REINVENTING THE ROSTER: A STUDY OF TWO RURAL ELEMENTARY SCHOOLS PARTICIPATING IN A HYBRID ONLINE LEARNING ENVIRONMENT FOR CLASS GUITAR.

by

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Accepted by the faculty of the
Indiana University Jacobs School of Music,
in partial fulfillment of the requirements for the degree
Doctor of Music

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April 17, 2015

For my supportive family and friends, especially my mother, Roxie, my wife, Katy, and my son, Julian.

Acknowledgements

My sincerest gratitude goes towards all of those who have helped this document come to fruition. First and foremost, I thank my research committee at the Jacobs School of Music for the encouragement to pursue such a scarcely studied topic: Dr. Katherine Strand (research director), Ernesto Bitetti (Chairperson), Dr. Luke Gillespie, and Elzbieta Szmyt.

This document would not have been possible without the participants involved. For this, I would like to acknowledge the students and afterschool coordinators at Coalmont Elementary and Tracy City Elementary in Grundy County, Tennessee. This acknowledgement is also extended to students at Sewanee: The University of the South, who dedicated their time and efforts to make the drive and perform the tasks required as teaching assistants.

I am especially thankful to Dr. Richard Macdonell for his guidance and insight to summarizing statistics and providing analysis techniques to the small sampling of participants included in this study.

Lastly, I would like to thank my family and friends for their extraordinary support and all of the guitarists I have had the fortune of studying with over the years with hopes of disseminating the legacy they have bestowed me.

- Lucas Finney

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List of Abbreviations

AOLE: Asynchronous Online Learning Environments

SOLE: Synchronous Online Learning Environments

HLE: Hybrid Learning Environment

ARC: Appalachian Regional Commission

LEAPS: Lottery for Education: After School Programs

VoIP: Voice over Internet Protocol

VDOC: Video Over DOCSIS [data-over-cable service interface specification]

CHAPTER I: INTRODUCTION

Statement of the Problem

In our modern "Information Age" there is a challenge to reduce the cultural divide regarding access to arts in rural and inner city classrooms.[1] As for general education, there tends to be a higher student dropout rate with schools in these areas. This is due in part to factors such as socioeconomic status and neglect with respect to educational policy and research in these areas.[2] In addition to general educational requirements, many of these students do not get the opportunity to play a musical instrument until high school[3] and in worse case scenarios will not start until the tertiary level. All too often, access to arts education is cut due to limited budgeting thus creating a school system that depends on one teacher responsible for teaching several schools at the elementary level within a given academic year.

Coinciding with this cultural phenomenon, are trends in online music instruction among instrumental music instructors in the 21st Century. In music, access to education at the tertiary level requires previous experience. Therefore, the need for quality instruction extends beyond the ivory tower of higher education into the wider community.[4]

"The lifelong-learning concept goes further than 'permanent education': it is an important conceptual framework for the improvement of people's employability and adaptability. Rapid changes call for the constant refreshment of knowledge and skills."[5]

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[1] US Department of Education, 'Making it happen,' Secretary's Conference on Educational Technology.   March 1995. Issue B.

[2] Roscigno, Vincent J., Donald Tomaskovic-Devey, and Martha Crowley. "Education and the inequalities of place." *Social Forces* 84, no. 4 (2006): 2122.

[3] 9th-12th grade in the US.

[4] Lancaster, Helen. "Music from another room: Real-time delivery of instrumental teaching." In *NACTMUS National Conference, Queensland Conservatorium of Music, Brisbane, 29 June-1 July 2007*. 2007.

[5] Smilde, R (2006) "Lifelong learning as a challenge: a portrait of the conservatoire in 2015." https://www.hanze.nl/EN/research/researchportal/centre-of-applied-research-and-innovation/art-society/lifelong-learning-music/publications/Documents/lllasachallengeaportrait.pdf Accessed August 14, 2014.

There is also a moral responsibility for educators to contribute pedagogical expertise to lifelong learning. Advances in Technology make this more possible than ever before and will continue to develop into the 21st Century.

What is Known

With advances in educational technology during the first decade of the 21st Century, there have been countless developments regarding computer hardware, software, and Internet accessibility. Berklee College of Music has pioneered asynchronous[6] online courses that offer specialty certificates from instrumental performance to studio production. The University of Vermont also offers distance based music degrees with specific conditions that must be met. *YouTube*, *Vimeo* and *Ustream* have also provided bountiful online resources for sharing information and concepts about music in general as well as helping the "self-taught." These forms of online instruction provide users with a wealth of information and are often used by modern institutions as supplemental resources for "traditional" classrooms. Skype and Facetime have aided in expanding the studios of music teachers wishing to offer lessons with distal students. Other countries such as Australia, Asia, Canada, and Scandinavia have experimented with online teaching environments to seek out the potential benefits and shortcomings of the medium for Music Education.

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[6] Skylar, Ashley Ann. "A Comparison of Asynchronous Online Text-Based Lectures and Synchronous Interactive Web Conferencing Lectures." *Issues in Teacher education* 18, no. 2 (2009): 69-84.

Need for the Study

  Research in the area of distance learning for the Performing Arts is still in it's infancy,[7]

thus the need for this study is threefold: (a) there is limited scholarly data on synchronous and

asynchronous online musical instruction, (b) music educators and institutions are relatively

behind in comparison to other disciplinary areas in the modern era.[8] (c) there are also relatively

few studies regarding a pedagogical model of teaching instrumental music in a hybrid-learning

environment. It is hoped that this study will add to the data regarding emerging studies utilizing

synchronous learning in pre-tertiary music education for distance and blended/hybrid learning.[9]

It is anticipated that the instructional method and design used in this dissertation will inspire

other music educators to further explore methods, designs, and the psychology of synchronous

online learning environments [SOLEs]. By doing so, we would be using technology as a means

to resolve educational inequality. As Dammers puts it, "…help equalize the disparity of musical

opportunities that exist between our metropolitan and rural areas."[10]

  The need for distance education in music at the pre-tertiary level will also aid in the

recruitment of students at the collegiate level. All forms of distance education in general may

help a student develop computer literacy skills as well as develop an understanding of cultural

diversity between participants.

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[7] Skylar. (2009)

[8] Rees, F. (2002). Distance learning and collaboration in music education. In R. Colwell & C. Richardson (Eds.),The new handbook of research on music teaching and learning (pp. 257–273). New York: Oxford.

[9] Falloon, G. Making the connection: Moore's theory of transactional distance and its relevance to the use of a virtual classroom in postgraduate online teacher education. *Journal of Research on Technology in Education* 43, no. 3 (2011): 187-209.

[10] Dammers, R. (2009) Utilizing Internet-based video conferencing for instrumental music lessons. *Applications of Research in Music, 28,* 17-24 (2009). Accessed July 15, 2014 http://intl-upd.sagepub.com/content/28/1/17.full.pdf+html

Purpose of the Study

The purpose of this study was to learn more about the interactions and learning that could take place in a distance-based synchronous online class guitar environment with elementary students. This includes what was gained and/or lost in context of the hybrid model of instruction used for this study.

Interactions studied were:

  a) student to student

  b) teacher to student

  c) teacher to assistant

  d) assistant to assistant

The study also looked at what was learned and retained using a hybrid model of online instruction that cultivated community engagement using onsite teaching assistants simultaneously with an online lead instructor. It is anticipated that this study will expose what form(s) of instruction are most needed for beginning guitarists at the pre-tertiary level.

In looking at the previously stated interactions as well as what was learned and retained, the following research questions arose:

  1. What are unique characteristics about this hybrid-learning environment that lead consequentially to participant feelings and learning outcomes?

  2. What instructional elements were gained and/or lost within the design of this hybrid learning environment model?

  3. Was this hybrid-learning environment effective in teaching basic beginning level guitarists how to play the instrument?

CHAPTER II: REVIEW OF LITERATURE

Since the turn of the 21st Century, distance education has grown to include many disciplines. The convenience offered for a prospective student to enroll in a distance education course allows the student to carry on with life without moving within geographical proximity to the classroom. In 2011, it was found that 30 percent of students enrolled in postsecondary education, had taken an online course.[11] There are no numbers within this study as to how many models of these courses were asynchronous vs. synchronous in nature. This chapter defines various formats of online teaching in the first quarter of the 21st century and what has been studied regarding some pedagogical application of these models.

Asynchronous Online Learning Environments (AOLEs) in Music Education

The Asynchronous Online Learning Environments (hereafter referred to as AOLEs) are derived from Seymour Papert's constructionist learning theory.[12] This model is "student-centered" and allows the learner to proceed through a course at his/her own pace. Forms of communication with AOLEs are email, electronic mailing lists, threaded conferencing systems, online discussion boards, wikis, and blogs. Software for course management includes programs such as *WebCT, Blackboard, Desire2Learn, Moodle, CampusCruiser LMS*, and *Sakai.* AOLEs allow for flexibility and can be accessed 24/7 as long as an institution's server is online. Asynchronous models[13] of online instruction may stand alone or serve as supplemental to

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[11] https://www.insidehighered.com/news/2013/01/08/survey-finds-online-enrollments-slow-continue-grow accessed July 14, 2014

[12] Papert, Seymour, and Idit Harel. "Situating constructionism." *Constructionism* 36 (1991): 1-11.

[13] See appendix A, i.

hybrid[14] and traditional courses. As of 2008, according to the National Center for Educational Statistics, 92 percent of institutions offering online courses used an asynchronous format. Nineteen percent used one-way prerecorded video, sixteen percent used only email, and twelve percent used one-way audio transmissions.[15]

Asynchronous distance education has received more attention than the synchronous counterpart in music education. Some of the more common courses offered within this discipline are music fundamentals, composition, and theory.[16] These courses have been developed for both music majors and non-majors. Currently, one of the more established asynchronous music programs in tertian education is Berklee Online.[17] This division of Berklee College of Music offers a variety of courses including: Music Production, Guitar, Songwriting, Bass, Orchestration, Piano & Keyboard, Voice, Music Theory Harmony & Ear Training, Music Business, Drums, Music History and Liberal Arts, Music for Film/TV/and Games, Arranging, and Improvisation. Berklee claims these courses are transferable to the college for credit and at other participating institutions. Course lengths and tuition costs vary from simple online courses without credit to a four-year Bachelor's Degree in Music Education.[18] The applied musical course offerings are done via video, email, live chat hours, and submitted recordings. Students are suggested to record themselves in .mp3 format using audacity or garageband for feedback from instructors. Berklee also has a website to promote their online courses which includes several sample courses at www.berkleeshares.com. Another degree- granting, institution is Valley City State University in Valley City North Dakota. This University offers all of the

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[14] Including elements of synchronous and asynchronous learning environments.
[15] Skylar 2009, pg. 70
[16] Dammers, R. (2009)
Sinclair, Diana Rebecca. "The effect of synchronous and asynchronous online communication on student achievement and perception of a music fundamentals course for undergraduate non-music majors." (2004).
[17] http://online.berklee.edu/
[18] Other offerings include a 1-3 year MBA in Music Business. Tuition costs range from $1200.00 to $58,000.

academic courses necessary for a composite BS/BA degree in Music with the exception of all

performance classes, lessons, and ensembles. Credits for applied lessons are done through

transferring or *transcribing*.[19] In this case, the granted online degree requires a lot of

responsibility on the students part and is not entirely accessible online.

Many of the AOELs offered for guitar do not grant degrees. These tend to be guitar-

specific websites such as http://www.truefire.com. This online community offers student

plans ranging from a 30 day free trial "free student" to "master student" package for a monthly

premium. The higher priced student plans allow submission of videos for feedback from

instructors. A response to any given student video submission is based upon availability of the

instructor once a plan is paid for.[20]

Scholarly research regarding the effectiveness of asynchronous models of guitar

instruction is scarce. One study by Michael Kato at the Educational Technology center,

University of Hawaii at Manoa, provided a module for teaching basic guitar to beginning

students.[21] The goal was to teach basic symbols and vocabulary associated with playing the

guitar. This study utilized Microsoft PowerPoint to deliver lessons covering various parts of the

guitar, note and string names for the guitar, and chord shapes with a chord diagram/grid. A

website was created which hosted the module, surveys, and tests. This study showed success

with teaching students in pre and posttests regarding this basic information. The design of the

module included "minimal text, plenty of blank space, images, animations, audio examples,

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[19] For *transferred* credits in applied lessons, students must enroll in applied instruction at an accredited university documenting all juries, recitals, proficiency exams, and transcripts for validation. For *transcribed* credits students must study with an independent teacher and send a video of the teacher's performance, a CV, and transcripts of the instructor.

[20] " This statement can be found in the FAQ tab on the website: "Depending on the individual instructor you are working with, you will receive several private lesson plans customized just for you." Accessed July 15, 2014 http://truefire.com/classrooms/classrooms-faq.html

[21] Kato, Michael. "Teaching Guitar in an Online Environment." (2011). Accessed July 14, 2014 http://etec.hawaii.edu/proceedings/masters/2011/etec_kato.pdf

sound effects, humor, and narration throughout the module."[22] Assessment tools used with each module included a pre-module survey, pretest, posttest, and attitudinal survey. These modules, tests, and surveys took approximately 30 minutes to complete.

The study was an experimental module as opposed to an online class and 12 participants were involved. These participants were 20-40 years old and were sought through verbal requests and email lists. This included students, faculty, and alumni of the University of Hawaii's college of Education and Educational Technology Departments. Participants had little or no experience with guitar and were not required to own a guitar. Pre and posttest scores found none of the participants scored 100% in the pretest. In contrast, the posttest scores showed 9 of the 12 participants scored 100%. A couple of the participants, who scored highest among the group, had no previous musical experience but had a relative who played guitar. This influenced the researcher to hypothesize that learning environments of these participants had a positive influence on their test scores. This study found that 75 percent of the students stated they would prefer to learn in a hybrid environment that combined face-to-face settings with an online component.[23]

Discussion of the study covered the concept that teachers must continually assess their mode of instruction to meet the needs and learning preferences of their intended audience. Implications from this study suggested that teachers need to decide when it would be practical and in some cases crucial to design instruction that would be monitored through some type of assessment process. The researcher determined that implementing the module into an online format was time-consuming and that the same subject matter could have been taught in a fraction of the time if it was face-to-face. Therefore, "lessons created for face-to-face learning

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[22] (Kato 2011)

[23] The study implies that students would rather use the online component as a supplement.

environments have to be rethought, redesigned, and reformatted to smoothly transition into online formats."[24] Finally, the issue of compatibility between various computer platforms (e.g. Mac, PC), operating systems, web browsers, software applications, and versions of software to solve computer glitches arose and needed to be explored. The study suggested that advancements in technology regarding online education would require "educators and technologists to create, innovate, and share their resources and discoveries within their respective communities."[25]

Synchronous Online Learning Environments (SOLEs) in Music Education

Synchronous Online Learning Environments (hereafter referred to as SOLEs) are designed based upon the idea of a traditional classroom setting. This model is "teacher-based" and requires that the student be present for lectures at specific times across a web-based conferencing software. Students join in a "virtual classroom" setting via laptops, computers, and smartphones. These courses are highly interactive in the sense that the classroom follows a traditional real-time experience for classroom participants using webcams and VoIP.[26] SOLE software such as *Elluminate Live, Interwise, Wimba Live Classroom, Adobe Acrobat Connect Professional, WebEx,* and *Saba Centra* are leaders in the market for this model of instruction. *Blackboard Collaborate,* has recently brought together *Illuminate* and *Wimba.* These learning environments facilitate the use of screen sharing to allow a rich multitude of perspective regarding word processed documents, spread sheets, presentations, web-based materials, and video recordings.

