Summer 7-30-2021

Student Engagement in Higher Music Education with Online Learning Components: A Mixed Methods Case Study

Xinwei Liu
University of Nebraska-Lincoln, xinwei.liu@huskers.unl.edu

STUDENT ENGAGEMENT IN HIGHER MUSIC EDUCATION WITH ONLINE LEARNING COMPONENTS: A MIXED METHODS CASE STUDY

by

Xinwei Liu

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Philosophy

Major: Music

(Music Education)

Under the Supervision of Professor Rhonda Fuelberth

Lincoln, Nebraska

July, 2021

STUDENT ENGAGEMENT IN HIGHER MUSIC EDUCATION WITH ONLINE LEARNING COMPONENTS: A MIXED METHODS CASE STUDY

Xinwei Liu, Ph.D.

University of Nebraska, 2021

Advisor: Rhonda J. Fuelberth

Higher education underwent an unprecedented transformation from conventional face-to-face education to remote learning due to the COVID-19 pandemic. In the 2020-2021 academic year, most universities throughout the U.S. had moved educational programs online, so professors and instructors, with and without previous remote learning experience, were suddenly expected to shift to synchronous or asynchronous classroom settings. Facilitated through Learning Management Systems (LMS), many teaching and learning practices took place in web-based environments. Some schools allowed a combination of in-person or hybrid classes by complying with evolving COVID-19 protocols (e.g., use of hand sanitizer, social distancing, facial coverings). These novel implementations raised benefits and challenges for higher education. Previous research studies assert that students tend to become isolated due to fewer interactions within a highly remote learning context. However, few studies have shown how students engage in hybrid educational delivery, and little was known about student engagement in music education courses integrated with online learning components.

The current study investigated student engagement in college music education courses under a mass educational transition induced by the pandemic. This study utilized a mixed methods case study approach, in which a quantitative survey and qualitive interviews concurrently investigated students' three types of interactions, engaging with instructors, classmates, and learning content. There was no statistically significant difference in student engagement between grade levels. Qualitative analysis provided a more comprehensive and detailed understanding of student experiences as they engaged with online learning elements. The data integration procedure produced three individual cases representing different levels of student engagement (poorly-engaged, moderately-engaged, and highly-engaged cases). The highly-engaged case showed rapid adaptability in committing to innovative learning models, whereas the moderately-engaged case presented a slower adaptation, and the poorly-engaged case displayed the most reluctance in adjusting learning strategies. Recommendations and implications of how online learning components can be better incorporated in music education courses are also discussed.

Acknowledgement

First and foremost, I would like to thank my parents, Tao and Yanhua Liu. They are the two best role models and educators. Your selfless love has been my most excellent fortune throughout my lifetime. Thank you!

Dr. Rhonda Fuelberth, I am so grateful and lucky to have landed here and have you be my advisor. Your unlimited guidance and considerable wisdom have taught me to be a better educator. Your optimism and encouragement have inspired me to be a stronger person too. I honestly could not have done all those challenging works without you!

Dr. Glenn Nierman, your wonderful personality and outstanding scholarship have directed me a well-rounded growth. Your kindness, thoughtfulness, and diligence are perfect examples of becoming an educator in the future.

Dr. Robert Woody, you are such a knowledgeable and efficient, and intelligent professor who has impressed me very much. I am thankful for the great classes and seminars that you presented and led in these years.

Dr. Danni Gilbert and Dr. Brenda Wristen, I am honored to have opportunities to work with you. Your excellent organization, responsiveness, and professionalism have influenced me to be a better educator like you.

I want to express my thankfulness to Aaron Shuck, Jessica Schreiner, Jennifer Wassemiller, Mary-Beth Hilbert, Brittany Rom, Marci DeAmbrose, and Brianna Smith, for being my best friends and academic support through this very difficult and meaningful process. I owe my gratitude for your generosity in helping me, a girl living in a foreign country, overcome any problems during these years.

Dr. Mark Clinton, you are such a perfect piano professor. You not only teach me piano performing skills, but you also show me what a distinguished musician looks like. I will keep practicing and exploring piano music under your halo.

Professor Tom Larson has taught me jazz piano skills and encouraged me to gain more jazz vocabulary in the past one and a half years. I will forever remember your warm encouragement and willingness to provide extra help.

Dr. Babchuk, thank you for your hard-working and careful guidance in those qualitative courses and my dissertation. I have seen your advanced level of scholarship in qualitative and mixed methods research studies.

Runkun Li, thank you for being my boyfriend and accompanying me through this challenged but invaluable experience. I cannot imagine how it would be in my life if I did not have your support and love. I appreciate your generosity and tolerance to help me be a better woman. I also appreciate your parents' care and encouragement for me very much.

Lihua Wang, Ming Liu, Ruixiang Liu, Qingyu Liu, my most vital family members, provide unconditional love even across the Pacific Ocean! Lihua Wang, thank you for leading me to the U.S.A. for my first travel. Your selfless love and charming personality have moved me deeply.

Weihuimei Ji and Zhenyu Dubian, thank you for being my piano students for over seven years. You two kept taking lessons by those hundreds of facetime video-conferencing when we were separated. We witness each other's a variety of growths along these years.

I also appreciate the countless UNL students who showed me a positive recognition of my teaching, as well as those participants who volunteered to support this research study.

Dedication

This dissertation is dedicated to my grandfather, Ruixiang Liu, a wonderful man raising and educating me for over 30 years.

Table of Contents

List of Tables

List of Figures

CHAPTER 1: INTRODUCTION

Statement of the Problem

Rapidly accelerating digital technologies have transformed higher education. Technology integration has led to a proliferation of online educational offerings, and a large number of online teaching practices have been carried out in many disciplines and majors. The coronavirus pandemic placed online learning to the foreground as higher education students, faculty, administrators, and other stakeholders attempted a transition to remote learning on a global scale. Though significant achievements have been made in the field of online learning, researchers have sought to understand emerging advantages and disadvantages.

