>Summative Assessment:</b></p> <ul style="list-style-type: none"> <li>3-4 minute composition in balanced binary form influenced by the image. Students will use live-recorded audio, student created MIDI sounds and imported audio to aurally depict the visual image. Digital effects will be incorporated into the composition.</li> </ul>
<p><b>Other Evidence:</b></p> <ul style="list-style-type: none"> <li>Music Listening and Composition Log – Students will complete an online journal entry describing their compositional process.</li> </ul>	
<b>STAGE 3 - LEARNING PLAN</b>	
<b>Summary of Student Learning Experiences</b>	
<p>During unit six, students will study the relationship between visual art and music. Students will examine how famous composers have used visual art as an inspiration for music. Successful and effective compositional techniques will be determined through group evaluation and conversation. The performance task for this unit is to select a piece of visual art and compose a three to four minute composition in balanced binary form influenced by that visual image. The image will be imported into the Mixcraft DAW. Students will use live-recorded audio, student created MIDI sounds, and imported audio to aurally depict the visual image. Digital effects will be added to the tracks and the mixing and mastering techniques utilized in unit three will be applied to the final composition. The final composition will be submitted as a movie file to the instructor for evaluation. In addition, the compositions will be posted to the course discussion board with a short composer created description of the piece and the techniques used to depict the visual art.</p>	

Adapted from *Understanding by Design, Unit Design Planning Template* (Wiggins & McTighe, 2005)

**Music Technology**  
**Unit 6**  
**Composition for Visual Art**

**Assignment Overview:** Students will create a 3-4 minute composition in balanced binary form influenced by the image. Students will use live-recorded audio, student created MIDI sounds and imported audio to aurally depict the visual image. Digital effects will be incorporated into the composition.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Form</b>	The composition is in Balanced Binary Form with the sections labeled.	The composition is in Balanced Binary Form.	The composition is in Binary Form.	The composition is not in Binary Form.
<b>MIDI</b>	3 or more student created MIDI tracks are present in the composition.	2 student created MIDI tracks are present in the composition.	1 student created MIDI track is present in the composition.	There are no student created MIDI tracks present in the composition.
<b>Live Recorded Audio</b>	The composition uses 3 or more examples of live-recorded audio.	The composition uses 2 examples of live-recorded audio.	The composition uses 1 example of live-recorded audio.	The composition does not utilize live-recorded audio.
<b>Digital Effects</b>	Digital effects have been added to 3 or more of the included tracks to alter them from their original state.	Digital effects have been added to 2 of the included tracks to alter them from their original state.	Digital effects have been added to 1 of the included tracks to alter it from the original state.	Digital effects have not been added.
<b>Imported Audio</b>	N/A	The composition incorporates 1 example of imported audio.	N/A	The composition does not incorporate an example of imported audio.
<b>Visual Image</b>	The visual art is presented as a part of a visual and musical composition created using the software. In addition, specific aspects of the visual art are presented in coordination with their respective musical aspects.	The visual art is presented as a part of a visual and musical composition created using the software.	The visual art is not incorporated into the software, but is presented in an alternate format. (EX: picture, computer projection, etc...)	The visual art is not presented.
<b>Time</b>	N/A	The composition is between 3-4 minutes in length.	N/A	The composition is less than 3 minutes long.
<b>Comments:</b>				

## APPENDIX G

<b>UNIT SEVEN</b>
<b>Composing for Video</b>
<b>Grade Level: 9-12</b>
<b>STAGE 1 - DESIRED RESULTS</b>
<p><b>Standards (Established Goals):</b></p> <ul style="list-style-type: none"> <li>• MU:Cr1.1.T.la – Generate melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr2.1.T.la – Select melodic, rhythmic, and harmonic ideas to develop into a larger work using digital tools and resources.</li> <li>• MU:Cr3.2.T.la – Share compositions or improvisations that demonstrate a proficient level of musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.</li> <li>• MU:Re9.1.T.la – Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.</li> <li>• MU:Cn11.0.T.la – Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.</li> </ul>
<p><b>Essential Learnings (Understandings):</b></p> <ul style="list-style-type: none"> <li>• Composers use music to enhance video.</li> <li>• Video can be an inspiration for music composers.</li> </ul>
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are the elements of music and how do musicians use these elements?</li> <li>• How does a musician create music?</li> <li>• How does a musician respond to or critique music?</li> </ul>
<p><b>Students will <u>know</u> or <u>be able to</u>:</b></p> <ul style="list-style-type: none"> <li>• Keywords: Cross fade, freeze tracks.</li> <li>• Incorporate video, live-recorded audio, student created MIDI and imported audio in the Mixcraft software.</li> <li>• Evaluate music using given criteria</li> </ul>