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[24] (Kato 2011)
[25] (Kato 2011)
[26] Voice over Internet Protocol

During synchronous online meetings, voice communication tends to not be simultaneous. Speakers within the virtual classroom must wait in turn to say something. The use of "live chat" during a meeting allows the instructor/moderator to assimilate the answers to questions in real-time while lecturing. This requires any instructor teaching in a [SOLE] model[27] to learn the pacing of teaching in such an environment. Students in the virtual classroom may click icons within the interface to "raise hand" "give a thumbs up or thumbs down" during discussion groups. The instructor may file share documents with all in attendance as well as poll questions from the lecture. These icons allow for instant interaction in order to get a visual and collect data in order to assess the class progress and create a rich interactive learning environment.

Empirical scholarly research regarding synchronous online courses is limited. This is certainly the case with group based instrumental musical instruction. According to theoretical arguments, synchronous online environments/courses should result in increased learning.[28] Of the cross platform software available to music teachers for individual applied music instruction, the most popular is Skype.

In 2009, a case study led by Richard Dammers followed a trumpet student and her teacher over a nine-lesson period using Skype.[29] The study was done to see what could be gained and what might be lost with online instruction. Equipment included the student's Dell PC, cable internet connection, and a Logitech Pro webcam while the teacher used an Apple MacBook Pro with the built-in camera and microphone. Skype was used due to the different operating systems between teacher and student (OSX 10.4 and Windows). Headphones were

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[27] See appendix A, ii.
[28] Allen, Mike, Edward Mabry, Michelle Mattrey, John Bourhis, Scott Titsworth, and Nancy Burrell. "Evaluating the effectiveness of distance learning: A comparison using meta‑analysis." *Journal of Communication* 54, no. 3 (2004): 402-420. Accessed July 14, 2014
http://www.personal.psu.edu/users/k/h/khk122/woty/F2FHybridOnline/Allen%202004.pdf
[29] Dammers (2009)

used to prevent oscillation from microphone to speaker. Data were collected in the form of

interviews, video recordings, still photographs, and field notes.   Research questions for this

study were: "(a) Is applied instrumental instruction feasible using widely available video

conferencing hardware and software? (b) What are the challenges, advantages, unique features,

and considerations of teaching and learning in an online video instruction environment?" From

this, categories were established prior to coding the data which included: unique aspects of the

online format, advantages of the online format, functionality (compared to traditional lessons),

challenges of the online format, and information about the student and teacher involved.

Subcategories in a second round of coding, the "functional" category, included connection,

assessment, and pacing. Subcategories of the "challenges" category included delay, impersonal,

sound control, limited visual, and restrained movement.

The study found that the model used for the format of instruction allowed for a baseline

level of functionality for applied music lessons. The connection using Skype was found to be

reliable. Assessment and pacing were found to be similar to that of a face-to-face lesson. The

biggest problem mentioned by the instructor was the delay. However, as the study moved

forward, both participants adjusted to the point of becoming unaware of this problem. It did

affect the instructor's curriculum when it came to his regular face-to-face teaching, in the fact

that he was unable to play duets with the student. Both participants in this study also noted that

the environment was more impersonal due to not being in the same room. The instructor

expressed this in terms of "set up and pack up time" in which the narrative between teacher and

student becomes a more unique experience. As for visual circumstances, both the instructor and

the student were conscious of the fact that they were restrained in terms of movement. This was

caused by the limited view from the camera and wearing headphones. Interpretation of

dynamics in sound produced by the student and heard by the instructor was relative to the proximity of the microphone to the student. With this, at times it was found difficult for the instructor to be certain at what dynamic level the student was playing.

Advantages of teaching online were found to be rather obvious regarding the following: the online format allowed interaction that would not have been possible otherwise, ease of recording and sharing files via computer, novelty effect of not having to leave the house to take lessons. One of the unique advantages was the fact that the instructor could monitor what the student was seeing through Skype and would use this to his teaching advantage in modeling embouchure.

In summation, the instructor's teaching style was found to require more preparation and planning for the online format than traditional face-to-face lessons. Dammers concluded that performance is, by nature, a synchronous experience with all members of a musical performance making music, in time, together. He continued arguing that collegiate music programs are likely to move to synchronous online instruction [SOLEs], due to the synchronous nature of the learning process (i.e. applied instruction), as opposed to other academic disciplines that have adapted asynchronous online learning environments [AOLEs].

A study conducted by Ashley Skylar at California State University, Northridge, compared student achievement and preference regarding asynchronous and synchronous online formats. The research questions were as follows: "1. Are there differences in performance between students accessing content presented in a synchronous interactive web conferencing lecture format compared to students that access content in an asynchronous text-based lecture format? 2. Would students prefer to take an online course that uses synchronous interactive web

conferencing lectures or asynchronous text-based lectures? 3. Do students perceive an increased level of technology skills when taking an online course?"

Methodology of this study included 44 pre-service general education and special education students enrolled in two sections of a special education course.[30] The course was advertised as a "Hybrid" course, which combined online components that were asynchronous text, based lectures using *WebCT* with a few face-to-face sessions that were synchronous web conferencing lectures using *Elluminate Live*.

Data were gathered through the use of pretests, posttests, student satisfaction surveys, and a pre/post computer literacy survey. This study found that student test results were slightly better when provided synchronous classroom meetings rather than those provided with purely asynchronous text-based lectures. However, this study did not find either model of online instruction significantly more effective than the other. Results of the analysis showed that both types of lectures used within the course were effective in delivering online instruction. The study found that there was a statistical significance when students were asked questions regarding preference, learning, and retention: (a) 73.2% (30) participants preferred the synchronous web-based lectures rather than purely asynchronous text based courses, (b) 87.8% (36) students felt that the synchronous web conferencing helped them gain a deeper understanding of the subject matter in addition to the asynchronous material, (c) 80.5% (33) felt they performed better on the weekly quizzes that were given after synchronous lectures rather than the ones that were purely asynchronous. Overall pre/post test surveys for students' perception of computer technology skills showed an improvement (Pre=3.29, Post=3.75).

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[30] (Skylar, 2009) It should be noted that the subject matter of the course in this study centered on "…adapting and modifying general education curriculum/materials for students with special needs."

Limitations with Skylar's study were the fact that students were required to attend an "in-person" class meeting at the beginning and end of each semester. Therefore, the class was not accessible for students outside of this proximity, which should not be a factor in the authentic nature of an online class. The sampling size was rather small with 44 students. Students were split into two different course sections, which may have inadvertently influenced the data. Instrumentation relied heavily on self-reported data, which could have resulted in participation bias and within-group variability. Finally, between group [class section] differences were not analyzed due to the fact that both were exposed to the same conditions. Implications for further research include measuring: "(a) the performance and satisfaction of students in these newer environments; (b) the level of interactions and strategies used between students and peers; (c) the level of technological support/barriers instructors and students encounter."[31]

Australia's Queensland Conservatorium Research Centre reviewed examples of distance learning in instrumental music at tertiary and pre-tertiary levels. The study was led by Helen Lancaster and outlined the challenging implications for student and staff mobility, student recruitment, and faculty development.[32] The study aimed to take examples of distance music learning experiences and suggest ways in which they may meet the evolving demands of contemporary music institutions. The focus was on synchronous videoconferencing and an analysis of examples demonstrating the benefits and shortcomings of this format.

Lancaster easily explained that the reluctance of tertiary music institutions to deliver music-learning experiences via interactive technology was due to the traditional expectation for a high percentage of 1:1 instruction and ensemble performance. She went on to argue that "conventional focus not only ignores the argument that future musicians will need to be able to

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[31] Skylar (2009)
[32] Lancaster (2007)

adapt to a range of contexts in order to connect to their audiences, more importantly it overlooks the technology savvy student, and the evolving role of technology in the art form.[33] A performance example using distance-based technology included a claim by McGill University in Canada to produce the world's first high quality Internet protocol performance in a violin duet presented in 2001. The players were able to hear each other in "near real-time" with a delay of only 20ms.[34]

At the Manhattan School of Music, Pinchas Zuckerman used VDOC[35], which was a real time video conferencing technology, to stay in contact with students and conduct distance master classes with other institutions including McGill University.   The study went on to discuss the use of VDOC in Australia. Though it lags behind the USA and Canada, developments have been made. One of these endeavors was the *VideoLink* learning project established by Mark Walton in 2000. The project was found to be very low cost with a room that houses the computer, camera, and monitors for the project. The *VideoLink* system is an effective means to improve the size and quality of conservatorium intakes. In other words, reach masses and improve student preparation for conservatory. Walton found that is was difficult to convert teachers to the concept so instead trained his students to deliver VDOC to remote locations. Beyond pre-tertiary education, examples such as this provide lifelong learning to those who may be otherwise unable to enroll.

The study suggested that all sites should use the same VDOC technology to ensure a clear resolution of picture and audio. It also suggested, like Dammers (2009), that teachers should be well prepared beyond that of a traditional classroom. Clarity of verbal communication and eye contact was considered important in preventing feelings of isolation. Walton claimed

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[33] Lancaster (2007)
[34] "Ultra-Videoconferencing." http://srl.mcgill.ca/projects/rtnm/ accessed August 14, 2014
[35] VDOC: Video Over DOCSIS [data-over-cable service interface specification]

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that the use of technology should not interfere with the learning process. He also recommended

"someone else be with the student (perhaps a local teacher) to make [technical] adjustments.[36]

The need for occasional face-to-face encounters with the specialist teacher is considered ideal as

"videoconferencing enhances traditional instruction."[37]

A recent case study in 2012 by (Brändström et al) examined a synchronous master class

that involved 11 meetings as well as an online guitar lesson case study (to be discussed later).[38]

The research was done to answer possible shortcomings and benefits of these two online

instructional situations and what the differences exist between online and face-to-face teaching.

The instruments in the first study were violin, cello, french horn, vocals, and chamber

music. Equipment used was of a high caliber such as Tandbuerg's (MXT Edge 95) video

conferencing system, extra microphones and speakers (for improved sound quality), and 50-52"

LCD TVS for video. Sessions for this study lasted around 3-4 hours with 6 students performing.

This audio/video set up transmitted clear sound and a detailed monitoring system for the distance

master classes. The main data/findings for the research was carried out by two semi-structured

interviews with a violin teacher immediately following his master classes.   The technical level

was found good enough for adequate feedback, however there were delays between sound and

picture, which were considered a weakness. The instructor found that when telling a student to

stop, thus interrupting the music, the student was confused with exactly were to stop due to audio

delay. As a consequence to this delay in audio, the instructor had to pace the lesson giving

feedback after the student played or sung an extended section of the piece. The instructor found

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[36] Lancaster (2007)

[37] Callinan, T. (2002) "A Case Study of Videoconferencing for Instrumental Music Teaching." Diss: > Mus. University of Sydney.

[38] Brändström, Sture, Christer Wiklund, and Erik Lundström. "Developing distance music education in Arctic Scandinavia: electric guitar teaching and master classes." *Music Education Research* 14, no. 4 (2012): 448-456.

that he had to express himself in a very clear manner both vocally and visually during the online class to convey pedagogical practices that could not be done in a traditional classroom.[39]

Overall, the study revealed that teachers and students seem to consider the online teaching in the project a positive experience. There were no major differences reported by participants in the online format compared to face-to-face teaching. However, there were features regarding online instruction that needed to be taken into consideration when delivering the material. The study found that an efficacious camera angle was more important to model instructional information to the student. The study also concurred with research suggesting teachers who wish to develop distance courses in music carefully plan lessons, give clear, focused and constructive feedback, and prepare to be flexible with lesson plans in the event of any technical problems. [40] Furthermore, the teacher must not interrupt the music unnecessarily when the student is performing. There is an implication that the generational gap in experience with computers and technology may be one underlying reason 21st century students and teachers feel confident and prefer the distance based lessons when compared to older generations and their traditionalist counterparts. This study found that research suggesting the need for eye contact to limit the sense of isolation, was not necessary valid.[41] An interview with one of the students revealed: "Even in a face to face lesson, I have some difficulties singing directly to the teacher and it's no problem for me that the technology makes it a little harder to have eye contact with the instructor."[42] The study concludes that distance music education could be the answer as an only alternative for those who live in an area that is without proximal access to the discipline and serves as a powerful complement to traditional instruction.

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[39] Brändström, et al. (2012)
[40] Dammers (2009)
[41] Lancaster (2007)
[42] Brändström, et al. (2012)

Patricia Riley, associate professor at The University of Vermont, conducted a two-year study regarding cross-cultural experiences in distance music education in 2009.[43] This study examined nine pre-service music teachers in the USA who taught underprivileged students in Mexico grades 3-5 online. There was a facilitator in Mexico who worked as the teachers 'arms and legs' setting up equipment before each web-conferencing session and translating English to Spanish for students when necessary. Equipment used for the project included a computer, i-Sight camera, audio speaker, projector, and screen at each location. High speed Internet was used with i-chat for the first year of the study. Skype was used for the 2nd year of the study. The research examined the challenges, progress, and lessons learned as interactions within the developing medium of instruction were refined. The intent was to find techniques to improve music teaching and learning in a video-conferencing environment.

Data for Riley's study were gathered through a researcher narrative, teacher reflections, and student writings. The advantages of this videoconferencing suggested that learning in distant locations all over the world provides increased musical exchange and cultural interaction. The study found common problems that have become threads in the existing scholarly research to date, which are technical difficulties with the software, audio/video failure, impersonal nature of the online teaching model, and a more detailed and flexible lesson plan.

The biggest revelation of the study was adjustment of the curriculum to fit the needs of a student-centered culture. As the study was conducted, the researcher and the teachers decided to remove the study of notation and sing/learn song-games aurally in the students' native tongue (Spanish), due to the fact that subject material was music not language. One of the pre-service music teachers stated, "I want them to learn without knowing they are learning. I want them to

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[43] Riley, Patricia E. "Video-conferenced music teaching: challenges and progress." *Music Education Research* 11, no. 3 (2009): 365-375.

feel the music and bring to their consciousness what they already know. Having them learn notation is not really high on my list."[44] A conclusion of the study shows that when teaching music to distant cultures, the instructor should be well aware of the musical style preferences and pedagogical practices that are student-centered.

Another study done by Maki (2001) involved lower and upper-secondary schoolchildren in Utsjoki, northern Finland.[45] The village had no music teacher and student teachers from the University of Oulu (600km from Utsjoki) developed methods for distance learning to promote educational equality. This study mainly found that the teacher had to be more prepared with lesson plans when teaching distance based synchronous lessons and at the same time very flexible and ready to change plans in the event of a technical problem.