Flexibility and convenience are key attributes that draw students to participate in online learning (Aslanian & Clinefelter, 2013). Students appreciate the advantage of flexible class times, the convenience of taking courses without having to commute to campus, and the ability to balance competing demands of part-time jobs or family commitments (Mucundanyi, 2019), but they felt disenfranchised by the virtual campus that offered limited interactions with peers and instructors (Cochran et al., 2014; Moore et al., 2016; Bawa, 2016; Bowen, 2019). The insufficiency of interactions between students and between individual students and instructors is a crucial component that may lead to an unsatisfactory experience with online learning. Students' feelings of isolation may lead to their negative perceptions of online courses (Koutsoupidou, 2014). Students may also encounter issues regarding effective communication with instructors with regard to their academic work and their personal growth (Keengwe & Kidd, 2010).

As student engagement continues to be a focus with the field of higher education, it is important to address college level music education courses within the e-learning environment (Baker & Pittaway, 2012). Student engagement is considered a prerequisite for effective learning and understanding how students engage with music education courses containing online learning components will enable educators to better facilitate student learning.

A multi-method study by Baker (2012) applied a constructivist ontology in an investigation of online learning in undergraduate music education classes. Analysis of pre-service teacher interviews revealed the importance of both student to student and student to instructor interactions, particularly interactions taking place during online discussions. While participants valued online interactions, they also recognized that they were considerably different from interactions that occur in face-to-face environments (Baker, 2012). Therefore, it is imperative to study how students interact with their instructors, their peers, and the learning content. Examining these three aspects of student engagement within the context of online learning environments may yield insights not only for remote courses, but for face-to-face courses as well.

Definition of Terms

Online Learning Components: Throughout the literature, there are diverse names describing educational models that are partly or fully realized by Internet-based technology, but a unified nomenclature has not yet been established. For the purpose of this study, a music education course wherein any proportion of remote learning occurs

via Internet-based models (synchronous, asynchronous, learning management systems, etc.) is described as a music education course with online learning components.

Pre-service music education courses: Pre-service music education courses refers to courses in college level music education programs that lead to music teacher certification.

Student Engagement: Student engagement is a state of being that is defined through three types of interactions happened within students' educational practices in college level learning (Bawa, 2016; Hager & Erin 2020; Mucundanyi, 2019).

Three Types of Interactions: Three types of interactions necessary for student engagement to occur are student-instructor interaction, student-content interaction, and student-student interaction (Moore, 1993; Sun et al., 2008; Arum & Roksa, 2011; Young & Bruce, 2011; Lock and Johnson, 2015; Muncundanyi, 2019).

COVID-19: According to Centers for Disease Control and Prevention (CDC), "Coronavirus disease 2019 (COVID-19) is caused by a new coronavirus first identified in Wuhan, China, in December 2019. Because it is a new virus, scientists are learning more each day. Although most people who have COVID-19 have mild symptoms, COVID-19 can also cause severe illness and even death. Some groups, including older adults and people who have certain underlying medical conditions, are at increased risk of severe illness."

Research Gap

Bowman explored the phenomenon and issues regarding online education in her book, *Online learning in music, foundations, frameworks, and practices*. In reviewing

Bowman's book, Gary (2014) stated that "While there is a substantial amount of research for online learning in general, there is a need for additional research of online learning in music" (p. 226), thus more research is needed to gain a better understanding of online music learning. Furthermore, a review of existing literature regarding student engagement, music education courses supported by online learning components, and pandemic-induced remote education, there are several compelling reasons to explore student engagement in collegiate level music education courses that incorporate online learning components.

First, previous researchers have explored graduate level music education programs delivered online but few have focused on courses offered at the undergraduate level. Researchers have studied multiple topics and located issues that occurred in graduate music education programs integrated with online learning components. Barry (2003) studied 12 students who enrolled in a Web-based graduate music education research course and found lack of communication between student and professor as the major issue. Groulx and Hernly (2010) recognized the "growing pains"—weaker interpersonal interactions and fewer curricular options—of online music education master's degree programs.

Second, much attention has been given to music teachers' professional development programs conducted via online technologies. Specifically, Greher (2007) studied music teacher licensure test preparation conducted via an online distance learning approach. Walls (2008) studied in-service music teachers/graduate students to learn about their changes of philosophy and teaching practice during an online graduate music

education program. Kos and Goodrich (2012) explored music teachers' perceptions of professional development accomplished through an online master's degree program. They found that music teachers' teaching philosophies and practices changed in multiple ways, such as increased confidence of curriculum re-design, the increased focus on how students learn, and so forth.

Graduate and undergraduate programs had never experienced a large global disruption of face-to-face learning that required an immediate transition to online learning approaches like the disruption that occurred in 2020. As implied in Johnson and Merrick's article (2020), post-COVID-19 scenarios will require further use of online tools for music education so future research is needed for "both student-based and instructor-based technology adoption in online music education" (p. 263).

Methodological Approach

Aiming towards an in-depth understanding of student engagement (i.e., highly-adaptable engagement, moderately-adaptable engagement, poorly-adaptable engagement) with college music education courses supported with online learning components, the current research study employed a mixed methods case study approach. To provide a comprehensive understanding of how college students engage in music education courses incorporating online learning, quantitative and qualitative data were collected and analyzed. In this study, a convergent parallel mixed methods case study design was used to generate cases by integrating both quantitative and qualitative data. The unit of analysis for the current study was individual students' engagement status in an online-based learning model.

