Guitar Hero:

Will Video Games Save the Day for Music Education?

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Many students growing up in the digital age tend to prefer video games over classroom learning because they find game-based learning to be more empowering and motivating (Simpson, 2005). Beginning band students are often further unmotivated because learning to play an instrument requires them to possess high-skill levels before they can fully enjoy making music (Denis & Jouvelot, 2005). The purpose of this instructional design project is to develop and evaluate a supplementary module to help integrate the video game, Guitar Hero, as a tool for teaching musical concepts and for motivating seventh grade beginning band students at a middle school on Oahu to practice their instruments and to continue on in the program.

Students have a much better grasp of abstract musical concepts if they can experience them firsthand (Gamwell, 2005). New technologies such as video games can lower the entry skill levels required to create music (Crow, 2006; Denis & Jouvelot, 2004). Nevertheless, pre-existing commercial video games are not always appropriate for use in education (Deubel, 2006). By itself, Guitar Hero provides very little musical content, but a supplementary module could increase its educational value if it includes practice strategies that teach them to self-correct (Pitts, Davidson, & McPherson, 2000). The module should include additional tools that will aid in listening and in the evaluation of performance, as well as in the development of student self-determination (Kirk, 2006; Hallam, 2002). Furthermore, the module could draw from strategies of video game design to make it more interactive and engaging for learners (Dickey, 2005).

The subjects in this study will be seventh grade beginning band students at a middle school on Oahu. This is a public school that services students from a variety of backgrounds—including military families and those living in nearby affordable housing. The time commitment and fees associated with learning an instrument, as well as the transient nature of the student population, makes it hard to retain students in the middle school band program.

During the developmental phase of the module, several methods of formative evaluation will be conducted to gather data for use in the revision process. These methods include a peer evaluation, completed by another music teacher in the department; a series of one-on-ones to be completed by students from the target population; and a small group evaluation to be completed by a larger sample population. The data collection methods for the classroom study will include student records, pre- and post-tests, and an attitudinal survey.

The module will be implemented as a part of whole class instruction. Each beginning band class contains about twenty students that are placed on various instruments. Prior to this placement, the PowerPoint module will be used along with the video game, Guitar Hero, to help the students learn musical concepts without them needing to have fine psychomotor skills on an actual instrument. It will also teach them strategies that would help them to practice on their real instrument when they are finally placed. Students will complete the pre-test before going through the module. After completing the instruction, they will complete the post-test along with the attitudinal survey.

Comparison of the pre- and post-test data should demonstrate the effectiveness of the module in delivering the content. Data from the attitudinal survey should help to determine students' attitude toward practicing and their motivation to continue learning an instrument in band. Furthermore, student enrollment records could be used to track the retention level of band students as the years progress.

Conclusions will be drawn from the data analysis about the overall effectiveness of the module in achieving the instructional goal. I will discuss the additional revisions that may be necessary to improve the instructional design, and I will propose the implications that this study might have on the future use of video games in music education.

References

Crow, B. (2006). Musical creativity and the new technology [Electronic version]. *Music*

   Education Research, 8(1), 121-130.

Denis, G. & Jouvelot, P. (2004, November 16). *Building the case for video games in music*

   education. Paper presented at the 2004 International Game Design and Technology

   Workshop. Retrieved April 16, 2008, from www.cri.ensmp.fr/classement/doc/A-356.pdf

Denis, G. & Jouvelot, P. (2005, June 15). *Motivation-driven educational game design: Applying*

   best practices to music education. Paper presented at the 2005 International Conference

   on Advances in Computer Entertainment Technology (ACE). Retrieved April 16, 2008,

   from http://cri.ensmp.fr/classement/doc/A-365.pdf

Deubel, P. (2006, January 1). Game On! *T.H.E. Journal*. Retrieved April 12, 2008, from

   http://www.thejournal.com/articles/17788

Dickey, M.D. (2005). Engaging by design: How engagement strategies in popular computer and

   video games can inform instructional design [Electronic version]. *ETR&D, 53*(2), 67-83.

Gamwell, P. (2005). Intermediate students' experiences with an artistic based unit: An action

   research [Electronic version]. *Canadian Journal of Education, 28*(3), 359-383.