Blended/Hybrid Learning Environments (HLEs)

Blended or hybrid learning is a model of instruction[46] that utilizes several learning environments. The term is associated with schools that offer classes that require a physical presence on the student's part and some form of web-based instruction to enhance the learning experience. Terms to describe this form of instruction include "blended" "hybrid" "technology-mediated instruction" "web-enhanced instruction" and "mixed-mode instruction"[47] The most common term used today is *blended*. However, the term *hybrid* may also be used to convey the imagery of a physical presence combined with a virtual presence.

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[44] (Riley 2009)

[45] Maki, J. (2001). Is It Possible To Teach Music In a Classroom From Distance of 1000 km? Learning Environment of Music Education Using ISDN-Videoconferencing. In C. Montgomerie & J. Viteli (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2001* (pp. 1208-1214). Chesapeake, VA: AACE.

[46] See appendix A, iii.

[47] Bonk, C.J., & Graham, C.R. (2006). The handbook of blended learning environments: Global perspectives, local designs. San Francisco: Jossey‒Bass/Pfeiffer. p. 5

Khan Academy has been leading the way for a "learn anything, anytime, anywhere." This academy is a 501c3 non-for-profit working towards free online learning environments in many subjects. As for humanities, the site offers Art History, History, and American Civics as well as very basic concepts in music theory. Some courses offer "badges" in completing coursework and collaborate and teachers, parents, and coaches may view the student/child progress. The website offers courses with a lot of breadth and depth in subject areas such as Math and Science. Teachers may use these courses in conjunction with classes they are teaching to create a blended learning environment. Otherwise, if only independent learners take courses, the material is asynchronous in nature.

The previously mentioned case study by (Brändström, Sture, Wiklund, and Lundström 2012) also looked at the use of an electric guitar class using blended learning which was carried out by synchronous and asynchronous means.[48] This involved the use of laptops, Skype, MP3, email and mobile phone. The classes were carried out between 2009 and 2010 and looked at the benefits and shortcomings of online teaching vs. traditional classroom settings. The material taught was hard rock and blues guitar for upper-secondary students. Lessons were given approximately once a month for 40 minutes. The participants involved were the supervising teacher (lead instructor), student teachers (assistants), and students (end user/client). The lead instructor, who did have experience with distance education, supervised the assistants responsible for teaching the class. These assistants had no previous experience with distance teaching but were computer literate and no problem with the technology. A typical lesson involved the recording of technical exercises as MP3 files which would be sent to the students. End user students would then work at home and email questions to the assistant teachers who

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[48] Brändström et al. (2012)

would respond as soon as they could. This alternated with the use of Skype for synchronous

lessons both with and without the picture. The study found that young people sometimes prefer

electronically mediated communication to in person meetings. The study also found (as

mentioned earlier) that technical shortcomings forced the teacher to give distinct clear verbal

instruction with feedback. There was no tactile involvement on the teacher's part so therefore

students could not rely on teachers placing fingers in the proper playing position as in a

traditional manner. By not being present for a lesson, the students and teachers had to

demonstrate everything via web-cam. This allowed both to also check his/her picture on their

respective screens (monitors).

CHAPTER III: METHODOLOGY

This chapter describes the methodology used in the study. It begins by locating what was attempted within the general field of social scientific enquiry to give a base line against which results can be examined and extrapolated. It continues by outlining the specific details of the populations used and the measurement methods employed.

Research Methods

Scientific enquiry demands precision, control and a systematic comparison of variables. Real-life tends to be interactive, complex and multi-variate. Because measurement means that statistics can be used to make precise distinctions, it is often seen as 'better' than simple observation and description. This may be true in part but underplays the richness and complexity of issues that cannot be reduced to a single simple statistic. This split between quantitative and qualitative data collection lies close to the heart of several issues that any researcher must take into account. The range of issues involved was elegantly described by Galtung.[49] He saw two dimensions of social inquiry as being important. Firstly, the settings from which data can be 'mined' – he described these as being informal, semi-formal or formal and secondly, the responses that a research could use; behavioral, spoken or written.   He used these two dimensions to differentiate most research methods.

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[49] *Galtung, J. (1967) Theory and Methods of Social Research. London: George Allen and Unwin. Or, possibly:* Galtung, J (1967) cited by: Georgiades, N J and Macdonell, R C (1998) Leadership for Competitive Advantage. Chichester: Wiley

Researchers who feel that only results which come from questionnaires and interviews [50] are

dismissive of attempts to work with anything else. For example, Campbell and Stanley in their

classic 1963 book said:

> "It seems well-nigh unethical at the present time to allow, as theses or dissertations in
> education, case studies of this nature (i.e., involving a single group observed at one time
> only)."[51]

This rigid view has been tempered over time by researchers who have been able to gather

useful ideas from other parts of the classification. Activities such as Action Learning or Post

Hoc Analysis have allowed a more eclectic view to develop. For example, Spector, some 40

years later wrote: "Descriptive data provide the raw material for theories and theories provide a

basis for new innovations, so both should be equally valued."[52]

Qualitative research is recognized as having the strength of generating rich data[53] and this

study was conducted with the anticipation that generalizations from the findings could be applied

to a wider population.[54] The way in which this could be done is shown from the work of writers

who have integrated practicality with theoretical perspectives. Revans, the 'founding father' of

Action Learning described the formula $L = P + Q$, where **L** is learning, **P** is programming and **Q**

is questioning to create insight into what people see, hear or feel.[55] For current purposes,

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[50] As seen in the bottom right hand quadrant of appendix B.
[51] Campbell, D. T., Stanley, J. C., & Gage, N.L. (1963). *Experimental and quasi-experimental designs for research* (pp. 171-246). Boston: Houghton Mifflin.
[52] Spector, P.E. (2001). Research Methods in Industrial and Organizational Psychology: Data Collection and Data Analysis. Thousand Oaks CA: Sage Publications Inc.)
[53] Glazier, J. D. (1992). Qualitative research methodologies for library and information science: an introduction. In J. D. Glazier, & R. R. Powell (Eds.) Qualitative research in information management (pp.1-13). Englewood, CO: Libraries Unlimited.
[54] Bryman, A. (2001). *Social research methods*. Oxford: Oxford University Press. Stake, R. (2009). Case studies. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 435-454). Thousand Oaks, CA: Sage
[55] Revans, R. (1980). Action learning: New techniques for management. London: Blond & Briggs, Ltd.

Marquardt usefully proposed the addition of the term R for Reflection. Thus: $L = P + Q + R$.[56]

The additional element emphasizes the point that important questions should give rise to

thoughtful reflections while considering the immediate problem, the desired goal, strategies. In

this expanded equation, R refers to reflection. This additional element emphasizes the point that

"great questions" should evoke thoughtful reflections while considering the current problem, the

desired goal, strategies, actions or implementation plans. This is essentially the intention of this

study, to examine a particular way of delivering instruction so as to see what 'thoughtful

reflections' result. To return, by way of summary for the current section, to the Galton

categories, this study will start in the top left quadrant of appendix B and broaden out from

Participant Observation to use data from all the other informal and unstructured segments.

Finally, because it is appropriate rather than a matter of form, small-scale questionnaire surveys

will be reported and used to supplement, not replace, the richer qualitative data, as we move

towards drawing conclusions.[57]

Setting

The research setting included two rural area elementary schools in Southern Middle

Tennessee that were involved in the first phase of an online web-conferenced guitar class. These

two schools will be referred to by their proper names: Tracy City Elementary and Coalmont

Elementary. The schools were within a 20-mile radius of University of the South in Sewanee,

TN. These schools are two out of six schools in Grundy County, who at the time, were on

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[56] Marquardt, M., Leonard, H. S., Freedman, A., & Hill, C. (2009). Action learning for developing leaders and organizations: Principles, strategies, and cases. Washington, DC: American Psychological Association.
[57] Appendices C, E, and F.

rotation with the county's music instructor and were not receiving music instruction during the spring semester 2014 when the hybrid guitar class was held. Elementary music education in Grundy County is taught by rotating the music instructor between all six schools thus serving three for the fall semester and three for the spring semester.

Grundy County is considered a "distressed" county according to the Appalachian Regional Commission (ARC),[58] which puts the county at the lowest point on the scale (worst 10% of US counties). Therefore, these two schools were selected to receive the pilot hybrid guitar class due to the need for supplemental music education beyond what is already in place for the county. Post-test sampling included 13 students of the 20 students who participated in the class throughout the semester. These students ranged in age from 6–14 years old and grades kindergarten to 8th.

Each classroom was equipped with broadband Internet, an iPad, projector, and projection screen in order to attend the classroom web-conference. WebEx was the company software that was chosen for this study as the web-conferencing solution. I taught, as lead instructor, from the guitar office at University of the South using a Mac desktop computer and nylon string classical guitar and headphones for noise cancelation/prevention of noise oscillation (feedback). Both elementary schools used a Wi-Fi connection to access Internet, whereas I was connected to both classrooms via web-conferencing with an Ethernet cable hardwired into my Mac desktop. There were 8 online class meetings from February 19, 2014 to April 30, 2014 on Wednesday evenings from 4-430pm CST. This afternoon meeting was during the reserved time for the Tennessee LEAPS (Lottery for Education in After-school Programs) afterschool hours. Teaching assistants (students from the University of the South) were in place at each school to help with teaching by

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[58] "Distressed Designation and County Economic Status Classification System FY2007- FY2015 http://www.arc.gov/research/SourceandMethodologyCountyEconomicStatusFY2007FY2015.asp accessed August 15, 2014.

modeling what I was teaching during the web-conference. These assistants would also make sure all technological equipment was functioning properly, enable screen sharing/webcam features within WebEx on the iPad at each respective school, and would be there to help with the lesson plan if the broadband connection were to fail.

As the class developed over the semester, "breakout groups" were established to give the assistants time to work with participating elementary students. The breakout groups lasted approximately 5-10 minutes and gave these elementary students an opportunity to work together and with onsite teaching assistants "in-person" for the chance to volunteer playing what was reviewed/taught upon returning from the breakout group to the web-conferenced classroom. These breakout groups were also designed to give a break in pacing to allow the class to interact with peers and teaching assistants. During these segments of the archived video, assistants were moving about the room helping the students play what was being taught for the given day. One assistant at Tracy City Elementary was found working with students on factors such as technique and "pressing" strings down to stop the note from buzzing. This assistant would move about the room in a student-to-student fashion. The assistant at Coalmont Elementary worked with students by showing them as a group to play small phrases of each given melody line by "microphrasing," that is, working on one measure of music at a time.

All assistants were there in case of audio/visual failures and to manipulate the Web-ex interface when it needed to be changed from screen sharing to the lead instructor's webcam. In the event of a bandwidth problem or technical fallout, the assistants would take over with the lesson plan for the day and I would communicate with them via my office phone. Teaching assistants submitted assessments of what was covered during these fallouts to me verbally on the day in which this would happen. I would then record this information in a reflection journal.

A scheduled class meeting would begin with me signing in to the online web-conferencing software 15 minutes before class to send meeting invites to the two afterschool LEAPS coordinators. An email would be sent with a link to join the meeting and then I would position the webcam properly. This all happened as assistants were traveling to their respective schools, which took approximately a 30 minute driving route to locations with the most distant school, Coalmont Elementary, being 19 miles away.

Each teaching assistant was instructed to set up students in a semi-circle facing the projection screen. As for hardware, iPads were set up with the front camera facing the students so the I could view the class. The projector was situated in the vicinity of the iPad with enough space to provide a clear image on the projection screen. Lights were slightly dimmed in each classroom so that visibility would not be as issue with the projector and students could easily see what they were playing.

The web-conferencing solution, WebEx, allowed both schools and myself to attend the online class meeting as participants. The web-conferencing interface allowed for screen sharing and visibility of webcams in both classrooms, therefore we could all see each other in real-time. All web conferenced lessons were recorded and archived for purposes of this study.

Participants

The project consisted of the following roles: lead instructor (myself), teaching assistant, and student. At the time of this writing, I hold the job title: Visiting Instructor of Guitar at The University of the South in Sewanee, TN. As lead instructor, I am also the researcher for this body of work.

As for the onsite teaching assistants, there were a total of three that helped with the class meetings. Initially, there were four but one had to drop the project after the third class meeting. These assistants were former or current students at Sewanee University of the South, who had been enrolled in guitar related music electives. Assistants met with me for 20 minutes prior to each class in order to review the lesson plan before commuting to their respective elementary schools and held the responsibility of helping students with the material at each school. An average class meeting had 7-10 students in attendance. Before each class meeting, I would give the teaching assistants all classroom handouts to deliver upon arrival at their respective elementary school. The assistants took their own guitars with them to model in person/onsite what I would teach via webcam. In a sense, assistants acted as my "avatar," which aided with correcting finger positions and technique with regard to a given applied classroom lesson.

The aforementioned "student" role belonged to children at Tracy City elementary and Coalmont elementary, which as mentioned earlier, totaled approximately 20 students with 13 taking the post-tests questionnaire and video test.

Curriculum

The objective of the curriculum for the class was to teach rudimentary guitar lessons to beginning students. The students learned the string names of the guitar first with acronyms for E A D G B E annunciating the sentence "Every Adult Dog Grows Big Ears." Easy chords and popular songs that allowed for simple melodies that could be played on one or two string(s) of the guitar were taught. With this elementary age group of beginning guitar students, keeping interest with a curriculum that included popular melodies that may be familiar to the students, seemed ideal for the learning environment. It was hopeful that using popular and easy melodies,

left hand dexterity and right hand calibration to the strings would be quickly developed. These were melodies that most of them could learn to play in one or two class meetings. This included melodies such as Beethoven's "Ode to Joy," "Twinkle Twinkle Little Star," "Happy Birthday," as well as more rock-oriented melodies such as "Smoke on the Water" by Deep Purple and "Iron Man" by Black Sabbath. By planting fingers (ima) on the treble strings G B E, the student was instructed to play the latter two one string melodies with the thumb (p) only.[59] Presenting the open note pentatonic melody "Amazing Grace" in G was also useful in teaching students proper right hand technique as this melody employs playing on strings D, G, and B with the first five notes of the melody. Classes were taught using a "say then play" method in which the lead instructor would say the note names, count the students in, and then listen to their response in unison over the web-conference.

Games were developed to aid in securing the students' understanding of the string names. One game, was a critical thinking exercise in which the students were asked to take the open string note names E A D G B E and create words such as BEE, DAD, BAG, BADGE, BAD, etc. I would then call on volunteers to play these words on the open strings of the guitar. This was used to reinforce right hand technique and develop creative skills.

Chords taught were easy chords that used one finger on the left hand and required strumming of the top three strings. "Easy" versions of the chords C, G, e minor, and G7 were introduced throughout the course and reinforced with progressions ranging from the harmony of "Ode to Joy" to more moveable harmonic progressions such as "I Got a Feelin" by the pop group Black Eyed Peas. These chords were presented by getting students to place the thumb (p) of the right hand on the fourth string of the guitar then strumming down with the index finger (i).