For this approach, quantitative data was used to measure three types of interactions (student-instructor interaction, student-student interaction, and student-content interaction). At the same time in the study, interviews were carried out to collect the qualitative data to gain an in-depth understanding of students' perspectives of their three types of interactions in music education courses with online learning components. After analyzing the merged quantitative and qualitative data, the researcher created the criteria for identifying and distinguishing a case among possible cases (Creswell & Plano Clark, 2018). Graphic joint display was used to present and interpret the merged results for individual case.

Purpose of the Study

The purpose of this mixed methods study was to investigate student engagement in music education courses with online learning components. A concurrent QUAN + QUAL mixed methods case study was used in which qualitative and quantitative data were collected and analyzed concurrently to generate cases. These cases represent how college music education students engage with instructors, peers, and learning content under a pandemic situation within courses supported by online learning components. Quantitative data consisted of survey responses from sophomore, junior, and senior music education majors at a Midwest university music school. In addition, qualitative data were gathered examining students' perspectives of online learning experiences from a subset of participants. To develop an in-depth understanding of student engagement of music education courses with online learning components, both forms of data were compared and integrated to generate cases.

Research Questions

This study addressed three types of research questions: research questions in the quantitative strand; research questions in the qualitative strand; and a mixed methods research question.

(1) Quantitative central question 1: What are the correlated factors of student engagement in music education courses with online learning components?

Sub-question: What are the dominant items within the factors of student engagement in music education courses with online learning components?

Quantitative central question 2: Is there a significant difference in overall student engagement among three grade levels of music education students?

Sub-question 1: Is there a significant difference in student-instructor interaction among three grade levels of music education students?

Sub-question 2: Is there a significant difference in student-student interaction among three grade levels of music education students?

Sub-question 3: Is there a significant difference in student-content interaction among three grade levels of music education students?

(2) Qualitative central question: What are the participants' perspectives of student engagement in music education courses with online learning components?

Sub-question: What characteristics (themes) of student engagement will emerge from participants' experience of music education courses with online learning components?

(3) Mixed methods research central question: To what extent do the quantitative and qualitative results converge or diverge?

Sub-question: What three cases illustrating student engagement in music education courses with online learning components will be compared?

Theoretical Framework

As this research employed mixed methods case study approach, pragmatism along with social constructivism were used as the paradigmatic framework to conduct the study.

Social Constructivism Theory

Those who view learning through a social constructivist lens, a leading paradigm in education today, propose that the creation of knowledge is formed when people interact with one another (Hausfather, 1996). Extending constructivism, social constructivism theorists emphasize the role of community and culture in one's development. "Social constructivist perspectives focus on the interdependence of social and individual processes in the co-construction of knowledge" (Palincsar, 1998, p. 345). Related research and literature regarding social constructivism verified that interpersonal interactions promote cognition and learning.

Pragmatism Theory

Pragmatism is historically associated with mixed methods research as an overarching philosophy (Tashakkori & Teddlie, 2003). The worldview of pragmatism focuses on consequences of research, on the problems being asked, and on the use of multiple methods of data collection (Creswell & Plano Clark, 2018). Since case study researchers commonly collect multiple types of data related to an interest case in order to

answer research questions, sometimes it uses both quantitative and qualitative data. The belief that allows people to solve problems successfully, pragmatism values what is "practical," "useful," and "what works" (Magee, 1987). In practice, a study using multiple methods embraces pragmatism as worldview because it allows the paradigm choice to be determined by the research problem (Creswell & Poth, 2018; Luck, Jackson, & Usher, 2006; Yin, 2014).

Dialectical Pluralism

In this research, social constructivism and pragmatism were used as paradigmatic framework. Johnson (2012) stated that, "dialectical pluralism takes a pluralist stance ontologically and relies on a dialectical approach to learning from difference" (p. 752). As to paradigm, dialectical pluralism is a metaparadigm framework that embraces multiple paradigms, theories, disciplines, and perspectives. Consequently, dialectical pluralism is appropriately combined with mixed methods research because it aims to gain complementary results because it provides a meta-ontological perspective. Mixed methods research experts, Creswell and Plano Clark (2018) also encourage the use of multiple worldviews or paradigms, rather than one solitary paradigm associated with quantitative research or other paradigms with qualitative research.

Basic Assumptions

1. This study assumes that participants will provide truthful and honest responses.
2. This study assumes that participants will remain enrolled in the music education program and plan to continue their development as professionals in the music education field.

3. This study assumes that participants are equipped with a certain extent of technological abilities in order to be competent in accomplishing most takes within their music education coursework.

Delimitations

Although the issue of student engagement in online education has been explored broadly, little focus has drawn on the subject of music education. This study only considers sophomore through senior students at college level because students begin taking professional music education courses in their second year of college based on their completion of requisite courses and their own decision to enter the teacher training program. At this point, students who are enrolled in music education begin to take a series of courses that lead to certification so that they may grow as professionals in this area. Sophomore through senior students provide valuable insights into student engagement as they gain knowledge and skills in music education courses with online learning components largely involved.

Methodology

Description of Participants and Population

The participants in this study were college students who are enrolled in a four-year music education program at a higher educational institution in the Midwest region of the United States of America. These students have experienced at least one course with integrated online learning components making them eligible to participate in this study. Under the coronavirus pandemic, a large number of universities and music schools accredited by NASM providing the program of study in music education shifted the

traditional education system to remote learning (Johnson, 2021). In result, those enrolled students throughout the U.S. have experienced different types of online-based courses deliveries in the past academic year.