<b>STAGE 2 - ASSESSMENT EVIDENCE</b>	
<b>Authentic Assessments (Performance Tasks)</b>	
<p><b>Formative Assessment Option:</b></p> <ul style="list-style-type: none"> <li>Vocabulary Quiz – Students will define key vocabulary related to musical and technical elements.</li> </ul>	<p><b>Summative Assessment:</b></p> <ul style="list-style-type: none"> <li>Movie Sound Effects – Students will add prescribed sound effects to a 3-minute silent film. In addition, the students will add imported music that sets the mood for the piece and is appropriate for the film’s era.</li> <li>Soundtrack composition - Students will create a musical soundtrack for a 3-4-minute movie trailer selected by the student. Students will use created MIDI sounds, live-recorded audio, and imported audio in their compositions. Digital effects will be added. In addition, at least three “sound events” will coincide with events in the video. This composition will be shared with and evaluated by the class.</li> </ul>
<p><b>Other Evidence:</b></p> <ul style="list-style-type: none"> <li>Music Listening and Composition Log – Students will complete an online journal entry describing their compositional process.</li> </ul>	
<b>STAGE 3 - LEARNING PLAN</b>	
<b>Summary of Student Learning Experiences</b>	
<p>In this unit students will examine the relationship between video and music. Students will examine how composers have composed music for video. The students will determine which techniques are effective and describe why.</p> <p>The first performance task will be to add prescribed sound effects to a 3-minute silent film. In addition, the students will add imported music that sets the mood for the piece and is appropriate for the film’s era.</p> <p>The second performance task is to create a musical soundtrack for a 3-4-minute movie trailer selected by the student. Students will use created MIDI sounds, live-recorded audio, and imported audio in their compositions. Digital effects will be added. In addition, at least three “sound events” will coincide with events in the video. This composition will be shared with and evaluated by the class.</p>	

Adapted from *Understanding by Design, Unit Design Planning Template* (Wiggins & McTighe, 2005)

**Music Technology**  
**Unit 7**  
**Sound Effects for Video**

**Assignment Overview:** Movie Sound Effects – Students will add prescribed sound effects to a 3-minute silent film. In addition, the students will add imported music that sets the mood for the piece and is appropriate for the film’s era.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>Accompaniment Music</b>	The accompaniment music is student created and appropriately enhances the video’s content.	The accompaniment music is imported audio and appropriately enhances the video’s content.	The accompaniment music is present, but does not align with the video’s content.	The accompaniment music is not present.
<b>Sound Effect #1</b>				
<b>Sound Effect</b>	The composer uses a student created MIDI sound or live-recorded audio that accurately represents the image on the video.	The composer uses a pre-created sound effect that accurately represents the image on the video.	The composer uses a sound effect that does not accurately represent the image on the video.	The composer does not incorporate a sound effect.
<b>Timing</b>	The sound effect is present and aligns with the image.	The sound effect is present, but may slightly phase from the image.	The sound effect is present but does not align with the image.	The sound effect is not present.

<b>Sound Effect #2</b>				
<b>Sound Effect</b>	The composer uses a student created MIDI sound or live-recorded audio that accurately represents the image on the video.	The composer uses a pre-created sound effect that accurately represents the image on the video.	The composer uses a sound effect that does not accurately represent the image on the video.	The composer does not incorporate a sound effect.
<b>Timing</b>	The sound effect is present and aligns with the image.	The sound effect is present, but may slightly phase from the image.	The sound effect is present but does not align with the image.	The sound effect is not present.
<b>Sound Effect #3</b>				
<b>Sound Effect</b>	The composer uses a student created MIDI sound or live-recorded audio that accurately represents the image on the video.	The composer uses a pre-created sound effect that accurately represents the image on the video.	The composer uses a sound effect that does not accurately represent the image on the video.	The composer does not incorporate a sound effect.
<b>Timing</b>	The sound effect is present and aligns with the image.	The sound effect is present, but may slightly phase from the image.	The sound effect is present but does not align with the image.	The sound effect is not present.