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[59] p, i, m, a, c: Abbreviation for Spanish terminology for the right hand fingers; thumb (pulgar), index (indice), middle (medio), ring (anular), and small (chiquita).

These melodies and chords were taught with techniques that foreshadow a fingerstyle/classical approach to the guitar.

As seen in any traditional classroom setting, the learning process included aural and visual learning approaches to the curriculum. The method for teaching this age group was consequentially aligned with the concepts behind the *Suzuki Method* as outlined in Edward Kreitman's book: *Teaching from the Balance Point,* specifically in chapter two "Rote vs. Note" with the following quote:

I believe that we need to examine three different approaches to learning.

Learning by rote: Using a specific set of instructions to produce the desired result.

Learning by reading: Using symbolism on the printed page to learn the sequence   of notes.

Learning by ear: Using the "mind's ear", together with a few simple skills and a   basic understanding of the logic of the instrument, to figure out any piece. [60]

The curriculum for this method aligned with several concepts found within the *Suzuki Method* such as: (a) Saturation in the musical community, including attendance at local concerts of classical music, exposure to and friendship with other music students, and listening to music performed by "artists." [Guitar class: Students were invited to attend concert held by the Sewanee Symphony during this semester, which included a performance with soloist of various concertos for piano, flute, guitar, and vocal.]

(b) Deliberate avoidance of musical aptitude tests or "auditions" to begin music study. Suzuki firmly believed that teachers who test for musical aptitude before taking students, or teachers

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[60] Kreitman, Edward. *Teaching From The Balance Point*. Western Springs, Illinois: Western Springs School of Talent Education, 1998 p.13-23

who look only for "talented" students, are limiting themselves to people who have already started their music education. Just as every child is expected to learn their native language, Suzuki expected every child to be able to learn to play music well when they were surrounded with a musical environment from infancy. [Guitar Class: Students were accepted into the guitar class regardless of any previous ability and/or musical background.] (c) In the beginning, learning music by ear is emphasized over reading musical notation. This follows Suzuki's observation that in language acquisition, a child learns to speak before learning to read. Related to this, memorization of all solo repertoire is expected, even after a student begins to use sheet music as a tool to learn new pieces. There is no formal plan or prescribed materials for introducing music theory & reading into the curriculum; this is left to the judgment of the teacher. [Guitar class: Students began learning melodies with a call/response method in the hybrid guitar class "say then play" which would then lead to reading from tablature numbers which designate frets one string at a time. All melodies were learned on a single string to avoid confusion of switching between strings in the beginning. Lesson plans were flexible and tentative regarding the groups overall progress.] (d) The method also encourages, in addition to individual playing, regular playing in groups (including playing in unison). [Guitar class: Students aurally learned melodies as a group in call/response fashion. Then application to the instrument was done in small "breakout groups" in which the assistants would help smaller groups with finger positioning for the melodies on an individual basis.] (e) Retaining and reviewing every piece of music ever learned on a regular basis, in order to raise technical and musical ability. Review pieces, along with "preview" parts of music a student is yet to learn, are often used in creative ways to take the place of the more traditional etude books. Traditional etudes and technical studies are not used in the beginning stages, which focus almost exclusively on a set of

performance pieces. [Guitar class: Each class began with a review session, which led to taking volunteers to play the piece. This also allowed for a small master class during each meeting in which all students involved in the online settings could take information from and apply to their learning. After this students were exposed to a new melody and/or chord for the days tentative lesson plan.] (f) Frequent public performance, so that performing is natural and enjoyable. [Guitar class: Performances were held at every class session allowing volunteers to perform for peer students at both elementary school locations via the online session.]

It is worth stating that even though these six Suzuki method concepts did align with the methods employed for the class, neither myself, nor the assistants were trained in the method. The result is purely consequential.

Data Collection

Data were collected through a data set, which included videotaping of the online class meetings, precoded student questionnaires, open-ended teaching assistant questionnaires, and a final videotaped student test with open-ended questions pertaining to the course curricula.[61] The process of a narrative for emergent data encoding was then acquired from transcription of the online class video recordings as well as the open ended and precoded questionnaires. There was an opportunity to use, as part of the research strategy, a small-scale questionnaire survey. It should be emphasized from the outset that, in keeping with the comments outlined in this methodology chapter, the questionnaire was intended to supplement the broader sweep of qualitative data collection and not to imply that quantifiable data were in any way superior or more meaningful.

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[61] See Appendices A1-C3

Precoded questionnaire responses were available from 13 students attending either Coalmont (N=8) or Tracy City (N=5). A copy of the questionnaire is given as Appendix IV.

Coding as a thematic analysis technique was used by the researcher of this study to find important threads in the raw data before interpretation.[62] Thematic analysis is the all-encompassing process that is used in qualitative research to find themes within a data set. Thematic analysis was found useful for this research in that it relates to phenomenology and focuses on the human experience subjectively.[63] This form of analysis takes on data sets that were first looked at by Barney Glaser and Anselm Strauss in Grounded Theory Method (GT).[64] GT requires empirical research; therefore due to the lead instructor also acting as the researcher of this study, this theory was found useful. Resembling GT, the data that were used aided in retrospectively forming research questions for the study. It is hoped that by utilizing this form of research, an "organic" and deeper understanding how this learning environment may have impacted participants will lead to refinement of the teaching process for future research. A combination of inductive and deductive reasoning was used to help bring about and answer research questions. Coding analysis began with pre-set codes also known as "a priori codes" before looking at the raw data to find a set of emergent codes, which pertained to online instruction.

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[62] Boyatzis, Richard (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: Sage.

[63] Guest, Greg, MacQueen, Namey (2012). "Introduction to Thematic Analysis". *Applied Thematic Analysis*: 12.

[64] Glaser, Barney G. and Strauss, Anselm L. (1967) *The discovery of grounded theory: strategies for qualitative research*. Chicago.: Aldine.

CHAPTER IV: FINDINGS

As stated in the methodology chapter, the data set included videotaped recordings of the online class meetings, pre-coded student questionnaires, open-ended teaching assistant questionnaires, and a final videotaped student test with open-ended questions pertaining to the course curriculum. This data set allowed for analysis of instruction given by myself as lead instructor, the teaching assistants ability to aid in delivery of the material, and student response to this instruction. This data set also allowed for the assessment of retained learning of two geographically separated classrooms in a hybrid online learning environment. In looking at these interactions, what was learned and what was retained from assessment through review of this data set the following research questions arose:

4. What are unique characteristics about this hybrid-learning environment that lead consequentially to participant feelings and learning outcomes?

5. What instructional elements were gained and/or lost within the design of this hybrid learning environment model?

6. Was this model of hybrid learning effective in teaching basic beginning level guitarists how to play the instrument?

Emergent category coding from the data set revealed four broad categories of findings that relate to these questions: student interests, visual concurrency, pacing, and perception of learning.

The category I call "student interest" covers two main themes: student risk-taking behavior and student-parental influence. This category relates to students and their expression of what they learned and retained throughout the duration of the hybrid-learning environment. The

second category looks at visual concurrency of all participants within synchronous and hybrid-learning environments. This is the real-time ability for all participants: lead instructor, teaching assistants, and students to see what is being taught. This category led to the category of "pacing." Pacing is the rate at which instructional materials are delivered within this hybrid-learning context. Finally, student assessment and testing examines my method for delivering material, the end of course questionnaire, and final videotaped performance test results to help answer the final research question as to the efficacy of this learning environment and perceptions of learning in a hybrid-learning environment such as this.

The impact of a hybrid-learning environment on student learning

Coding revealed that there were two themes within the category of "Student Interests." These themes were "student risk-taking behavior" and "student-parental influence." Risk-taking behavior in learning involves the student's willingness to answer open-ended questions, ask questions, and work on extra-curricular related subject material.   These themes yield answers to the first research question: What was unique about this hybrid-learning environment that lead consequentially to participant feelings and learning outcomes?

Factors that may have impacted a student's individual risk-taking behavior in the context of this study may relate to fear of failure or ambition to succeed. This causal behavior can be related to learning environment, student/teacher relations, behavioral engagement, and/or emotional engagement.

One unique example of a student's unwillingness to answer questions on the final videotaped test[65] came from a 4th grade girl in the class (student 6C). This test came from an

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[65] See appendices C and D for the videotaped open-ended questionnaire and results.

open-ended videotaped questionnaire that was conducted by the researcher in person at each school during the normal class time. During the test, this student seemed uneasy and was unwilling to answer in response to questions related to "string spelling" words with the open strings of the guitar. She was also hesitant to play any of the easy chords (C, G7, G, e minor) learned throughout the semester. She was only willing to play "Smoke on the Water" and was successful at this. During the final videotaped test, it was revealed that the student did not have a guitar at home and had been borrowing a friend's during class time. This was also seen in the web-conferencing class videos when the student was observed conversing with her friend during the lectures. It is easily explained that the student may have had a fearful approach to answering the questions if there was no guitar at home to practice for the test. Other possibilities include self-comparison to peers, fear of teacher reprisal, and embarrassment. All possibilities may have contributed to the student's emotional engagement as there was no sense of ownership (with the guitar) and especially if participation in the class relied heavily on peer-related interest. However, there was a sense of curiosity as to how she could improve when the videotaped test came to an end with the following conversation:

> Lead instructor: "Do you have any other questions?"
>
> Student A: "How do you play so well?"
>
> Lead Instructor: "First off, I have a guitar."
>
> Student A: "And you've played for years?"
>
> Lead instructor: "Probably three times longer than you've been alive."

Another possible reason for this student's hesitance to answer questions may have been the result of isolation from myself, the lead instructor. In this context, isolation is the social lack of "in-person" connection and development of student-teacher trust, which could result in

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distance education due to being physically separated. To put this idea into context, throughout the online segment of the course, questions found on the videotaped test were practiced in a group call-response approach during the online classes as opposed to the final videotaped test scenario when students were asked the questions by myself in a one on one environment. Therefore, the hybrid-learning environment may have led to intimidation during the final videotaped testing environment due to a sense of this "isolation" from me during the semester.

However, upon further examination of the final videotaped test results, another student who failed to answer many of the questions was student 2C.[66] Transcription of this videotaped test also revealed that particular student did not own a guitar.   Many factors could have been at play in terms of student risk-taking behavior. I reflected that there was some "hidden" risk-taking behavior present for both previously mentioned students. Yet another issue that arose from student risk-taking behavior considers motivation factors. Why were these two students continually present for class without owning an instrument and still willing to be present for the final videotaped test? One possibility still lies in the realm of peer-motivation. This reason seems highly likely from context clues that occurred while the open-ended test was being given. During the test for these two students, peers that participated in the class were present in the room. It is quite possible that these two students 6C and 2C were simply friends that enjoyed taking the class together, perhaps not necessarily to learn how to play the instrument, but because it was socially gratifying. It is also possible that the presence of other peers, while taking the test, may have affected these two students with respect to student-risk taking behavior and test results. In order to validate this, I should have asked these students open-ended questions that related to reasons for taking the class without ownership of a guitar, as well as controlled the test

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[66] See appendix D.

taking environment with a bit more scrutiny in terms of who was present during each student test.

An example of positive student risk-taking behavior was seen with a fourth grade girl at Tracy City elementary (student 3T).[67] During one of the online class meetings the student was eager to show the lead instructor a melody she had been working on. She then played "Twinkle, twinkle little star." This student was very active in answering questions throughout the course. She was also successful at answering most of the questions from the final videotaped test. This student owned her guitar and also had a parent who played guitar. I surmised that she had "student-parental influence," which is the next topic found within the student interest category.

This theme of student-parental influence was found with two of the children who played unique pieces for the final videotaped test. The previously mentioned fourth grade student (3T), and the youngest child in the class who was a five-year old kindergarten student (1T).[68] The latter young student played one of the more difficult and lesser-reviewed pieces in the class, "Iron Man." When asked by the lead instructor, "How did you learn this? Did you practice on your own or did anyone help you?" The student stated, "My 'poppy' [grandfather] helped me." The formerly mentioned fourth grade student (3T) said that her mother showed her how to play "twinkle, twinkle, little star." Both of these students at Tracy City were actively engaged in the hybrid-learning environment. They were also participating from the same elementary classroom. Therefore, peer-to-peer motivation from healthy peer competition as well as the positive support/interest that parental figures had in their lives may have related to the test results with correlation their positive risk-taking behavior.

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[67] See appendix D fro the open-ended questionnaire/video taped test results and I, J for transcripts of two archived video classes.
[68] See appendix D.

As stated in the introduction, the teaching assistants' ability to aid students with the instructional material delivered by me was reviewed from an open-ended questionnaire to help answer research questions. When the teaching assistants were asked if they felt comfortable with the level of instruction delivered by myself, all responded with positive remarks on the assistant questionnaires.[69]

Assistant 1: I felt comfortable with the level of instruction given by the lead instructor. Instructions were clear, concise, and adapted well for the age groups to which the assistants were designated. Instructions were easy to understand for the students as well as the assistants, which greatly facilitated the process in its entirety.

The biggest problem that was unique to this hybrid-learning environment was the Internet connection. There were times when the connection would be lost and this impacted the lesson plan for the day. This required the assistants take over the class and review material and/or take questions from students and report back to me. There are two possible scenarios for these delays and technical failures. The first could have been due to connection via Wi-Fi vs. a hardwired Ethernet connection from the iPad to the LAN.[70] The second could have been due to kids who were using bandwidth in the computer lab in another room during the time in which the online class was taking place. There was frustration among the assistants regarding this problematic aspect. When asked by way of the open-ended assistant questionnaires if they [assistants] would have learned from an online class such as this one, the teaching assistants responded negatively:[71]

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[69] See Appendix E, question 3.
[70] Local Area Network
[71] See Appendix E, Question 7.

Assistant: I agree that I would have learned from an online class such as the	one I

helped with. However, the fact that the class is online, requires Internet	technicalities, and the

class is made up of group instruction did slow down the	learning process.

It is possible that these technical obstacles may have magnified the previously mentioned

topic of isolation thus resulting in the negative examples of student risk-taking behavior found in

students 6C and 2C.

Visual Concurrency in Synchronous and Hybrid Learning Environments

In reviewing webcam footage from recorded videotapes, this category emerged to

examine what all participants: lead instructor, teaching assistants, and students, were viewing

within the context of this hybrid-learning environment. This all-encompassing category helps

answer the next research question: "What instructional elements were gained and/or lost within

the design of this hybrid learning environment model?"

To begin, I examined my ability to see myself though the web-conferencing interface. As

is the case with most web-conferencing interfaces, my monitor allowed me to see both classes

simultaneously, as well as myself, through webcam windows on the monitor of an Apple iMac

screen within the WebEx software. One element that became clear to me was "self-awareness"

on the video feedback monitor to myself. This allowed me to view precisely what I wanted

participants to see on the receiving end of instruction at each geographically distal classroom.