Hallam, S. (2002). Musical motivation: Towards a model synthesizing the research [Electronic

   version]. *Music Education Research, 4*(2), 225-244.

Kirk, S. (2006, August/September). Do music teachers have a responsibility to teach with

   technology? [Electronic version]. *American Music Teacher,* 72-73.

Pitts, S., Davidson, J., & McPherson, G. (2000). Developing effective practise strategies: Case

   studies of three young instrumentalists [Electronic version]. *Music Education Research,*

   2(1), 45-56.

Simpson, E.S. (2005). Evolution in the classroom: What teachers need to know about the video

game generation [Electronic version]. *TechTrends: Linking Research & Practice to

Improve Learning, 49*(5), 17-22.

Using GarageBand to Motivate Students to Practice

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Lack of student motivation and engagement in learning is becoming an increasing challenge for music educators because when students disengage from learning, it can lead to classroom disruptions and behavioral problems. Beginning instrumentalists are often frustrated because of the time and effort it takes to develop proficiency on a musical instrument. The purpose of this action research project is to evaluate the feasibility of using Apple's GarageBand software as a tool for motivating seventh and eighth grade music students at an Oahu middle school to practice their instruments.

Digital recording technology, such as GarageBand, is particularly attractive in an educational setting because it allows teachers to expose students to real world skills such as recording, composing, audio editing, and music production (Criswell, 2008). Furthermore, the recording process is student-centered and collaborative. Students enjoy using GarageBand because they can quickly hear and modify sounds that they have created. Nevertheless, some critics argue that GarageBand takes away from the experience and effort that goes into learning fluency on a musical instrument (Nelson, 2007).

The subjects in this study will be seventh and eighth grade instrumental music students at a middle school on Oahu. This is a public school that services students from a variety of backgrounds—including military families and those living in nearby affordable housing. The time commitment and fees associated with learning an instrument, as well as the transient nature of the student population, makes it hard to retain students who are dedicated to practicing and learning a musical instrument.

As a part of this study, students will be taught basic skills on their instrument as a part of whole class instruction. They will also learn basic practice strategies before they break up into groups to do independent practice. As they practice, students will be asked to self-monitor

whether or not they are on-task at timed intervals. Notes from teacher observations will supplement this data. After practicing, students will perform and be evaluated by the teacher who will rate them against a rubric to determine the effectiveness of the practice session. Finally, students will be asked to take an attitudinal survey to determine their level of motivation and their engagement with practicing.

This process will be repeated with the intervention in place. This time, students will be asked to practice as a part of a unit that requires them to produce their own CD using Apple's GarageBand software. Students will continue to self-monitor as the teacher observes their practice. Students will record their performances and use GarageBand to create their own CD. The teacher will evaluate their final recording against the same rubric and the students will once again complete the attitudinal survey to examine their motivation and engagement levels.

Data from the student self-monitoring can be graphed to determine the percentage of time on-task—both with the intervention and without. This can be compared against qualitative data from the teacher's observation notes. The student performances can be judged against the same rubric to compare the effectiveness of the practice. Lastly, Likert scale ratings and open responses from the attitudinal surveys can be tabulated and categorized to create a picture of students' perceptions of their motivation and engagement with practicing in both scenarios.

Conclusions will be drawn from the data analysis about the feasibility of using GarageBand as a motivator for students to practice their instruments. Provided that the intervention is successful, these conclusions will be utilized in constructing an action plan to implement GarageBand into the curriculum. I will discuss additional issues that arose during the study and suggest improvements to address these areas. Finally, I will propose the implications that this study might have on the future usage of recording technology in the classroom.

References

Criswell, C. (2008). Setting up a music lab: The essential steps. *Teaching Music, 15*(4), 26-27.

Nelson, T. (2007, March 28). Can garage bands be replaced by software? *Christian Science Monitor, 99*(84). Retrieved June 2, 2008, from Newspaper Source database.