<b>Sound Effect #4</b>				
<b>Sound Effect</b>	The composer uses a student created MIDI sound or live-recorded audio that accurately represents the image on the video.	The composer uses a pre-created sound effect that accurately represents the image on the video.	The composer uses a sound effect that does not accurately represent the image on the video.	The composer does not incorporate a sound effect.
<b>Timing</b>	The sound effect is present and aligns with the image.	The sound effect is present, but may slightly phase from the image.	The sound effect is present but does not align with the image.	The sound effect is not present.
<b>Sound Effect #5</b>				
<b>Sound Effect</b>	The composer uses a student created MIDI sound or live-recorded audio that accurately represents the image on the video.	The composer uses a pre-created sound effect that accurately represents the image on the video.	The composer uses a sound effect that does not accurately represent the image on the video.	The composer does not incorporate a sound effect.
<b>Timing</b>	The sound effect is present and aligns with the image.	The sound effect is present, but may slightly phase from the image.	The sound effect is present but does not align with the image.	The sound effect is not present.

<b>Sound Effect #6</b>				
<b>Sound Effect</b>	The composer uses a student created MIDI sound or live-recorded audio that accurately represents the image on the video.	The composer uses a pre-created sound effect that accurately represents the image on the video.	The composer uses a sound effect that does not accurately represent the image on the video.	The composer does not incorporate a sound effect.
<b>Timing</b>	The sound effect is present and aligns with the image.	The sound effect is present, but may slightly phase from the image.	The sound effect is present but does not align with the image.	The sound effect is not present.
<b>Sound Effect #7</b>				
<b>Sound Effect</b>	The composer uses a student created MIDI sound or live-recorded audio that accurately represents the image on the video.	The composer uses a pre-created sound effect that accurately represents the image on the video.	The composer uses a sound effect that does not accurately represent the image on the video.	The composer does not incorporate a sound effect.
<b>Timing</b>	The sound effect is present and aligns with the image.	The sound effect is present, but may slightly phase from the image.	The sound effect is present but does not align with the image.	The sound effect is not present.
<b>Comments:</b>				

**Music Technology**  
**Unit 7**  
**Soundtrack for a Movie Trailer**

**Assignment Overview:** Students will create a musical soundtrack for a 3-4-minute movie trailer selected by the student. Students will use created MIDI sounds, live-recorded audio, and imported audio in their compositions. Digital effects will be added. In addition, at least three “sound events” will coincide with events in the video. This composition will be shared with and evaluated by the class.

	<b>Expert 5 points</b>	<b>Proficient 5 points</b>	<b>Developing 3 points</b>	<b>Beginning 2 points</b>
<b>MIDI</b>	3 or more student created MIDI tracks are present in the composition.	2 student created MIDI tracks are present in the composition.	1 student created MIDI track is present in the composition.	There are no student created MIDI tracks present in the composition.
<b>Live Recorded Audio</b>	The composition uses 3 or more examples of live-recorded audio.	The composition uses 2 examples of live-recorded audio.	The composition uses 1 example of live-recorded audio.	The composition does not utilize live-recorded audio.
<b>Digital Effects</b>	Digital effects have been added to 3 or more of the included tracks to alter them from their original state.	Digital effects have been added to 2 of the included tracks to alter them from their original state.	Digital effects have been added to 1 of the included tracks to alter it from the original state.	Digital effects have not been added.
<b>Imported Audio</b>	N/A	The composition incorporates 1 example of imported audio.	N/A	The composition does not incorporate an example of imported audio.
<b>Sound Events</b>	The composer uses four or more student created MIDI sounds or live-recorded audio excerpts that accurately represent the images on the video and align with the image.	The composer uses three pre-created sound effects, student created MIDI sounds or live-recorded audio excerpts that accurately represent the images on the video and align with the images.	The composer uses two pre-created sound effects, student created MIDI sounds or live-recorded audio excerpts that accurately represent the images on the video and align with the images.	The composer uses one or zero pre-created sound effects, student created MIDI sounds or live-recorded audio excerpts that accurately represent the images on the video and align with the images.
<b>Comments:</b>				