Researcher Positioning

The researcher's strength was the identity of being a music educator and a musician with long-term music learning and teaching experience, in both traditional classroom and online formats. Additionally, the researcher was equipped with appropriate technological background to include experience with statistical applications, such as Excel and SPSS, ensuring integrity in the data analysis process. The researcher also has great enthusiasm for exploring undergraduate music education courses with online learning components, and it may be a main area of emphasis for the researcher would in the future.

College level music education courses that incorporate online learning components provide a variety of learning tools that help students improve knowledge and skills both in face-to-face teaching formats and online models, such as 1) synchronous class meeting via the conferencing media, 2) asynchronous instructional videos enabling students to access course content from anywhere and at any time, as well as discussion platforms allowing students and instructor to interact asynchronously, and 3) online management of course documents, assignments submissions, and student feedback. Part of students are provided with opportunities to practice music teaching skills with their peers in on-campus classes. In addition, students develop their music teaching experience by participating in the practicum taken place in elementary or secondary schools.

Materials and Equipment

Self-Report Survey Rationale. Self-study was examined as the provision of "strong personal reference in that it involves study of the self and study by the self" (Samaras & Freese, 2006, p. 12) for practitioners. Blake (2018) echoed the legitimization of using students' perceptions of online learning, more specifically, in the music education profession. He stated that student perception may help understand which parts of online learning experience that students value and which they do not. It allows the investigators to better understand students' minds about the intricacies of online learning (Blake, 2018). Several researchers have utilized self-report style surveys to investigate students' perceptions of online learning experiences (Pintrich et al., 1993; Keuthen et al., 2000; Freeman, 2004; Bell & Naugle, 2007).

Online Student Engagement Instrument. In order to better understand student engagement within the context of online learning through self-report, instruments must be designed to capture relevant perceptions as students engage with online courses. It is undoubted that it is challenging to design an instrument of examining student engagement within the online learning environment (Brindley et al., 2009). This present study employed the Young and Bruce's (2011) instrument, an Online Community and Engagement Scale that include three types of student interactions (Appendix C). The survey was adapted from a scale used to assess community and engagement in face-to-face instruction and in online classrooms (Handelsman et al., 2005; Liu et al., 2007; Pate et al., 2009). In addition, this tool emphasizes the promotion of social existence to self-growth through the theoretical lens of social constructivism.

It is a Likert style survey, consisting of three factors: student-instructor interactions; student-student interactions; and student-content interactions. Each factor includes a different number of variables, and 22 variables (e.g., contact with instructor, committed to working with classmates, complete all assigned work, etc.). These are presented in a random order instead rather than being clustered by factor. Each item contains one variable presented in descriptive terms (e.g., I enjoyed interacting in my class; I am well organized in my learning, etc.). Thus, participants were asked to indicate the extent of their agreement to each item, (i.e., Strongly agree; Agree; Neutral; Disagree; Strongly Disagree). In this current study, this instrument was involved in the pilot study prior to actual study.

Qualitative Interview Questions Protocols. As suggested by Castro et al. (2010), qualitative interview questions can be designed as similar or parallel as quantitative instrument of the survey with a series of scales. Similarly, Creswell and Plano Clark (2018) found that, to better merge the two databases, parallel questions in both quantitative and qualitative data collection should be asked. In present study, the researcher constructed the interview questions, as shown in Appendix D, based on the Young and Bruce's Online Student Engagement Survey instrument. For example, one of the survey questions asked participants to indicate their extent of agreement, articulated as "I complete all of the assigned class work," and the parallel interview question was "How do you see yourself completing assignments?" For another example, one survey question asked, "I am well organized in my learning," and the parallel interview question asks, "What specific strategies do you use to organize yourself in your online courses?"

In summary, quantitative questions ask “what” and qualitative questions ask “how” and “why.”

Procedures

Prior to conducting the survey, Institutional Review Board (IRB) approval was granted. The researcher acquired each instructor’s permission of implementing the study, since every participant has taken music education course(s) with various faculty members in this semester. The researcher asked participants to complete survey in Qualtrics and indicate their interest of participating in the interview by filling in their email addresses. The participation took place either during a scheduled class on campus or an online Zoom meeting. The present research recruited all available sophomore through senior participants (N = 70) who have taken at least one music education course that incorporated online learning components in the 2021 spring semester at a Midwest university music school.

Stratified sampling for 20% of sophomore through senior students who had completed survey was used to select participants in qualitative phase. Students (n = 14) were randomly selected to the one-on-one interviews and answered qualitative questions. These participants were contacted with the researcher to establish interviews at students’ convenient time. The individual interviews were conducted via Zoom meeting. All interview data were stored securely and then transcribed, coded and analyzed. The emerging themes generated through analyzing qualitative data were merged to the existing 22 quantitative variables. The criteria for identifying cases was determined. Distinctive cases of student engagement were described and interpreted.

The IRB approval letter for this project is attached in Appendix A. Consent forms, survey instrument, instrument permission of use, and interview questions can be found in Appendix B-E.

Design of the Study

This research study utilized a convergent mixed methods case study design. Quantitative data were collected to gain a general picture of the research problem. Concurrently, qualitative data were gathered and analyzed. Data from the two strands were integrated to develop an enhanced description of cases (Creswell & Plano Clark, 2018).

Quantitative Data Analysis

(1) Quantitative central question 1: What are the correlated factors of student engagement in music education courses with online learning components?

Sub-question: What are the dominant items within the factors of student engagement in music education courses with online learning components?

These questions were tested with an Exploratory Factor Analysis.

(2) Quantitative central question 2: Is there a significant difference in overall student engagement among three grade levels of music education students?

Sub-question 1: Is there a significant difference in student-instructor interaction among three grade levels of music education students?

Sub-question 2: Is there a significant difference in student-student interaction among three grade levels of music education students?