Literature Review

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Introduction

A survey of the existing literature is necessary in order to determine the feasibility of using Apple's GarageBand software as a tool for motivating eighth grade music students at Leeward Middle School to practice their instruments. Information gathered from the literature review will aid in the research design process and will also influence the final action plan generated along with the data collected from the study. The selected literature is categorized into the following areas. First, there is an examination of student motivation and engagement. This is followed by a discussion of ways to assess student learning and to measure the effectiveness of the music program. Finally, there is an exploration of the ways in which technology—like GarageBand—can enhance music education through the utilization of computers to motivate students to practice using specific strategies.

Student Motivation and Engagement

Lack of student motivation and engagement in learning is becoming an increasing challenge for music educators because when students disengage from learning, it can lead to classroom disruptions and behavioral problems. Some of the reasons that students lose interest in learning and school include feelings of isolation, a deficiency of activities in the classroom that have personal relevance, and a need for trusting and caring relationships (Thomas, 2007). To counter the seemingly shrinking attention spans of the "iPod generation", music educators have turned to making rehearsals more interactive and student-centered (Ulrich, 2008). More recently, students are also becoming more involved in self-assessment, discovery learning, and authentic tasks (Ulrich, 2008; Thomas, 2007). By involving students in making musical decisions that affect their learning as well as the overall success of the music program, they

become motivated and feel as though they have ownership of their development as a musician (Leonhardt, 2005).

Another way to keep students engaged is through self-monitoring. A study conducted by Moore, Prebble, Robertson, Waetford, & Anderson (2001) found that goal setting and self-recording can increase on target behavior for students. Setting specific, challenging, and attainable goals helped students to become more focused on completing their work. In addition, students who were taught to self-record their on-task behavior and use of learning strategies were able to develop better self-control and self-management skills.

Addressing Issues of Motivation and Measuring Success

One way that the lack of student engagement and motivation in the music class can be addressed is through action research. The action research model has been somewhat underutilized in studies of music education. However, this type of research is valuable to practicing music educators because the questions it can address are particularly relevant to unique situations that develop in the music classroom that may be foreign to outside researchers (Conway & Jeffers, 2004). The constantly changing conditions and variables within a classroom environment require the flexibility that action research methodology allows.

Assessing Student Learning and Program Effectiveness

A music educator needs to be able to assess student progress and the effectiveness of the entire music program. This is important not only for data collection, but also for maintaining a high quality music program. Recently there has been a renewed push for better means of assessment in music programs. Brasher (1999) advocates generating an assessment management plan that includes determining assessment methods that will determine how well students have mastered specific concepts, creating a regular assessment schedule that allows teachers to

consistently track student progress, developing a means for reporting the data, and using assessment results to evaluate the overall effectiveness of the music program in meeting curriculum standards. Different assessment methods include rating scales and rubrics, student self-assessments, student teacher meetings, surveys, portfolios, and recordings of student performances.

When using rating scales and rubrics, students are assessed based on how well they demonstrate mastery of skills in a standards-based curriculum (Brasher, 1999; Leonhardt, 2005). Self-assessments engage students in the evaluation process and provide practice in becoming a self-directed learner. Student teacher meetings allow students to demonstrate performance skills and to receive immediate feedback to help guide future learning.

Surveys can be used to evaluate the instructional process in a music program. Some advantages to using this method for data collection include anonymity, quick results, and flexibility (Porter, 2006). Furthermore, surveys can be used to track changes in student practice habits throughout the year and can help to adjust curriculum planning.

Portfolios and recordings of student performances are authentic assessments, which measure student abilities in real-world contexts (Johnson, 1997). Brasher (1999) acknowledges that authentic assessment methods are necessary "[t]o maintain the integrity of music education as an academic course of study" (p. 29). Often music educators are overly consumed with ensuring that students are engaged in rich music making experiences that formal assessments are overlooked. However, technology that can be used to create or capture student performances for assessment may provide a means for simultaneously engaging and motivating students while accurately measuring their progress.