Therefore, I was able to see with the same visual perspective of the teaching assistants and

students through the webcam windows. In the case of demonstrating the easy chords: C, G,

eminor, G7 to the classroom, I made sure the assistants and students on the receiving end were

seeing exactly what I wanted them to see on their respective projection screens. If I wished to

zoom in on the exact string, fret, finger etc, I simply moved my hand towards the webcam and could show all angles of the chord being held down. In other words, I could see through the "student eye" teaching as well as witnessing the instruction in real-time. This real-time visual concurrency is certainly gained within synchronous and hybrid online learning environments and is a unique characteristic of perception that is not found in traditional classroom instruction. In a traditional classroom, visual concurrency is important when it comes to group, applied instrumental instruction. In my experience teaching applied group instruction, modeling chords and melodies from the front of a classroom can be cumbersome and time consuming. Students in a group class often misinterpret fingerings for a chord and the instructor has to go around to each student helping them place fingers properly. Also, students in this setting are often looking at the instructor's fingers from a perpendicular angle. Therefore, they tend to press fingers into the fretboard that are not being pressed by the instructor. In comparison, web-conferencing with the webcam allowed me to see exactly what I wanted to demonstrate. Again, this allowed me the ability to see what the student was seeing via the participant webcam windows. This expedited the lesson by magnifying the intended fingering for a chord, scale, melody, etcetera, so there were no misinterpretations.

Even though assistants helped students with melodies and chords in "breakout groups," there were several students who understood before the breakout group segments of class. More often than not this occurred with the older group of students at Coalmont elementary. I observed this when I would call on volunteers to play what I was modeling before breakout groups commenced. Therefore, breakout groups with the teaching assistants served more as an interactive human element further validating what was learned. They also served to show me as a group they were understating the chords and melodies.

Another positive outcome of teaching the course as a hybrid online course was the real-time feedback that is a associated with synchronous online learning environments. This real-time feedback is lost when a student, or group of students, attempt to learn by watching instructional videos on websites such as YouTube, Vimeo, and Truefire and other video-based (asynchronous) lessons. Though many of these websites have embedded a "comments" section to accompany video, which allow a threaded dialogue between viewers, I found that my spontaneous questions could not be asked/answered and a narrative group discussion, which is more "organic" in nature, would be lost in this context. Synchronous online learning environments allow participants to interact and grow together as a classroom giving the class setting personality, which creates an experience similar to a traditional setting.

Other obvious elements that were gained within this hybrid model were the ability to reach beyond geographical boundaries and set up a virtual environment that promotes a larger peer-related, multi-cultural community. The interactions that took place between the two classrooms in this hybrid-learning environment sparked questions and provided answers ultimately benefiting all participants involved. Without geographical boundaries, the synchronous element of this hybrid-learning environment provided a way to fix the problem of educational equality in musical arts programming. Finally, recording features found within this web-conferencing software permitted me to archive and post lectures online for further review by students involved in the class.

Pacing

The nature of a web-conferenced hybrid classroom requires that the instructor be careful not to "rush" the dialogue when delivering instruction. This requires a slow paced transmission

of exactly where to place fingers (i.e. finger, fret, string). This may also be true of a traditional

classroom. However, within the context of this study, technology allowed the instruction to be

delivered in a simplified manner for beginning guitarists. This was accomplished by using a

slow-paced dialogue; live webcam feed of both hands, screen sharing of chord diagrams,

annotation tools, as well as basic material such as single-string melodies and easy chords.

Instructional pacing was dependent on the delay and bandwidth for a given lesson day. This was

found to be something that was lost in terms of the amount of material that could be covered

when compared to a traditional classroom. Pacing of the instruction required the lead instructor

to thoroughly examine what could be covered within each session's time frame. Instructional

design included three major segments: (a) the "call response" segments of the class in which the

children aurally repeated what the lead instructor said in order to cognitively learn single string

melodies, (b) "breakout groups" in which assistants took over to help students with the

instruction, and (c) "peer performance" which was a chance for students to volunteer playing

what had been spoken and reviewed (from a-b). This three segment pedagogical approach to

pacing in synchronous online environments could therefore be defined as (a) cognition, (b)

incubation, and (c) tactility.   This is the student's ability to think about what should be played

and recite melodies in a rote manner, incubate this material by working in breakout groups with

validation from peers and teaching assistants, and finally, perform the melody individually for

the classroom thus exercising the tactility of playing the melody on the guitar.

Pacing was also largely dependent on the web-conferencing software being used. In

order to permit a streamlined workflow without interruption both the lead instructor and

assistants had to become familiar with the technology being used. The web-conferencing

software, WebEx was used for this study and required the lead instructor to become acquainted

with the interface on current windows (PC) and OS (Mac) platforms, hardware devices used during the study (iPad and iMac), and compatibility with various web browsers. The WebEx interface creates a web-conference setting with one entity being the host (moderator) and another entity joining as a participant. All participating arties may join via a laptop, tablet, or cellphone to view the meeting. For this study only iPads and a desktop Mac were used. Due to an entire class being on the receiving end at each location, the assistants had to control the screen sharing element and what the classroom could see on the projector. This switch between lead instructor view and screen sharing view for the presentation had to flow seamlessly to avoid interruption.[72] This was done by "swiping" between views on the iPad at each location. Which is to say, the assistant touches the iPad screen with two fingers and drags the fingers to change presentation view. I found there certainly was a communication learning curve amongst the teaching assistants and myself to make sure students in both classrooms were viewing what I intended. Therefore, I used keywords such as "screen sharing" and "demonstration view" to designate when the assistant would swipe between these two presentation views. This technical aspect of the WebEx software could be viewed as a negative workflow with regard to pacing and needs further examination by testing other software that would allow me to control what the receiving end class views without someone having to be on location to swipe between viewable screen windows manually. With the software used, I had to take into account teaching workflow when making the lesson plan. This required noting cues for teaching assistants within the lesson so that changing views at both locations was seamless, therefore allowing minimal distraction for the students. Pacing of the lecture in terms of listening to students perform was at first problematic due to delays. With modern technology, the student and the teacher in live online

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[72] Often this material on the presentation reflected what was given to the students via paper handouts for the day's lesson.

environments must adjust to any given delay. This was worked around rather easily and I gave detailed instructions to the class before counting off a group call/ response segment of the lesson. When counting off a class there was a notable delay before the class would respond and play. In "near" real-time, I had had to make sure the student and/or class was finished playing before interrupting the performance for corrections.

Student testing, responses, and summary statistics

The final research question, "Was this hybrid learning environment effective in teaching basic beginning level guitarists how to play the instrument?" looks at my method for delivering material. I examined this question by assessing the previously discussed, open ended questionnaires from the final videotaped performance test results and end of course precoded questionnaires, which are summarized in appendices F and H.

Student responses from appendix , show that a majority of students found the experience fun (77%), slightly fewer expressed an intention to continue learning the guitar (62%) and even fewer still thought that they might take another class (54%). It is a not unexpected by-product of any educational experience to find that learners get enjoyment from meeting new people and this was certainly the case with 92% of the students expressing a positive opinion. With regard to the more practical aspects of learning to play the guitar, 92% were confident that they had learned string names and only 38% were confident that they had learned the designated chords although 41% expressed a more cautious 'Maybe'.

As it stands, these data provide general confirmatory feedback and, in addition, show that the lessons seem to have been pitched at an appropriate level, in than all but one of the students rejected the idea that the lessons were too easy and the group was split almost 50/50 on the

question as to whether the lessons were too hard. It was pleasing to see that no negative views were expressed about the help offered by the on-site teaching assistants.

The greatest caution must be exercised in attempting to go beyond simple conclusions drawn from such a small sample but a little further analysis raises questions that could provide insights for further investigation. First, there may be some interaction effects at work between how hard the students found their studies and either the role of the classroom assistant or some general demographic factor. To be specific, Question 9 in appendix C "Was the class too hard?" shows clearly that younger students from Coalmont found the experience too hard whereas the older ones did not, with 6 students below 10 years of age answering "yes" and age 11 and over answering "no." [73]

This split can be seen as having a measure of statistical significance. Using Chi-squared, a p value of 0.0027 is obtained which is significant beyond the .01 level of probability. The calculation for this is given in appendix G. However, this pattern of scores is not replicated from the data found in the Tracy City School responses in appendix C3, where 4 of the students below 10 years of age, were examined. There could be many reasons for this geographical split and a single small survey could not hope to reveal which is correct. However, the process of seeing and raising such questions is part of the justification for the present study.

Perceptions of Learning

In a similar fashion, it is instructive to look at the relationships between how students felt about their work: Would, for example, they like to continue with another class similar to this

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[73] See appendix G, figure 1.

based on what they have/have not learned. One might hope for a nice clear-cut pattern of scores but the actual result is different as seen in appendix G, figure 2.

Here the response categories of 'Maybe' and 'No' have been combined into a single 'Not wholly favorable' category. A strong association would be 'Yes with Yes' and 'Not yes' with 'Not yes'. In this instance, the four students from the top right hand quadrant of appendix G, figure 2, who answered "not yes," (i.e. maybe and/or no) to being able to play all chords, yet also answered "yes" in wanting to continue, are the major factor that skews the distribution into non-significance. Of much more practical interest is the question why these four students would like to continue in the face of not having achieved one of the course objectives. With only 13 students in the whole group I pondered George, Harriet, India, and Lucy who were the 4 students that made up this quadrant specifically.

At this distance in time it is not possible to revisit the these students and interview them in sufficient depth to find out why they did not wholly succeed but remained committed to continuing. The 'road blocks' they faced had clearly not deterred their drive to continue. These will be the issues that will provide significant data for whoever continues these lines of research. Another single example of the issues one may find, would be a student who volunteered the information that the family guitar was a prized parental instrument and this student simply was not allowed the time and freedom needed to complete tasks in the curriculum.

Summary

In continuing with student testing, as seen with the discussion on student risk-taking behavior, students did take something from the class. However, no one was prepared to play everything learned from the course.

Out of the 13 students surveyed all were able to easily demonstrate proper string names E A D G B E with the acronym "Every Adult Dog Grows Big Ears." Of these, 12/13 students were able to successfully play a melody line taught during the course. The exception was a student who could not demonstrate a melody line but could, however, play some chord. None were able to play all 4 chords (easy versions of C, G7, G, e minor using the top three strings). One reason behind the ability for most students' success in performing single melody lines may be directly related to the fact that this material was delivered in closer proximity to the videotaped test. The two weeks preceding the final playing test were heavily focused on melody lines that students chose to play. These were more popular melody lines played on single strings.

Perhaps this course was the start of a learning experience in which students began collecting ideas to continue learning on their own. There is a strong cultural association these students in Appalachia share with guitar being a primary "folk" instrument. The course may have been a vessel to inspire and initiate the autodidactic student.

CHAPTER V: SUMMARY, IMPLICATIONS, AND CONCLUSIONS

In reviewing the results of the current study, it can be seen that the research questions posed at the end of the first chapter have been addressed and that some potentially interesting answers were obtained. The research design deliberately used several data gathering methodologies and these seem to have gone some way towards turning the purpose of the study into practical results. However, this dissertation was never intended to provide clear-cut results for immediate attention. As indicated in Chapter Three, the intention was to look at hybrid teaching methods so as to enable 'thoughtful reflection'. It is hoped that what follows will be seen as thoughtful enough to do justice to the work put in by the students and assistants who participated in the research.

This chapter will continue by looking at some overview issues of research into methods and media. It will continue with some reflections on the limitations of what was attempted and move to position this piece of work with those outlined in chapter II.

It was noted on page 9 of this dissertation that 'Research in the area of distance learning is still in its infancy'. Research into the areas of educational and instructional technology must therefore be regarded as having reached a venerable old age. Soon after the end of World War II, the theoretical work of B. F. Skinner in learning theory developed a technology of training and education usually called 'Programmed Learning'. The principles were straightforward and remain part of any systematic approach to education or training:

- Define the learning goals in measurable terms.

- Employ appropriate methods and media

- Validate by comparing goals with end results.

This dissertation is clearly in the area of methods and media but the simple word 'appropriate' is the key to the new and emergent ideas that have been touched on the earlier chapters. In the early days, methods and media essentially meant the difference between 'chalk and talk'. Half a century later, the need for objectives and post-learning evaluation remain the same but the methods and media for presenting the material to be learned have expanded at a dizzying rate. This dissertation cannot make claims to have revolutionized an understanding of how new technologies can contribute to pedagogy. It does however raise issues of student interaction with teachers, peers, and parents, as well as visual concurrency, pacing, and perception of learning in a hybrid online applied music learning environment. It will be exciting to see how many more 'appropriate' methods will emerge to aid in future endeavors of how to deliver instruction in this medium. For example, a 21st century guitar class may see technology that surpasses the need for on-site teaching assistants. When working with fretted instruments, one possibility for online learning environments would be an LED fretboard transparency. As of this writing, only one primitive attempt at creating such a device has been found on kickstarter.com[74], yet it did not reach funding goals. This hardware device would allow instructors to demonstrate fingerings for a lesson to the student(s) while teaching in an online environment in one-on-one and classroom settings. A more advanced device would be powered via USB and transmit the information from client (instructor) to server (student). This would certainly eliminate the need for onsite teaching assistants, and when plugged to a multi USB hub for each student in a classroom setting, would create a very unique learning environment that could be assessed. The 21st century classroom will also see advances in broadband speeds, which will help with the pacing of the material.

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[74] https://www.kickstarter.com/projects/conversationmedia/tabber-led-guitar-light-sleeve?ref=nav_search Accessed: October 9, 2014

This is particularly true in rural areas. Ironically, rural populations wishing to participate in an "outreach" course utilizing high definition video are currently limited to internet service providers (ISPs) that provide high speed internet with low monthly data caps. Two of the leading ISPs on the market for people in rural areas are Hughes Net and Verizon's "Home Fusion" broadband service. These services are expensive and provide at the higher end of the spectrum only 30 gb of data per month, thus making live streaming for web conferencing relatively impractical due to the higher capacity needed to join such events. This study was fortunate enough to find schools with ISPs using high-speed broadband provided by cable companies with higher data caps at 200gb per month.

The most obvious limitation of the work reported in this dissertation is that it was, out of necessity, small scale and limited to the population of students and assistants who were accessible and willing to participate. From my point of view, there were many difficulties involving communication, equipment and internet connection/set up. Another problem I found, was the number of students who took the precoded and open-ended questionnaires were the same, however the precoded questionnaires were anonymous and the number of students from each school differed between tests. It would have made for a more detailed narrative and analysis with answers to of some questions addressed in chapter IV. Future research will be more structured in terms of assigning id numbers to students in all test-taking scenarios to protect identity yet follow each student throughout the course.

Communication from lead instructor to student was problematic in that there was no assigned seating. From week to week it was difficult to get into a "groove" due to this. It was also quite difficult to memorize student names. Future study will require assigned seating so that the student-teacher relationship may be further established. This may also aid in eliminating the

feeling of isolation as previously defined in this research. In conjunction with the live online sessions, quizzes and asynchronous/supplemental videos will accompany each weekly lesson posted online. A website will also provide information regarding classroom setup for the assistants and in this case, afterschool coordinators.