Sub-question 3: Is there a significant difference in student-content interaction among three grade levels of music education students?

These questions were tested with a 3x3, between-subjects analysis of variance (ANOVA) and follow-up ANOVA tests.

Qualitative Data Analysis

(1) Qualitative central question: What are the participants' perspectives of student engagement in music education courses with online learning components?

Sub-question: What characteristics (themes) of student engagement will emerge from participants' experience of music education courses with online learning components?

(2) Mixed methods research central question: To what extent do the quantitative and qualitative results converge or diverge?

Sub-question: What three cases for student engagement in music education courses with online learning components will be compared?

These questions were answered through data integration procedures.

Significance of the Study

A direct benefit of the current investigation is to promote a more comprehensive understanding of student engagement in higher music education programs that incorporate online learning components. The results of this mixed methods study will provide education stakeholders, policy makers, and higher music education institution administrators with data regarding best practices regarding online course design, instructors' commitment to communicating with students, and the provision of an online

learning community among learners to improve students' engagement and learning results. It is also beneficial for future higher music educators to understand how online learning components can be better incorporated to develop pre-service music teachers' abilities.

A thorough examination of the three types of interactions that occur in online learning environments, future researchers and educators will gain insights into undergraduate music education students' online learning needs and characteristics. The cases, determined by different levels of online engagement, generated in this study can fill a gap in the field of music education research. While previous studies have examined the three types of student engagement explored in this study, there is no existing literature that seeks to apply this to courses within an undergraduate music education program. It is also beneficial for faculty who teach courses with online components to understand the reasons students show a lack of engagement in order to improve student interaction and engagement. Particular insights may be gained by examining the individual case that emerged from this study to represent different levels of student engagement when adapting to the transitional learning formats. In addition, to improve learning outcomes for music education students, the results and implications of this study are expected to garner more research interest on the topic of the student engagement when online learning models are involved.

CHAPTER 2: REVIEW OF LITERATURE

In this chapter, the researcher overviewed the rapid development of higher education integrating information technology in the past decades. Fully distance education and hybrid course delivery have gradually increased as essential components in the complete picture of higher education. Multiple descriptors of technology-based learning models were reviewed through literature. Where there is education involved, the issue of student engagement is needed to discuss, not exceptional for online learning. Three types of interactions are commonly used to measure student engagement, including student-instructor interaction, student-student interaction, and student-content interaction.

Several issues that emerged in online education were outlined: social and technological problems causing lower effectiveness in the virtual learning environment. Diverse music related disciplines and courses have incorporated Web-based tools to enhance learning throughout the U.S. The music education courses have pioneered the path. Inevitably, issues and problems have occurred within this field when integrating online learning components, such as lack of collaborative process in the music-making experience. Finally, the researcher provided implications from the literature for further guiding the adoption of online learning components in music education courses.

Overall Online Education in Higher Education

From 2002 to the present, enrollment in online educational programs grew rapidly. Among all types of education modes, hybrid course delivery offerings increased substantially. Between 2012 and 2018, the total enrollment of distance education increased from 5.4 million to 6.9 million (National Center for Education Statistics, 2018).

From the fall semester of 2012 through the same time in 2018, student enrollment in hybrid modes of classes increased from 2.8 million to 3.7 million. Within this period, the number of students enrolled in only distance education mildly mounted from 2.6 million to 3.3 million. Enrollments of distance education in college are presented in Figure 1.

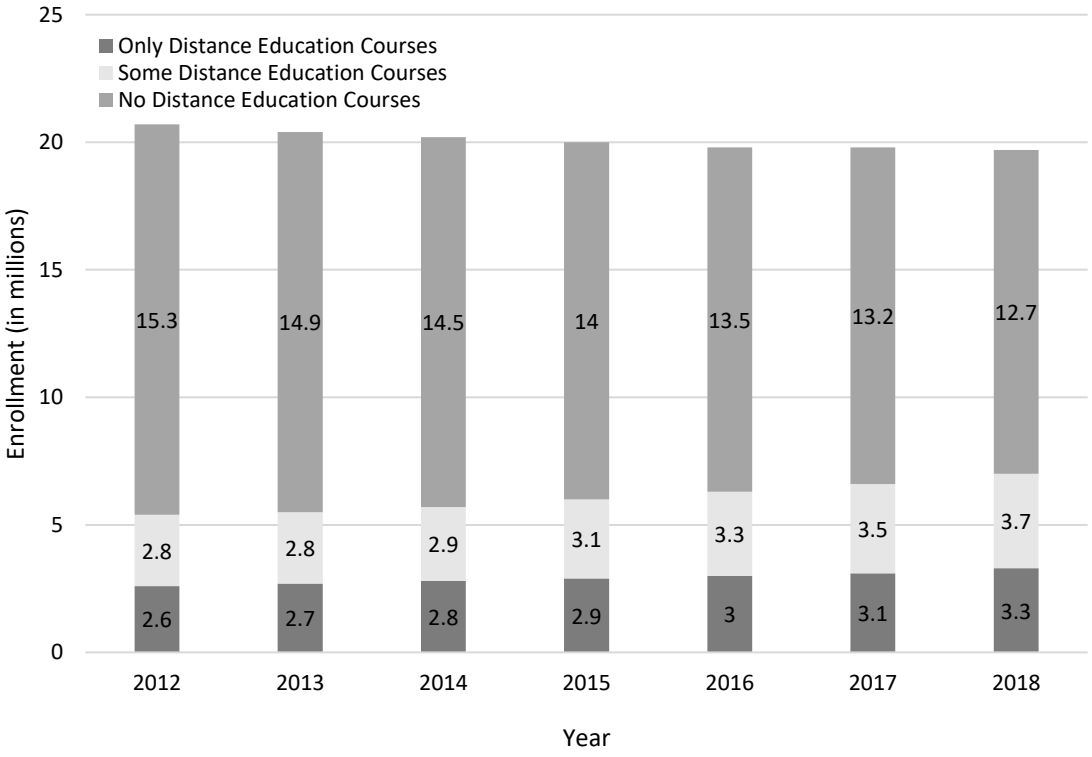

Figure 1

Total College Student Enrollment/Distance Education Participation: Fall 2012 through Fall 2018

Note. From "Distance Education in College: What do we know from IPEDS?" by R. Ruiz and J. Sun, 2021, National Center for Education Statistics Blog.