Music Education and Technology

Improvements in digital music technology—including sound quality, portability, and lower costs—have made it easier to integrate technology into music education (Peters, 2001). Administrative software can help teachers in preparing worksheets and designing other activities for their students; music notation software assists students in composing music; drill software can aid students in learning to read and listen to music; the Internet can provide students with excellent resources in music history; and, video and audio recordings of student performances can be used to critique and assess student progress (Peterson, 2006; Reninger, 2008). However, to prevent ill-suited technology purchases it is important to establish the goal and purpose for using it in the curriculum and how it will help to meet standards and benchmarks (Criswell, 2008; Hickley, 2000). If used properly, technology can also be used to differentiate instruction for learners at diverse levels of musicianship (Burns, 2006).

Digital recording technology is particularly attractive in an educational setting because it allows teachers to expose students to real world skills such as recording, composing, audio editing, and music production (Criswell, 2008). Furthermore, the recording process is student-centered and collaborative, allowing the teacher to fulfill the role of a facilitator or guide. In addition, with the introduction of MIDI keyboards and software instruments, the music making process has become more accessible to students who might not otherwise have possessed the proficiency required on a real instrument (Feldstein, 2001). Although arguably technology can dehumanize the music experience, students are still often more motivated to refine their musicianship knowing that they will be committing a performance to a recording that will be permanent (Johnson, 1997).

Using a Computer as an Instructional Delivery Method

One potential barrier to integrating technology into the music classroom is the lack of available computers. However, music educators can still utilize the tools on one computer to benefit the entire classroom. Hooking up the computer to a television or projector along with an audio system allows for whole-class instruction (Studer, 2005; Frankel, 2004). Other strategies for delivering instruction with a single computer include the learning station model—where the single computer is one of several stations that groups of students rotate through—and a mastery learning curriculum model—where students use the computer individually to proceed at their own pace through activities that are designed to teach skills and concepts (Kassner, 2000). While working with technology in a one-computer classroom may not be the ideal situation, it provides many cost breaks and allows the teacher to become familiar with computer programs before deciding to purchase expensive equipment and software (Studer, 2005).

Teaching Students to Practice

Not only can computers be used to deliver instruction, they can also serve as powerful motivators. To understand the ways in which technology can be used as an intervention to influence students to practice, it is important to be aware of the nature of musical practice as a learning activity. Some factors that influence the frequency of musical practice include the environment in which students practice, the degree of parental support, and the extent to which the student identifies with the instrument or ensemble (Austin & Berg, 2006; Albert, 2006). The quality of musical practice can be affected by the student's metacognitive abilities, which allow the student to monitor progress, self-detect errors, and help to employ learning strategies. Some practice strategies include goal setting, preparation or mapping a piece, marking the music, practicing small sections, repetitive drill, and slowing down the tempo.

A study conducted by Bauer (2008) found that teachers could positively affect their students' metacognitive capabilities in instrumental music through the discussion of practice strategies and through the self-monitoring of their own playing. Furthermore, practice sessions that are focused and strategic, can lead to increased frequency or duration of practice and thus, accelerated skill development (Austin & Berg, 2006). In order to promote quality practice, teachers need to spend time teaching students how to rehearse—through the creation of personal practice plans, using aural models or recordings, and through error detection drills (Kostka, 2004). Therefore, the technological intervention proposed as a part of this research project should be supported by instruction in how to practice.

GarageBand and the Music Making Experience

Sometimes students lose interest in practicing a musical instrument because it takes a long time to develop proficiency. However, GarageBand may have the capacity to engage students because it can democratize the creative process by allowing them to create recorded sound without having to fully master an instrument (Hopkins, n.d.). The software allows users to quickly record real sounds or to manipulate software instruments. Students enjoy using the software because it allows for instant gratification—they can quickly hear and modify sounds that they have created (Nelson, 2007). Some critics argue, however, that the benefits of using GarageBand in the curriculum do not outweigh its shortcomings such as the loss of the experience and effort that goes into learning fluency on a musical instrument (Nelson, 2007).

<center>Conclusion</center>

Middle school students often have difficulty in staying engaged in independent musical practice. They are often frustrated because of the time and effort it takes to develop proficiency on a musical instrument. Ulrich writes that students are "accustomed to hearing iPod perfection,

immediacy, and perfect repetition. As a result, the clumsiness and mistakes of humanity exposed

in rehearsal and performance is becoming a lost and intolerable art" (p. 44). However, software

programs like GarageBand have the potential to motivate students to practice if they are used in a

way to engage them in an authentic activity such as recording their own musical tracks.