As for equipment, a few of the students did not have instruments. Making sure all students have instruments for future classes will be a priority at each elementary school. Given the technical setup there were days in which the classroom was not completely visible by the lead instructor due to webcam placement via the iPad. It would have been helpful to have a versatile webcam such as the Logitech BCC950 Conference cam,[75] which could easily be connected to the computer and positioned in the classroom for a proper angle to see all students. Testing the WebEx software in a cross-platform environment from Mac to PC should be considered as well as the use of Ethernet wiring (hardwiring) opposed to a Wi-Fi (wireless) connection. Further research is also needed to compare/contrast various synchronous online learning environment software, which is available such as the previously mentioned *Elluminate Live*, *Interwise*, *Wimba Live Classroom*, *Adobe Acrobat Professional*, and *Saba Centra*. In terms of equipment, it is worth mentioning that there are more expensive ways of conducting an applied music course such as this, therefore this study was also limited to basic equipment needed for such a class. On the other hand, this proves that anyone wishing to conduct such a class has the modern household technology to do so.

Further research will also examine capacity regarding student/teacher ratios in hybrid-learning environments. It would be important to look at how many classrooms may join a live session with one lead instructor and still remain effective for students to gain a baseline

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[75]http://accessories.us.dell.com/sna/productdetail.aspx?c=us&l=en&s=dhs&cs=19&sku=A7062237&ST=pla&dgc=ST&cid=262077&lid=4742363&acd=1230980731501410 Accessed: October 11, 2014

understanding of the guitar and ability to play. This future research would also examine the number of assistants needed per classroom. Assessing students to find curricular material that best suits this hybrid online environment will take years of study, with regard to the capacity and student/teacher ratio. It is worth noting that student retention in each classroom usually resulted in 7-10 students. This does seem to be a reasonable starting place for testing the student/teacher classroom ratio.

A possible future way forward for the future would be the employment of the technique of Meta-Analysis. At its simplest level, this involves gathering together studies in an area which have been produced by different researchers and using correlational statistics, which would be beyond the scope of a single analyst, looking for overall similarities which are otherwise hidden by the specifics of any single piece of research on its own. This dissertation looked at teaching guitar. The closest parallel available from the literature is the Dammers study (Cited on page 17), which looked at trumpet tuition with a single student. Some of the immediately obvious comparisons are given below. Meta Analysis would involve adding other studies and trying to use statistics to look for subtler characteristics and interactions.

As the Dammers study is the closest parallel, it seems sensible to look first at the converging issues and then move to examine some other studies that could assist in making a more detailed comparison. The 2009 study by Richard Dammers, led to the assessment of whether or not teaching applied lessons over the internet allowed for a baseline level of functionality as well as challenges, advantages, unique features, and pedagogical considerations regarding teaching and learning. There were similar problems this research encountered when compared to the Dammers study, which include connection and delay. Connection and delay issues will certainly affect pacing of the instruction. However, once the teacher and student

become acquainted with the delay both may adjust accordingly. The difference in the Dammers study and this one is the pedagogical model. Dammers involved a case study that looked at one-to-one instruction using Skype. This model a bit easier to for the teacher to adjust regarding delay, as there are only two participants the teacher and the student in the setting. With the current study there were three 'participants' in the online classroom. These were the two elementary schools and myself. One of the major hurdles is getting used to moderating this setting as the lead instructor and may be quite challenging for the inexperienced web-conferencing platform user. There are cross bleeds from the microphone between classrooms and the instructor must know when to "mute" microphones for participants in order to make sure that the proper attendee is answering and being heard. In this sense the instructor is both mindful of delivering the instructional material and moderating the classroom. This is particularly true when dealing with visibility issues and being able to see all participants at each location with each respective webcam. Therefore, this research shows that when adding classes/participants to the web-conference, the lead instructor must be well prepared to conduct these multiple classrooms and be fully aware of each participating classroom's inquiries. The instructor in this setting must adapt to this environment by addressing this dialogue and developing a narrative for communication that does not interrupt the class meeting due to technical error. The WebEx platform was helpful in allowing the moderator (myself) to be fully aware of whose microphone was "live" with an indicator that lit up to show who was speaking. Being prepared to direct questions to each school/participant is also a pertinent part of the workflow as a teacher in this multiple participant environment. In agreement with the Dammers study, the course within this hybrid-learning environment did communicate course objectives, which in the case of this study was an entry-level guitar playing ability. This study agrees with Dammer's finding that using

widely available videoconferencing hardware and software made applied instrumental instruction possible. Just as Dammers noticed that he could monitor what the student was seeing through Skype, so could I use the webcam to model techniques to both classrooms. These techniques included both left and right hand subjects such as how to fret a note and right hand starting position.[76] As previously mentioned in the findings of chapter IV, this is certainly a useful and unique pedagogical advantage of teaching in an online environment whether hybrid or purely synchronous. This convenience allows for objective perception when modeling a technique and/or musical example. As mentioned, I have found that teaching traditionally often causes ambiguity with this particular age group (elementary school) when demonstrating these techniques. This is particularly true with the left hand when modeling chords. There are times when doing this that a student will often not realize which finger(s) are being fretted when sitting across and facing perpendicular to the teacher's fretboard. Thus the teacher in traditional settings is not seeing the student's perspective with respect to a traditional class and/or one-to-one setting. Visual learning may also be argued more effective when modeling technique across video because the demonstrations/presentations are magnified. This is especially true for beginners.

Using these online teaching techniques, this study and others related to it ultimately produce a strong visual learning environment. Visual learning emerges from the combined use of video, webcams, rich screen sharing, and interaction between classes across the web-conferencing software. Recent studies have indicated that visual learning greatly improves a student's overall learning experience. Visual learning increases student interest and engagement

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[76] thumb (p) on the 4th(d) string, index (i) on the 3rd string (g), middle (m) on the 2nd string (b), ring finger (a) on the 1st string (e).

and students are more likely to remember something with a visual aid.[77] Students have also shown more positive attitudes about what they were learning when teachers used a form of visual aid in the classroom.[78]

Alongside the works of Dammers, two other studies have useful contributions to make. The study led by Helen Lancaster in 2007 at Queensland Conservatorium Research Center mentioned the importance of eye contact to prevent feelings of isolation. In contrast to this study, eye contact was not a perceived issue as the class was often found looking at the teaching assistant and/or what the lead instructor was modeling via webcam. Perhaps in this study's set and setting it would be important to consider in a one-on-one lesson. However, the recent study by Brändström, Wiklund, and Lundström in 2012, found otherwise, with a student who found it difficult to sing towards the instructor in when in a traditional one-to-one setting. Further research regarding webcam placement may be necessary to persuasively make an argument relating the importance of eye contact to student perception and feelings of isolation. The Lancaster study also mentioned that all sites should use the same VDOC (real time video conference) technology. Given the year of the Lancaster study, the statement is a bit outdated. Most modern PC's and Mac based technology use high definition (HD) 1080p resolution for webcam video feed. In agreement with Lancaster, it is imperative that both the client and server have HD webcams to clearly see what is being modeled by the teacher and performed by the student. As for the current study, the lead instructor and elementary schools used 780p and still communicated effectively.

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[77] Beeland, W. "Student Engagement, Visual Learning, and Technology: Can Interactive Whiteboards Help?" (2001). Theses and Dissertations from Valdosta State University Graduate School.
[78] Farkas, R. "Effects of Traditional Versus Learning-Styles Instructional Methods on Middle School Students" The Journal of Educational Research. Vol. 97, No. 1 (Sep. - Oct., 2003), pp. 42-51

The study conducted by (Brändström et al) found that pacing was somewhat interrupted and the teacher could not give adequate feedback during a violin master class setting. This was considered a weakness from the study and for advanced students this could certainly be the case if thinking in the traditional mindset. However, it can be worked around at advanced levels easily if both parties (the teacher and the student) have a score. Current hardware devices such as Bamboo pad[79], a graphic design tool, may be used in conjunction with annotations with any web-conferenced classroom to mark scores in near real time with the student.

At the conclusion of a study like this, it is worth taking a few words to reverse the microscope and look at broader issues. There are several implications for the usefulness of the methods and media found within this study. The first lies in how it may serve it to develop life long learning programs that are in place at institutions of higher learning. An applied music course for those interested in studying a particular instrument would fit the bill here. The second is what this study looked at, which is outreach and educational equality for all. Particularly at the pre-tertiary level, these methods and media of instruction have far reaching ethical benefits when looking at supply/demand regarding all educational disciplines. From the wealthy urban city school to the poverty stricken rural counterpart, technology is the immediate answer to "level" the playing field especially when arts education programming is constantly struggling. Thirdly, the hybrid environment uses web conferencing technology that could allow for interaction among many different cultures in a simultaneous class session. This could connect not only regional schools but also international schools. Leading to globalization of music educational programming for all.

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[79]http://www.microsoftstore.com/store/msusa/en_US/pdp/productID.288613600?srccode=cii_13736960&cpncode=43-6812641-2&WT.mc_id=US_datafeed_Shopping Accessed November 4, 2014

If an opportunity were to arise for the researcher to take these ideas forward, a study that seems to cry out would be to work with a specific age group and/or grade level. An ideal scenario would be to split the applied group class into various sections for further curricular testing: kindergarten - 2nd grade, 3rd grade - 4th grade, 5th grade - 6th grade, middle school (7th - 8th grade), high school (9th – 12th grade). As hinted to earlier, future study would also include looking at the student/assistant/lead instructor ratio.

Finally, it would make sense to move forward assessing the curricula of practicing institutions currently offering the various synchronous, asynchronous, and hybrid forms of online applied instrumental instruction. This, in combination with a meta-analysis of available studies, will lead the pedagogy to a method that is of a significant advantage.

To conclude, we can quote the verse penned by Robert Mager:[80]

There once was a teacher
Whose principle feature
Was hidden in quite a strange way,
Students by millions,
Or possible zillions,
Surrounded him all of the day.

When finally seen
By his scholarly Dean
And asked how he managed the deed,
He lifted thee fingers
And said 'all you swingers
Need only to follow my lead'.

'To rise from a zero,
To big campus hero,
To answer three questions you'll strive,
Where am I going?
*How will I get there?*
And when will I know I've arrived'.

The search for 'how will we get there?' must continue.

---

[80] Mager, Robert Frank, and Nan Peatt. *Preparing instructional objectives*. Vol. 962. Belmont, CA: Fearon Publishers, 1962.

# APPENDIX A: MODELS OF WEB BASED LEARNING ENVIRONMENTS

i. Asynchronous Online Learning Environment (AOLE)
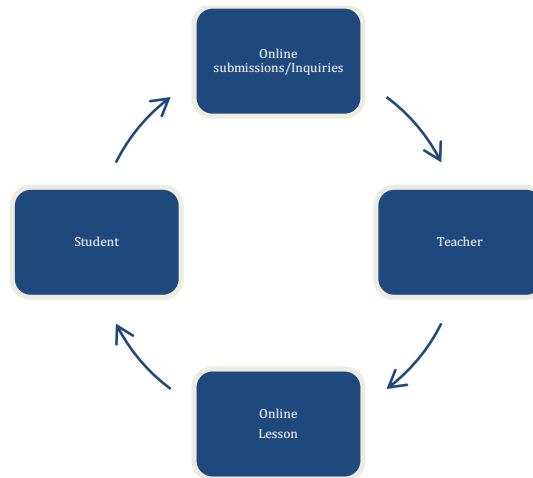
ii. Synchronous Online Learning Environment (SOLE)
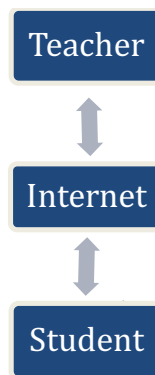
iii.   Hybrid Learning Environment (HLE)
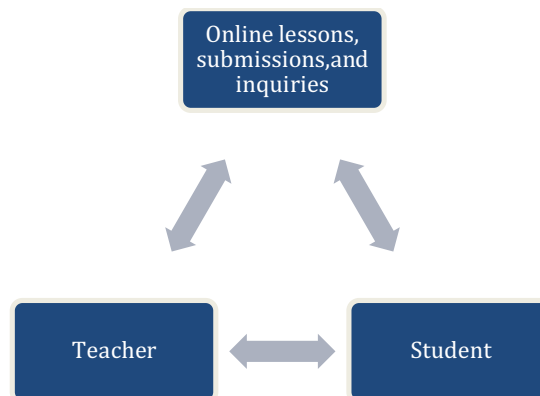
APPENDIX B: MAIN FORMS OF DATA COLLECTION

STIMULI	Non-verbal acts	Oral-verbal acts	Written, verbal acts
Informal settings	(Participant) observation	Conversations, use of informants	Letters, articles biographies
Formal unstructured settings	Systematic observation	Interviews, open-ended	Questionnaire, open-ended
Formal structured settings	Experimental techniques	Interviews, precoded	Questionnaire, structured

APPENDIX C: FINAL VIDEOTAPED TEST QUESTIONS

1. Ask to play the following string names E A D G B E (Every Adult Dog Grows Big Ears)

2. Play (any) of the following words on the open strings: BEAD, DAD, BAD, EGG, ADD, BADGE, BAG, BEG, BED, BEE, GAG.

3. Try to play the following chords: easy C, easy G7, easy e minor, easy G.

4. Play <u>any</u> melody learned throughout the course. (i.e. from tablature or aurally "Ode to Joy," "Smoke on the Water," "Iron Man," "I got a feelin," and/or "Amazing Grace.")

APPENDIX D: FINAL VIDEOTAPED TEST RESULTS AND SUMMARY CHART

VIDEOTAPED TEST RESULTS AND SUMMARY STATISTICS

STUDENT	AGE	Q1: Play open String names EADGBE.	Q2: # of words spelled w/ open strings:	Q3 (Play easy chords): C	G	e minor	G7	Q4 (Play a melody.): Ode to Joy	Smoke on the Water	I got a feelin (chords)	Iron Man	Amazing Grace	Other (beyond class)
COALMONT SCHOOL													
1C	9	100%	2	correct	correct	incorrect	incorrect		X	X			
2C	9	100%	2	no attempt	no attempt	no attempt	no attempt						
3C	10	100%	3	incorrect	correct	correct	incorrect		X				
4C	10	100%	2	N/A	N/A	N/A	N/A						
5C	10	100%	4	correct	incorrect	incorrect	incorrect		X				
6C	10	100%	2	no attempt	no attempt	no attempt	no attempt		X				
7C	12	100%	2	incorrect	incorrect	incorrect	incorrect		X		X		
8C	14	100%	2	correct	correct	correct	correct	X			X		
AVERAGE	10.5	100%	2.38	37.50%	37.50%	25%	12.50%	12.50%	62.50%	12.50%	25%		
TRACY CITY SCHOOL													
1T	6	100%	3		correct								
2T	7	100%	2								X		
3T	10	100%	4	correct			correct		X				
4T	10	100%	4	correct		correct	correct					X	
5T	11	100%	3	correct			correct						X
AVERAGE	8.8	100%	3.20%	60.00%	20.00%	20.00%	60.00%		20.00%		20.00%	20.00%	20.00%
OVERALL	9.1	100%	2.69	46%	30%	23%	30%	7%	46%	7%	23%	7%	7%

APPENDIX E: ASSISTANT QUESTIONNAIRES AND RESPONSES

Please answer yes/no. Explain if you feel necessary.