A growing number of academic leaders report that online learning is critical to their institution's long-term strategy (Seaman et al., 2016). Higher educational institutions have largely embraced online tools to promote the effectiveness of teaching and learning practice. Colleges and universities have updated their information technology infrastructures to generate more paths and platforms for students to learn (e.g., Learning Management Systems). The digital devices allow faculty and students to be productive and collaborate with more flexibility. These developments in technology have led to an inevitable movement toward online learning environments. Because of significant advances in communication, learners and educational institutions have access to information in unlimited ways and students are no longer restricted to specific class time or locations.

In this session, various descriptors related to the technology-based educational model are outlined. Hybrid instruction delivery is discussed in detail. Formats of synchronous learning, asynchronous learning, and the use of the Learning Management System are illustrated individually.

Throughout the literature, there are numerous terms that are used to describe educational models that are partly or fully realized by Internet-based technology, such as distance learning (Kentnor, 2015), distance education, Web-based Learning and Instruction (Barry, 2003), e-learning, virtual classroom education, remote instruction, remote learning, online learning (Albert, 2007; Groulx & Hernly, 2010), online distance learning (ODL, Koutsoupidou, 2014), and so forth., but a unified name has not yet been formed.

Technologies used for distance education may include the following: “Internet; one-way and two-way transmissions through open broadcasts, closed circuit cable, microwave, broadband, broadband lines, fiber optics, satellite or wireless communication devices audio conferencing; and video cassette” (Seaman et al., 2018, p. 5). Kentnor (2015) defined distance education as “a method of teaching where the student and teacher are physically separated” (p. 22).

The New Media Consortium (NMC) and EDUCAUSE Learning Initiative (ELI) jointly conducted the horizon report project of 2017 higher education, offering a comprehensive summary of data, trends, challenges, and developments (Adams Becker et al., 2017). Since 2002, the project identified and described technology adoption as an important development in higher education. Technology adopted in educational institutions allows instructors to implement many new pedagogical practices that they could not use before. For example, instructors can track students’ learning progress according to performance, engagement, and behavior data captured and analyzed by platforms (Adams Becker et al., 2017). The individual student’s learning information is recorded and analyzed with the aid of technology to provide instructors with a holistic picture of one’s learning experience. This may foster more personalized tutoring for each student accordingly.

Hybrid Instruction. The term hybrid instruction is used when 30% to 80% of the course content is delivered online (Seaman et al., 2016). Characterized by a reduced number of face-to-face meetings, hybrid instruction usually offers a substantial proportion of the content delivered online. Web-facilitated instruction, in contrast, is

where web-based technology is employed to facilitate essentially a face-to-face course, where a learning management system may be used to post the syllabus and assignments.

Academic leaders have been more favorable about hybrid instruction than full online course delivery over time (Seaman et al., 2016). It is widely acknowledged that hybrid instruction has become an umbrella term that includes all combinations of face-to-face and online delivery options (Adams Becker et al., 2017). Hybrid instruction provides benefits such as its flexibility, ease of access, and the integration of multimedia use and technology. This enables online and face-to-face learning to be combined in a variety of ways depending on the appropriateness of curriculum, the needs of student, and the preferences of faculty. It leverages both traditional education experiences and technology-facilitated instruction to enhance learning outcomes and meet students' needs.

Synchronous Learning. Synchronous learning requires real-time communication between teachers and students, most commonly in the form of web-conferencing. Research indicates that synchronous learning environments allow students to experience more social presence than in the asynchronous settings (Kuyath, 2008). The development of "computer technology including bandwidth, video streaming, messaging and chat, social media, and more—has allowed online learning to become more synchronous" (Heick, 2020, June 19). The central idea of synchronous learning is to enable a group of participants to engage in learning activities at the same time through real-time discussions, lectures, question and answering, presentations, and so forth.

Studies have shown that web-conferencing software (e.g., Adobe Connect, Cisco WebEx, Horizon Wimba, or Blackboard Collaborate) positively influence student

engagement. (Schindler, 2017). Due to its mimicry of face-to-face classroom, web-conferencing software provides various interactive features, such as screen-sharing, media-rich lecture presentations, live question and answer sessions, live discussions, and break out rooms that enable students to participate in the class with their peers as well as the instructor. Some research findings suggest that web-conferencing software incorporated in blended courses may provide more opportunities for active class participation (Schindler, 2017). As to cognitive engagement, researchers have found that students demonstrated more critical reflection and enhanced learning when they experience interactions with others within web-conferencing classes, especially in response to challenging assignments (Armstrong & Thornton, 2012; Wdowik, 2014).

Asynchronous Learning. Asynchronous learning models appeared earlier than synchronous communication (Johnson & Aragon, 2003). It does not rely on simultaneous educational interactions between teachers and students so students can access learning materials multiple times or at their convenience. Several researchers have conveyed advantages of asynchronous learning, such as extra time-on-task, increased time for reflection, and more equal levels of contribution (Meyer, 2003). Rourke and Kanuka (2009), however, they also suggest that a large number of students worked at the lowest cognitive level when engaging in asynchronous learning, which might result in a less meaningful outcome.