## APPENDIX H

Office of Teaching and Learning  
Minnetonka Public Schools



**Course Title:**  
**Music Technology**  
Submitted by: Paul Rosen

**Description of the Proposal:****1) What new course/activity is being proposed? What grade levels? Semester? Full-year?**

Music Technology, Grades 9-12, 1 Semester Course

In this project-based course, students will explore music composition using Digital Audio Workstations, looping software, MIDI and live audio recording. Projects will include composition using music using technology, film scoring, editing sound files, podcasting and creating mash-up compositions. All students are welcome regardless of prior music knowledge.

**2) How did this proposal originate?**

This course proposal is the result of course work and research I have completed in the last year.

**3) What is the anticipated level of participation? What information are you using to determine this level of participation?**

Without any comparable class currently offered at our school, the participation level is difficult to predict. Other high schools offering similar courses have filled multiple sections or have developed waiting lists to handle the large amount of interest. The first year, I would anticipate 15-20 interested students.

**4) What is the rationale for the proposal? What need does it fulfill?**

Across the United States and in our school, it is estimated that 80% of students are not involved in traditional school music programs. Though not serviced through public education, music is an important part of their daily lives. Many of these students are active musicians and composers, but are not able or willing to participate in our current performance ensembles. This course will allow both the traditional music student and the non-traditional student the opportunity to explore individual musicality and music creation through the use of technology. The fundamentals of music will be taught while also teaching 21<sup>st</sup> century skills to students who are not currently serviced by our music program.

**Analysis of the Proposal:****1) How is this proposal compatible with the vision, mission, and beliefs of the district?**

This Music Technology course will allow all students, regardless of prior education or performance experience, the opportunity to explore their passion for music during the school day. Technology will be used to help students meet MN Academic Standards for the Arts and learn 21<sup>st</sup> century skills. An additional elective course may allow students the flexibility to meet their personal academic goals.

**2) What is the relation of the proposal to the Minnesota Graduation Standards?**

This course could help students meet the MN Graduation Requirements of 7 elective credits and 1 arts credit.

**3) What is the effect of the proposal on district resources?****a) Space: Where is space currently available for the activity?**

An existing computer lab equipped with removable USB musical keyboards and the appropriate software could be used for this course offering.

**b) Time: Where will the activity fit in the daily schedule?**

This course could be offered any class period of the day.

**c) Personnel: What staff will be necessary?**

0.2 FTE would be required for each section offered.

**d) Financial Costs: What is the cost to the district of this proposal? What are the requirements for texts, equipment/supplies/curriculum writing? Are funds currently allocated and available for this activity?**

The availability of Garage Band on iPad and inexpensive Digital Audio Workstation software for PC such as Reaper, Soundation Studio, and Audacity can help to keep software costs low. USB keyboards are \$80.00 each. Microphones and cables for high quality iPad recording are \$80.00 each.

16 hours of summer curriculum writing time would be necessary to develop the course.

There are no textbook costs.

**4) What will be the effect of the proposal on the rest of the curriculum or on other activities?****a) How does the proposal expand, complement or strengthen an existing program?**

The current music program at Minnetonka High School offers band, orchestra and vocal performance ensembles, music theory, AP music theory and IB music courses. These offerings do not

adequately meet the needs of the 80% of students who are not involved in performance ensembles or are not interested in traditional music theory. This Music Technology course will allow any student, regardless of prior education or performance experience the opportunity to explore their individual musicality and music composition outside of traditional performance music offerings at Minnetonka High School.

**b) How does the proposal effect existing programs?**

Existing programs will not be affected by this course as it is meant to service the students not participating in current Minnetonka High School music courses.

**c) Does this course/activity substitute for an existing program? Could it be integrated into an existing course/activity? Are there courses/activities that should be eliminated if this proposal is approved?**

The material presented in this proposed course is not covered in any other area of our current music program. The Music Technology course would be an addition to the curriculum, not a substitution for existing curriculum.