1. **Do you think the class was helpful and was successful in accomplishing a beginning level of guitar instruction?**

    Assistant 1) I think that the class was helpful and was successful in accomplishing a beginning level of guitar instruction. Although the technical difficulties we encountered as a result of less than perfect wireless Internet connections in the schools we were stationed in, the communication shared by the assistants, students, teachers, and Mr. Finney allowed us to proceed with instruction and make noticeable progress each and every week with the students.

    Assistant 2) Overall yes, but the style of teaching led to a lot of kids getting left behind.

    Assistant 3) Yes, in accomplishing a beginning level, the class was a success, otherwise, no. The class was not the place for someone wanting to learn more than a few chords.

2. **Do you feel the class could succeed without assistants?**

    Assistant 1) I do not feel that the class could succeed without assistants. As aforementioned, the ability for the assistants to explain the weekly concepts and take over when Internet connection failed was crucial in the success of the program. Additionally, the students needed help from the assistants each week to make sure that their hand and instrument placement was correct.

    Assistant 2) No, the assistants were necessary for times when the Wi-Fi was delayed or to demonstrate things that couldn't be seen clearly on the screen. Also needed to help the kids focus.

    Assistant 3) With the way it was, not a chance. The assistants are useful for explaining things to the kids when they get confused.

3. **Did you feel comfortable with the level of instruction given by the lead instructor?**

    Assistant 1) I felt comfortable with the level of instruction given by the lead instructor. Instructions were clear, concise, and adapted well for the age groups to which the assistants were designated. Instructions were easy to understand for the students as well as the assistants, which greatly facilitated the process in its entirety.

Assistant 2) Yes, but the effectiveness was limited by the Wi-Fi and notes on [the] screen were hard to see.

Assistant 3) Yes.

4. Did the collaboration with other assistants build a stronger sense of community?

Assistant 1) The collaboration with other assistants helped establish a strong team of instruction and community within the LEAPS Program. Throughout the semester, the assistants learned more of our strengths and weaknesses in instructing a younger class of students. The sense of camaraderie we established over the semester allowed us to know which assistants fit best with specific groups of students at specific location and progress the process of instruction as needed even when some assistants could not be present.

Assistant 2) Yes.

Assistant 3) Not really. The quality of assistants was okay, but the purpose was somewhat fulfilled.

5. Did you make new friends?

Assistant 1) I consider all of the assistants, teachers, and especially the students as new friends. By the end of the semester, I had observed shy and introverted students transform into outgoing and eager performers.

Assistant 2) Yes.

Assistant 3) Some.

6. Was this experience educational?

Assistant 1) This experience was very educational for me. As a previous group and individual musical instructor of 5+ years, this experience was very different specifically due to the online aspects of the program. The most valuable lesson I took from the program was the impact of simple encouragement and enthusiasm on students. The more excited about guitar the students were, the more improvement they demonstrated on a weekly basis.

Assistant 2) No, it was very basic and our job was more to just make sure they [students] listened.

Assistant 3) Yes.

7. **Would you have learned from an online class such as the one in which you have helped with?**

      Assistant 1) I agree that I would have learned from an online class such as the one I helped with. However, the fact that the class is online, requires Internet technicalities, and the class is made up of group instruction did slow down the learning process.

      Assistant 2) No it is too difficult to keep track and learn with all the audio and visual delays.

      Assistant 3) Not nearly enough. The online aspect was too limiting for the kids. On the rare occasion when Wi-Fi was down, everything failed for a day and class had to be cancelled.

8. **Do you feel that the children involved were attentive?**

      Assistant 1) I felt that the children involved were very attentive to instruction. Although the numbers of students diminished over the course of the semester, the students who truly were passionate and dedicated toward guitar maintained attendance and interest until the end of the semester. Those students expressed exemplary behavior and attention during the weekly lessons, which was a joy to work with.

      Assistant 2) About half and half.

      Assistant 3) Yes. They tried even though they were confused.

9. **Was the set and setting ideal for this type of outreach (online) instruction?**

      Assistant 1) The set and setting worked for this type of instruction with the exception of the Internet connection difficulties as mentioned beforehand. Otherwise, as long as the Internet worked at the schools we were stationed at, the visual and audio aspects of the course were clear and easy to follow for both the assistants and the students.

      Assistant 2) The setting was, the video system needs tweaks.

      Assistant 3) Yes.

10. Would you consider being involved in this project for years to come?

        Assistant 1) I would definitely agree to be involved in this project for years to come. I began playing guitar at age 7 and quickly realized the benefits involved in incorporating music into elementary school educational curricula. The growth I observed from the students was priceless and the overwhelming excitement they expressed after learning the simplest riffs and songs was worth every bit of time and energy we put into the LEAPS program. As a native of this rural and primarily low socioeconomic region, I will always insist that music will provide not only an outlet for our local youth to explore the values of the arts and professionalism, but also create a sense of community and a gift that they can give to someone else along the way.

        Assistant 2) I would consider it depending on the other activities in my schedule.

        Assistant 3) Maybe.

Comments: (Please list anything you think would benefit the online class for years to come. What were some of the major successes/issues?

        Assistant 1) In order to benefit the online class for years to come, I would suggest a greater sense of communication and understanding between the teachers at the schools in relation to the lead instructor, assistants, and electronic aspects of the course. Often times, the teachers weren't sure how to navigate the iPads or Internet connections necessary for the progression of the course. The most major success was the level at which the students understood and followed the course of instruction. Obvious progress was made weekly by the students.

        Assistant 2) No comments made.

        Assistant 3) Online class not a great idea; Should be divided based on skill level; Should not involve two schools and one instructor; Should have a day before the class to prepare, instead of just receive assignments and go; Needs better organization.

APPENDIX F: END OF COURSE PRECODED QUESTIONNAIRE FOR CHILDREN STUDENTS

Please fill in and/or circle.

Age range: 7 (1) 9 (2) 10 (7) 11 (1) 12 (1) 14 (1)

Grade levels: 1st (1) 4th (6) 5th (4) 6th (1) 8th (1)

Preferred Style(s): Country (13) Rock (3) Jazz (1) Classic Country (1) Bluegrass (1)
Gospel (1)

Please circle Y for Yes, N for No, and M for maybe.

		Yes	No	Maybe
1.	Did you find the class fun?	10	1	2
2.	Would you like to continue playing guitar?	8		5
3.	Would you take another ONLINE class for guitar?	7	1	5
4.	Did you learn the names of the guitar strings?	12		1
5.	Did you like meeting new people in the class?	12		1
6.	Did you practice at home for the class?	6	3	4
7.	Can you now play chords C, G7, e minor, and G?	5	3	5
8.	Was the class too easy?	1	12	
9.	Was the class too hard?	6	7	
10.	Were the class assistants helpful with your questions?	11		

APPENDIX G: CHI-SQUARED CALCULATIONS

The contingency figures below provide the following information: the observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].

Figure 1

	Hard - Yes	**Hard - No**	*Marginal Row Totals*
10 or under	6 (4) [1]	0 (2) [2]	6
11 or over	0 (2) [2]	3 (1) [4]	3
Marginal Column Totals	6	3	9 (Grand Total)

The Chi-square statistic is 9. The P value is 0.0027. This result is significant at p < 0.01.

Figure 2

	Play chords? - Yes	**Play chords? - Not Yes**	*Marginal Row Totals*
Continue? - Yes	4 (3.08) [0.28]	4 (4.92) [0.17]	8
Continue? - No	1 (1.92) [0.44]	4 (3.08) [0.28]	5
Marginal Column Totals	5	8	13 (Grand Total)

The Chi-square statistic is 1.17. The P value is 0.279401. This result is *not* significant at p < 0.10.[81]

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[81] These calculations were mad using the calculation program made available at http://www.socscistatistics.com/tests/chisquare/Default2.aspx. Accessed October 20, 2014.

APPENDIX H: PRECODED QUESTIONNAIRE RESPONSES AND SUMMARY STATISTICS CHART

QUESTIONNAIRE RESPONSES AND SUMMARY STATISTICS

STUDENT	AGE	1 Was it fun?	2 Like to continue?	3 Take another class?	4 String names?	5 Like meeting people?	6 Did you practice?	7 Play chords?	8 Too easy?	9 Too hard?	10 CA's helpful?
COALMONT SCHOOL											
Adam	9	YES	MAYBE	YES	YES	YES	NO	NO	NO	YES	YES
Betty	10	MAYBE	YES	MAYBE	MAYBE	YES	MAYBE	YES	NO	YES	MAYBE
Charlie	10	YES	YES	YES	YES	YES	MAYBE	MAYBE	NO	YES	YES
Derek	10	MAYBE	MAYBE	NO	MAYBE	MAYBE	MAYBE	MAYBE	NO	MAYBE	MAYBE
Elizabeth	10	YES	NO	MAYBE	YES	YES	YES	YES	NO	YES	YES
Freya	10	NO	NO	YES	YES	YES	MAYBE	NO	NO	YES	YES
George	11	YES	YES	YES	YES	YES	YES	MAYBE	NO	NO	YES
Harriet	12	YES	YES	MAYBE	YES	YES	MAYBE	MAYBE	NO	NO	YES
India	14	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES
TRACY CITY SCHOOL											
Mike	10	YES	YES	MAYBE	YES	YES	MAYBE	NO	NO	NO	YES
Lucy	10	YES	YES	YES	YES	YES	YES	MAYBE	NO	NO	YES
Katy	10	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES
Julian	7	YES	YES	YES	YES	YES	NO	NO	YES	NO	YES
TOTALS		Yes - 10 / No - 1 / Maybe - 2	Yes - 8 / No - 2 / Maybe - 3	Yes - 7 / No - 1 / Maybe - 5	Yes - 12 / No - 0 / Maybe - 1	Yes - 12 / No - 0 / Maybe - 1	Yes - 6 / No - 3 / Maybe - 4	Yes - 5 / No - 2 / Maybe - 6	Yes - 1 / No - 12 / Maybe - 0	Yes - 6 / No - 7 / Maybe - 0	Yes - 11 / No - 0 / Maybe - 2
PERCENT		Y - 77% / N - 8% / M - 15%	Y - 62% / N - 15% / M - 23%	Y - 54% / N - 8% / M - 38%	Y - 92% / N - 0% / M - 8%	Y - 92% / N - 0% / M - 8%	Y - 46% / N - 23% / M - 31%	Y - 38% / N - 15% / M - 46%	Y - 8% / N - 92% / M - 0%	Y - 46% / N - 54% / M - 0%	Y - 85% / N - 0% / M - 15%

APPENDIX I: CLASS TRANSCRIPTION 1

Lesson video date: 4/16/14

Participants: Lucas Finney (lead instructor), 3 teaching assistants, Coalmont Elementary students, Tracy City Elementary students.[82]

Classroom setup: Hybrid instruction with one assistant at each elementary school. Each classroom is using a projector, Pad, with chairs set up facing the projector screen. Lights are dimmed to view the projection screen with a small amount of natural light filling the room through the windows. WebEx is the web conferencing solution that is being used for conferencing and 2-way streaming of audio and video for all participants/classrooms. Coalmont has approximately 6 students attending. Two had to leave before the class was over. TCE has approximately 5 students attending. The afterschool LEAPS coordinator was absent for this lesson date at Tracy City.

Lesson Plan and objectives: New material "Smoke on the Water" by Deep Purple. The objective is to get students to say the fret numbers then play the melody on the low E string (6th string) with the first finger of the left hand.

Video Transcription Timeline

Min/sec

01:33 Class begins

02:08 Lead instructor asks assistants to maximize the screen-sharing window in the WebEx interface to show the PowerPoint presentation for the lesson plan, which included fret numbers for the melody to be learned. Cross check to see that all students see the slide on the projector screen.

03:02 Lead instructor demonstrates the melody on the high (E) string then on the low E string.

04:11 Lead instructor is addressing students at Coalmont Elementary. These students are raising their hands and smiling in acknowledgment of the popular melody "Smoke on the Water" melody.

04:50 Lead instructor counts off the melody for response from both classes. Student participants respond in time with the fret numbers [035036503530] in a "say then play" aural method.

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[82] Note that all student identifiers refer to appendix D.

06:55 After a quick demonstration of playing the first phrase of the melody [035], the lead instructor asks the assistants to take five minutes for "breakout groups" in order to help the students with this task using the first finger only.

07:22 At Coalmont, students are actively engaged with the assistant putting their first finger on the fretboard and executing the melody.

08:24 Assistant at Coalmont is describing the usefulness of the "dots" on the fretboard in finding the various frets for the given melody.

09:20 Difficult to see the students at Tracy City Elementary. The assistant is telling the students to "Press hard because this is a "big string" [low E]. One student states "I've got it."

09:42 Assistant at Coalmont asks students "Does anyone want to try to play it by themselves?" Student in the back of the class raises his hand and plays the melody as other kids in the classroom turn around to view him. He plays it successfully and the assistant states "Good."

09:52 Assistant at Coalmont takes a look at the next part.

10:30 Assistant at TCE is helping student b telling him to place the finger right behind the fret.

11:22 Students at Coalmont are asked to play together with direction of the lead instructor. Following this, the assistant at Tracy City is continuing to instruct kids that they have to press "harder" to properly fret the lowest string.

12:50 The assistant at Coalmont is describing the last phrase of the melody and one student is confirming by stating "I got it."

13:34 Tracy City Elementary assistant is helping a student who does get through the first phrase.

14:00 Lead instructor resumes the class to ask for volunteers that could play "solo" for the classes.

14:45-15:00 Student at Tracy City Elementary volunteers and plays the melody for the first two phrases successfully.

15:20 Students give the previous student who played a round of applause.

15:45 The lead instructor calls on volunteers from Coalmont. There is a lot of ambition with 3-4 students wanting to perform the melody.

16:05 Coalmont students as a group are instructed to "play loud so he [lead instructor] can hear you. Student plays the melody and successfully completes the entire melody with

applause following. Student 5C plays but is far away and a bit difficult to hear. There are several wishing to play but lead instructor switches back over to Tracy City Elementary to ask for volunteers. Video is locked up a bit but audio is fine.

17:55   The assistant has one more volunteer who wants to play. Student is difficult to hear at first due to the distance from the microphone. Student 3T performs closer to the iPad and successfully plays the entire phrase with the assistant's guidance.

19:54   Lead instructor turns attention to Coalmont with two more volunteers who wish to play. Student 4C plays the entire melody perfectly in time. Student 6C is next and has difficulty playing but gets through it with guidance from the lead instructor.

23:30   Reviewed chord progression for "I Got a feelin" [G - C - eminor - C]

24:45   Assistants are instructed to take a moment and show students how to play. Video quality is not so great but assistant at Tracy City Elementary can be heard helping students play the 3 chords.

27:42   Lead instructor asks if anyone would like to play at Tracy City Elementary. There seems to be no one ready to play it as they try to work on it. There is also a bit of broadband connectivity issue.