Learning Management Systems. Learning management systems (LMS) were designed to administer and organize online educational courses or training programs. LMS have been used primarily for online course delivery but they also support a wide

range of uses, acting as a platform for online content uploading and distribution that can be integrated in both asynchronous and synchronous learning environments (Long, 2004). The use of LMS, which are courses websites by nature, began to develop approximately 20 years ago, initially requiring online access to basic information in scientific and artistic subjects (Song et al., 2004). Through LMS, instructors can create and integrate course materials, define learning objectives, list content and assessments, homework assignments and assessment, track learning progress, and establish customized tests for students. LMS generally supports content in various forms, such as text, video, audio, and customized webpage design.

Student Engagement

Student engagement has been broadly explored by researchers, university policy makers, and faculty members in the past years. First, the three dimensions of engagement have been used to define student engagement widely. Fredricks et al. (2004) proposed three dimensions of engagement, which are 1) behavioral engagement—students' participation in academic activities, 2) cognitive engagement —students' perseverance and level of investment, and 3) emotional engagement—students' feelings and reactions on things occurred in class. Second, student engagement is also defined as a student's thoughts, feelings, and behaviors about learning (Schindler, 2017). This definition emphasizes the cognitive and behavioral processes of learning as the "individual psychological state" (Kahu, 2013, p. 764). Third, a similar definition of student engagement refers to the "interaction between the time, effort and other relevant resources invested by students" (Kuh, 2009, p. 6).

On the other hand, as NSSE indicated, student engagement is “how the institution deploys its resources and organizes the curriculum and other learning opportunities to get students to participate in activities” (Center for Postsecondary Research, 2020), beyond what efforts and time the students contribute. Indeed, student engagement is a complex concept that it is reflective of both student and university characteristics. From the perspective of the university, student engagement may be linked to institutional culture, curriculum, academic atmosphere, and teaching practices. Higher education institutions would concern themselves about the outcomes of student engagement since those outcomes impact enrollment rates and retention. From the perspectives of the students, engagement may be influenced by their motivation, interest in learning, interaction with instructors and peers, and personal growth. (Kahu, 2013; Lam et al., 2012).

Viewing student engagement through a socio-cultural perspective (Kahu, 2013), a broader social context of student experience in higher education brought into focus and discussed. Faculty have the potential to impact student engagement through their communication with students, their enthusiasm for the course, and their professional behavior (Bryson & Hand,2007). They viewed student engagement as a dynamic continuum associated with different situations, such as institution atmosphere, classrooms, courses, and assignments.

Student Engagement in Online Education

Student engagement is an essential element in online education and has been discussed broadly. First, according to Martin and Bolliger (2018), “the definition of engagement has been extensively explored in distance and online learning literature for

decades" (p. 205). Recent research implies that certain interactions with key faculty and staff members may influence online students' perceptions and commitment to the institution, affecting their plans to return to the same institution for the next academic year (Hager & Henthorne, 2019). Their findings support the assertion that student engagement may influence enrollment retention. Furthermore, researcher found that the online professor-student and student-student interactions promoted students' satisfaction and professional development (Walls, 2008).

In order to retain students in online courses and improve student learning, student engagement has been studied by many researchers (Carini et al., 2006; Ramirez & Gillig, 2018). For example, the Community of Inquiry (CoI), established by many researchers (Garrison, Anderson, & Archer, 2000; Swan et al., 2008; Akyol, Vaughan, & Garrison, 2011), serves as a popular model for online learning assessment in recent decades. Hager and Erin (2020) found three engagement indicators (Student-Faculty Interactions, Higher Order Learning, and Supportive Environment) contribute to online student retention. Dixon (2010) designed the Online Student Engagement Scale to measure online student engagement. Additionally, researchers used three types of interactions to examine student engagement in online education (Bernard et al., 2009; Lear, Ansorge, & Steckelberg, 2010; Anderson, 2004).

Several models emerge from the review of literature. Each model examines student engagement: Community of Inquiry, National Survey of Student Engagement, Fredricks et al. three dimensions of engagement (2004), Robinson and Hullinger's (2008) National Survey of Student Engagement, Dixon's (2010) Online Student Engagement

Scale, and Young and Bruce's (2011) Online Community and Engagement scale (concerning three types of interactions) (Martin & Bollinger, 2018; Moore, 1993). After summarizing the merits of each model, the chapter will conclude with the reasons why I chose to use Young and Bruce's (2011) Online Community and Engagement Scale for the present study.

Student Engagement Measurements

Researchers (Garrison et al., 2001; Dunlap & Lowenthal, 2014; Dunlap, Verma, & Johnson, 2016) developed models that served as guidance for instructors and instructional designers to create online courses that promote social interaction for the online educational environment (Mucundanyi, 2019). The theoretical framework of Community of Inquiry (CoI) represents that leaning occurs within a community through the collaborative interaction of three core elements, which are: social presence, cognitive presence, and teaching presence (Garrison, Anderson, & Archer, 2000; Swan et al., 2008; Akyol, Vaughan, & Garrison, 2011). Three types of presence reflect educational effectiveness taken place in a variety of environments (Shea & Bidjerano, 2012).

Housed in a virtual, internet-based environment, the social presence of CoI allows students to use technology tools to communicate and feel connected (Mucundanyi, 2019). Garrison et al. (2000) described the cognitive presence as "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (p. 11). Teaching presence refers to the teachers' role in constructing the online course and facilitating students' learning. Teaching presence was

found to have direct positive impacts on cognitive presence and social presence, and indirect positive impacts on learning performance (Law et al., 2019).