Nevertheless, some music educators fear that the increasing integration of technology

takes away from the creativity and skill development inherent in the music making process.

Hickley (2000) worries that students will not mature as creators of music if they do not actually

undergo the experience of playing a musical instrument. Feldstein (2001) observes that some

students now foster the belief that the traditional fundamentals of music education such as

notation, arranging, and composition are no longer necessary because of new technologies.

From the literature examined thus far, neither viewpoint has a decisive edge over the

other. Reviewing additional research from both sides will be necessary to help refine the overall

design of this study. Another issue that must be taken into consideration when recording student

performances is copyright law (Peters, 2001). Resources on this subject and on student privacy

issues might prove to be useful in conducting this action research study.

References

Albert, D.J. (2006). Strategies for the recruitment and retention of band students in low socioeconomic school districts. *Contributions to Music Education, 33*(2), 53-72.

Austin, J.R. & Berg, M.H. (2006). Exploring music practice among sixth-grade band and orchestra students. *Psychology of Music, 34*(4), 535-558.

Bauer, W.I. (2008). Metacognition and middle school band students. *Journal of Band Research, 43*(2), 50-90.

Brasher, E. (1999). Managing assessment in music education. *Teaching Music, 7*(1), 26-31, 59.

Burns, A.M. (2006). Integrating technology into your elementary music classroom [Electronic version]. *General Music Today, 20*(1), 6-10.

Conway, C. & Jeffers, T. (2004). The teacher as researcher in beginning instrumental music. *Update – Applications of Research in Music Education, 22*(2), 35-45.

Criswell, C. (2008). Setting up a music lab: The essential steps. *Teaching Music, 15*(4), 26-27.

Feldstein, S. (2001). Music education and technology: Past, present, and future. *Teaching Music, 9*(3), 26-30.

Frankel, J. (2004, November 1). The one-computer music classroom. *Music Education Technology*. Retrieved July 22, 2008, from http://metmagazine.com/mag/onecomputer_music_classroom/

Hickley, J. (2000). Progress on the technology express. *Teaching Music, 7*(4), 12.

Hopkins, B. (n.d.) New software helps struggling musicians cut albums cheaply at home studios. *Daily News* (Los Angeles, CA). Retrieved June 2, 2008, from Newspaper Source database.

Johnson, K. (1997). Computers in Education. *Music & Computers, 3*(1), 73-74.

Kassner, K. (2000). One computer can deliver whole-class instruction. *Music Educators Journal, 86*(6), 34-40.

Kostka, M.J. (2004). Teach them how to practice. *Music Educators Journal, 90*(5), 23-26.

Leonhardt, A. (2005). Using rubrics as an assessment tool in your classroom [Electronic version]. *General Music Today, 19*(1), 10-16.

Moore, D., Prebble, S., Robertson J., Waetford, R., & Anderson, A. (2001, September). Self-

recording with goals setting: A self-management programme for the classroom. *Educational Psychology, 21*(3), 255-265. Retrieved June 2, 2008, doi:10.1080/0144310120065469.

Nelson, T. (2007, March 28). Can garage bands be replaced by software?. *Christian Science Monitor, 99*(84). Retrieved June 2, 2008, from Newspaper Source database.

Peters, D. (2001). Transformations: Technology and music industry. *Teaching Music, 9*(3), 20-25.

Peterson, H. (2006). Technology tips and tricks for music educators [Electronic version]. *General Music Today, 19*(3), 36-43.

Porter, A. (2006). Assess your program with a survey. *Teaching Music, 14*(3), 46-47.

Reninger, R. (2008). Music education in a digital world. *Teaching Music, 8*(1), 24-31.

Studer, K. (2005). Maximum technology in the music classroom: Minimum requirements. *Teaching Music, 13*(3), 44-47.

Thomas, E. (2007). Student engagement and learning in a community-based arts classroom. *Teachers College Record, 109*(3), 770-796.

Ulrich, J. (2008). Engaging the iPod generation: Perspectives from a new generation of conductors. *The Choral Journal, 48*(8), 34-45.