28:52   Lead instructor turns to Coalmont.

29:37   (Student unlabeled) at Tracy City Elementary asks "When will the next concert be?" Student 3T, exclaims, "I was gonna ask that!" The same student then asks, "Where is the next concert?" Lead instructor tells the students that the afterschool coordinator has the info in email. The slide show on screen also gives the date/time and place.

33:30   Lead instructor asks assistant at Tracy City Elementary to get contact info for any further questions (Lead instructor never received this information). Class ends.

Lead Instructor

The lead instructor is sitting facing the camera about three –four feet from the camera. The guitar is visible. The left hand is fully visible. Right hand is not as visible. Headphone cable is visible in front of the guitar soundboard. Eyes are not looking directly at the webcam. Instead looking down at the monitors that were visible for both classrooms during the web-conference.

The lead instructor tended to call on Coalmont more often due to audible and visible classroom participation. This class was on average a bit older than the class at Tracy City.

When demonstrating the how to play the first three notes of the melody before the first "breakout group" session the right hand is not visible only the left hand in the webcam monitor. Encouragement is given while the student is playing and afterward applause is given. After the

breakout sessions and volunteers for "Smoke on the Water" the tone of voice dropped with the lead instructor seemingly due to a bit of frustration with the audio/video beginning to fade out.

Assistants

The assistants at Tracy city were not as audibly noticeable or seemingly involved as the assistant at Coalmont.

Assistant at Tracy city is telling a student to play directly behind the fret for the best possible sound. The assistant's instruction focuses on getting getting the younger students at Tracy City to play by applying more pressure to the strings and place the finger directly behind the fret to stop buzzing. This assistant was up helping students and walking around the room at Tracy City while the assistant at Coalmont was sitting in front of the class demonstrating how to play. As the Coalmont assistant worked with the group students, they were given the chance to play in unison as a class before the lead instructor came back to ask for volunteers.

Video Quality

Video quality is Standard definition. Webcam/classroom setup was not proper resulting in the lead instructors inability to see all of the students faces at Coalmont. Consequentially, could not see all of the students' technique regarding left and right hand. The assistant was held responsible for this error.

The camera angle at Tracy City was impossible to see any students due to the camera pointing too high over the student's heads. At Tracy City the lead instructor had to depend on audio to give verbal feedback. The ability to play the songs properly from a visual perspective with proper left and right hand technique was completely dependent upon assistants in the classroom in this case.

Camera tends to go to Coalmont on auto setting for webcam more so than Tracy City due to closer proximity from mic to the students/assistants.
During the breakout groups audio and video is somewhat choppy as both classes have their microphones on for later analyzing.

During the breakout groups students see the handout on the projection screen with the fret numbers 035 0365 035 30. The web video is viewable underneath this screen-shared handout, which the kids received for this class in person as well.

After the breakout groups the assistants are asked to call on volunteers to play. Audio seems to drop due to noise cancellation with the web conferencing software but this was due to the microphone not being able to pick up the intricacies of the smaller guitars, as well as being placed too far from the microphone. As students moved closer the sound was audible.

Students (Coalmont)

Sitting with the guitar on right leg in a popular "dreadnought style." Not sitting with the guitar on the right leg in a traditional classical style. The curriculum did not call for such as no one had a nylon string classical guitar.

During the first breakout session one student 6C is talking to her friend student 4C, who is sitting behind her.

Near the end of the breakout session students are sitting with their left hands on the fretboard ready to play as the Coalmont assistant details the last phrase of the piece. The two other girl students in the front row are paying close attention to the assistant at Coalmont.

Another student 7C chimes in during the instruction to help another girl with the left hand fingers by telling her to leave a string open in the beginning of the melody. The two students 6C and 5C and are still intermittingly talking to each other.

There is only one assistant at Tracy City helping students uncertain where the second assistant is at this location.

Volunteers at Coalmont for "Smoke on the Water" were student 3C, student 4C, and student 7C.

Students (Tracy City)

During the breakout sessions, the students at Tracy City were more audible. The guitars seemed more out of tune. It is possible that the assistants did not get there in time to tune the guitars in unison.

Volunteers for "Smoke on the Water" at Tracy City were unlabeled student and Student 3T.

Volunteers for the chord progression "I Got a Feeling" yields no volunteer. Students unlabeled and 3T showed interest in future concerts by asking when/where the concerts. There seemed to be confusion as the afterschool LEAPS coordinator had received an email regarding this information. She was not present for this lesson date.

Pacing

Students were asked questions in a call response manner. When teaching "Smoke on the Water" first on the high e then on the low E string, they were asked to use only the first finger for beginners. When explaining everything the camera flashes to the class at Coalmont and they seem engaged in listening.

In asking the kids to respond in a call and response manner the fret numbers 035 0365 035 30 the camera switches to Coalmont with both classes repeating the numbers. One student in the front row of the class is looking off of the handout to repeat what the lead instructor has

just said. Another student sitting to the right (Student 3C) is reading off the same sheet. The student sitting to the left (Student 6C) is expressing a smile and saying the numbers without looking.

The assistant at Coalmont is saying the fret numbers along with students.

There was a pause of about 5-8 minutes to allow assistants to help in "breakout groups." After the first part the lead instructor reviewed "I got a feeling" with the three easy chords: C, eminor, G.

The momentum for the class slowed down drastically in reviewing this. Due to what seemed to be audio failure. There were no participants at either school. Asking everyone to review these chords and play them for each other concluded the class.

APPENDIX J: CLASS TRANSCRIPTION 2

Lesson video date: 4/23/14

Participants: Lucas Finney (lead instructor), 3 teaching assistants, Coalmont Elementary
students, Tracy City Elementary students.[83]

Classroom setup: Hybrid instruction with one assistant at each elementary school. Each
classroom is using a projector, iPad, with chairs set up facing the projector screen.
WebEx is the web conferencing solution that is being used for conferencing and two way
streaming of audio and video for all participants/classrooms. Coalmont has about 7
students attending.

Lesson Plan and objectives: Reviewing previous material rock songs "Smoke on the Water" –
Deep Purple. The objective is to building confidence by getting volunteers to play this
"riff" which in turn builds fretting capabilities and left hand dexterity/movement. Each
volunteer is performing for both classes in attendance. Also reviewing the 4 chords
looked at during the semester C, G7, G, and e minor. Working on new song "Iron man."

Video Transcription

01:32 Tracy City Elementary coordinator, "Student 3T has something she needs to show you."

01:50 Tracy City Elementary coordinator, "Oh (student) can play Twinkle Twinkle Little Star"
The student then plays the first section of "Twinkle Twinkle Little Star."

03:00 Lead instructor, "Okay is everyone in place now." The class begins.

03:58 Lead instructor, asked if anyone remembers the name of the tune looked at last week to
raise his or her hand.

04:00 Lead Instructor notes a student raising hand at Tracy City Elementary. Then calls
on the assistant to see if the student can answer the question.

04:14 The student responds with the correct answer: "Smoke on the Water."

04:30 Lead instructor performs "Smoke on the Water" for the participants and will ask
volunteers to perform it for the classroom.

05:07 Students hands are raised and 3T is picked from Tracy City Elementary to perform for the
class. The assistant is guiding student through the performance. The student makes a
small mistake but with a second try performs for the class successfully.

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[83] Note that all student identifiers refer to appendix D.

05:32   Student 3T is then asked by the lead instructor "How often do you practice?" The student responds, "About 30 minutes everyday."

06:24   Another student volunteers to play at Tracy City Elementary and is successful with just a minor mistake in the second phrase.

07:27   Lead instructor demonstrates to the class for review how to play the melody with the index finger only at first, then how to move from this to using more than one finger in order to play a melody.

08:06   Lead instructor asks the assistant at Tracy City Elementary if the previous student was using one finger or more than one. He stated that the student was only using the index finger.

08:22   The attention then moves to Coalmont for volunteers. Two students are willing to perform.

08:41   Student 3C volunteers to play and on the second try performs the piece with a small mistake at the end.

09:40   Student 5C begins to play and is begins on the wrong string. The assistant then corrects this student. Student continues by performing the piece successfully with some tuning problems.

10:41   Assistants are asked that the screen sharing content is viewable on the projection screen.

11:36   Lead instructor performs the new song for the day "Iron Man" still keeping with the movement of the fingers on the fretboard. "Powerchords" are introduced.

12:34   Students are asked to speak the fret numbers before playing in a "say then play" call/response fashion.

13:14   Students at Coalmont respond with the proper fret numbers under the direction of the assistant [033558787873355].

13:55   Students at Tracy City Elementary are asked to respond with the refrain of fret numbers. Under the leadership of the assistant the students properly respond.

15:03   Assistants are asked to engage in "breakout groups" for 10 minutes working with students two at a time on the first phrase of "Iron man" [03355]. Students are engaged in listening to the assistants and trying to perform the first phrase of the song. Assistants are actively engaged in helping students with finger placement. Students are able to see the tab numbers from the lesson plan on the projection screen in front of them. One assistant at Tracy City Elementary is telling the students to play slower and try to play along with him if they have it. Assistant at Tracy City Elementary is less engaged and a student asked "Is this one much harder than Twinkle Twinkle Little Star?"

19:30   Assistant at Coalmont is telling student to use one finger per fret.

23:08   Students at Coalmont are asked to play and a bit nervous. Told to make mistakes and asked by the lead instructor, "Why do we want to make mistakes?" Answer: So we can learn. One student tries to play it and is successful.

24:53   Lead instructor asks "Can anyone raise their hand and tell me which string this is being played on?

25:15   Student 3T at Tracy City Elementary answers incorrectly, "Low E." She mistakenly thought the numbers were to be played on this string. Student is corrected by the lead instructor to play on the "next string down" and asked what this string name is. Student correctly responds "A."

26:33   Tracy City Elementary is asked by the lead instructor for volunteers to play the first phrase [03 3 55]. The assistant states, "Who thinks they can play it? (Student unlabeled) do you want to try first?" then states "I think we have few that can at least play part of it." Student then plays. There are two more volunteers that follow this student's example.

27:40   Student 3T performs the first phrase of the melody [0 3 3 55]. There is some interference with another guitar in the meeting but this student can be heard playing the melody properly.

28:30   A third (Student L, Appendix A1) is asked to perform the piece. He is interrupted a bit by another student practicing "Smoke on the Water" at the Coalmont class. The lead instructor then asks Coalmont to listen to the other students perform and I will be with them in a moment.

29:15   Student 4T is asked again to perform the first phrase of "Iron Man" and does so successfully.

30:26   Students are asked by the lead instructor to raise their hand if they have any questions. Students are told to practice for the final videotaped test.

31:20   Students at Tracy City Elementary are asking about concerts at University of the South. No questions at Coalmont.

32:38   Class/meeting ends. Students are viewable at both schools.

Tracy City

The webcam at Tracy City is set up to where students can be seen from behind giving the lead instructor full view of the projector and the class. Visibility of their guitars is not happening due to webcam placement behind the students. The teaching assistant here is sitting to the left of the projector students are in a small half circle around the projector. 3T volunteers to play "Twinkle Twinkle Little Star." As she is doing this class is still getting set up and she plays it

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for the class and assistants. The lead instructor is in conversation as class is starting and does not hear this. Student 3T answers the name of the tune learned last week "Smoke on the Water."

Coalmont

Students are set up in rows making visibility of the students in the 2nd and 3rd rows difficult for the lead instructor. The Coalmont assistant is set up to the left of the projector in front of the class and is helping kids with "Smoke on the Water" during set up time.

Lead instructor

Is sitting about three to four feet from the webcam. The guitar fretboard is visible but the full instrument is not in the beginning. Begins class by checking audio and video connections. Instructor calls on students to answer questions reviewing material from the last lesson. The instructor plays the song then calls upon others to play it. When demonstrating the tune. Right hand is not visible. The left hand is partially visible but becomes fully visible as the lead instructor leans backward to get the hand in view of the webcam. When asking others to play afterward, Student 3T volunteers and after a second try, successfully plays the melody. The Tracy City teaching assistant is helping and encouraging 3T through this volunteer performance. The lead instructor asks if there are any other volunteers at Tracy City Elementary. The teaching assistant there responds with a student wanting to play. Student looks off of the handout piece of paper to read the piece. During this the lead instructor does not have his guitar in hand but is leaned forward and engaged in listening only. When playing this the students do not have the tab on the projection screen, instead the lead instructor is in full view listening. There is an applause after the (student unlabeled) plays the piece.

The lead instructor then adjusts demonstration to make sure the fretboard is fully visible through the webcam. The lead instructor demonstrates how to play with only the first finger and how to play with more than one finger using the left hand first, third and fourth fingers. Dependence on the Tracy City Elementary assistant to answer how a student played was necessary and there was a response with the fact students were playing with the first finger only.

When the lead instructor shifts to Coalmont, audio is clearer due to closer mic proximity of classroom participants. In asking the assistant for volunteers, student 3C goes first. She is fully visible by the webcam and is playing with the entire class shifting attention to her. Technique she is using the index finger (right hand) and the thumb (p) only.

A second student is called on and asked to move closer to the camera for visibility by the lead instructor. The Coalmont assistant helps this student in getting through the piece by getting up and helping him. He is a bit out of tune but plays with the same technique as 3C.

After reviewing material, the assistants are asked to switch the projector content to the new song the lead instructor is going to teach them for the day "Iron man," then a moment is taken to let the assistants get this in order.

A glance at the projector as seen through Tracy City Elementary's webcam, shows the handout on the projector with small webcam feeds of the lead instructor, and each classroom webcam at the bottom of the projected content.

The lead instructor performs the song with the left hand in full vision. His technique makes use of all the fingers. The class is then asked if they have ever heard the familiar melody. One student at Tracy City Elementary is raising his hand the lead instructor acknowledges it but tells him he will get to said student in a minute.

Coalmont is asked to repeat the fret numbers for the melody [033558787873355]. After a counting the class in, students are led by the assistant to respond by aurally saying these fret numbers. Students are seen viewing the projector content as opposed to the handouts that were issued with the instructors (same content).

A "breakout group" is called and assistants are up and helping students in the classroom out. Kids in view at Coalmont are all actively engaged in trying to play the piece. There are a few at Tracy city who are engaged and a few who are just sitting there as the assistant helps others. The assistant gets to these students as well and gets the students who are trying to play the melody to slow it down. The assistant then moves to the second phrase and tells the students to use 2 fingers. The younger students are asking the assistant, "Is this one much harder than Twinkle Twinkle Little Star?"

There are more students at Tracy City Elementary than there are at Coalmont Elementary with regard to attendance the Tracy City Elementary assistant is handling. Volunteers are called on at Coalmont. One of the older students plays a bit of the new song and is encouraged and appraised by clapping.

As three student volunteers play at Tracy City Elementary, there seems to be some interference from someone else playing. Only one class/student was asked to play. Students at Coalmont are possibly bleeding through the microphone. Students can at least play the first 4 notes. These were: student 4T, unlabeled student, and student 3T. Students are told to speak up so they could be heard. Questions about the concert were asked.

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