Robinson and Hullinger (2008) developed National Survey of Student Engagement (NSSE) to assess student learning by measuring these three dimensions of engagement. The National Survey of Student Engagement (NSSE) aims to provide "educators with an estimate of how undergraduates spend their time and what they gain from attending college" (Center for Postsecondary Research Indiana University School of Education, 2020). Hundreds of universities have participated in the survey in last 20 years and NSSE releases the annual report regarding the data of undergraduate students' significant aspects of college experiences. NSSE admitted the nature of student engagement is multi-dimensional and developed ten indicators within four engagement themes, which are Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. Multiple researchers have explored student engagement issues using the NSSE instrument (Kuh, 2001; Carini et al., 2006; Gordon et al., 2008; Campbell & Cabrera, 2011; McCormick & Gonyea, 2013; Price & Baker, 2012).

Robinson and Hullinger (2008) modified a new version of the NSSE, adapted to measure the level of student engagement in the online learning context. The adapted measurement focuses on patterns of online student engagement, incorporating this focus into the NSSE principles to arrive at five benchmarks, termed "effective educational practice" (Carini et al, 2006, p. 7): level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences, supportive campus climate (Robinson & Hullinger, 2008).

Fredricks along with other researchers' three dimensions of engagement consist of behavioral, emotional/affective, and cognitive engagement (Fredricks et al., 2004; Fredricks et al., 2016). Similar to CoI, Fredricks et al. use the term cognitive engagement to refer to concerns about students' self-regulated learning, including higher order thinking and deep learning strategies to enhance academic success. In contrast to CoI, these three dimensions of engagement take emotional engagement into consideration, focusing on the extent of students' positive and negative attitudes toward instructors, classmates, and the school; students' sense of belonging to their chosen institutions and majors; and students' identification with affiliations and subject areas (Finn, 1989; Voelkl, 1997). Behavioral engagement deals with the student's class participation and the effort they put into content learning.

The Online Student Engagement (OSE) scale was created by Dixson (2010) in response to the engagement issues due to a sharp increase in online course enrollments over the past twenty years. The creation of OSE was based on Handelsman et al.'s (2005) Student Course Engagement Questionnaire (SCEQ) and included several adapted items to better accommodate online learning contexts. The 19-item SCEQ scale consists of four factors: 1) skills engagement, including, 2) emotional engagement, 3) participation/interaction engagement, and 4) performance engagement (Handelsman et al., 2005). In a study of online engagement, (Dixson, 2015), the OSE scale was incorporated with observational behaviors (reading discussion posts, watching lectures, viewing emails, etc.) accessed by learning management system analytic data. However, admitted by Dixson (2015) himself, observational behaviors differ from actual learning behaviors.

The tracking information of how much students access course website only serves as quantity value but not quality value. Thus, though OSE scale provides instructors with an easy way to examine student engagement in online courses, it should not be used in isolation.

Three Types of Interactions

According to these explorations of the CoI model, social presence, cognitive presence, and teaching presence have pointed to three types of interactions—student-student, student-content, and student-instructor interactions. Sher (2009) defined learner-learner interaction as "the exchange of information and ideas that occurs among students about the course in the presence or absence of the instructor" (p. 104). Student-content interaction emphasized students' internalized and individualized learning (Mucundanyi, 2019). Moore (1989) defined learner-content interaction as "the process of intellectually interacting with content that results in changes in the learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind" (p. 2).

Student-instructor interaction is crucial for both students and instructors (Moore, 1989). Instructors play an important role in constructing well-scaffolded course content, designing effective communicative boards, offering feedback, and fostering students' growth and development gaining progress. Specifically, effective online instructors participate in discussions boards and motivate students to join and complete their posts on time, while students use instructors' posts as a guide to the improvement of deep learning and learning expectations (Mazzolini & Maddison, 2003; Rovai, 2007). It is also

worth noting that students are more likely to ask instructors for help with problem-solving than others in online virtual learning environment (Bawa, 2016).

Prior to the expansion of online instruction, the three types of interactions were used to define student engagement with traditional course delivery in Moore's study (1993). Seven principles of Good Practice in Undergraduate Education for face-to-face courses were proposed by Chickering and Gamson (1987), including 1) the encouragement of contact between students and faculty, 2) the development of reciprocity and cooperation between students, 3) the use of active learning techniques, 4) the provision of prompt feedback, 5) the emphasis of time on tasks, 6) the communication of high expectations, and 7) the respect of diverse talents and learning styles. Among these principles, three types of interactions are observed.

Three types of interactions could be applied to online education as well (Arum & Roksa, 2011; Sun et al., 2008). According to Nortvig et al. (2018), the factors that dominated the literature of student engagement in online learning were "educator presence in online settings, interactions between students, teachers and content" (p. 46). Sher (2009) and Strachota (2006) found that these three types of interactions were significantly essential to online student engagement. Lock and Johnson (2015) identified online learning environments that provide three types of interactive learning: student-to-student, student-to-content and student-to-instructor.

Young and Bruce (2011) launched a study aiming to investigate relationships between online classroom community and student engagement. Researchers recruited participants (N = 1410) who were enrolled in online courses among five colleges. In this

study, classroom community is defined as the connection between students and other students, and students and their instructors. Both were considered essential components leading to successful learning outcomes. Young and Bruce were interested in examining how classroom community is shaped in online courses. Establishing a sense of community is the instructor's responsibility. This sense of community is essential in order for instructors to effectively facilitate online learning and ensure quality (Rovai et al., 2005; Liu et al., 2007). In Young and Bruce's study, engagement was defined as students' own investment in their learning and self-organization. The researchers found a positive relationship between students' perceptions of community with classmates and engagement, "indicating that students who are motivated to working and helping each other are also engaged in their own learning" (p. 225).

The researchers developed the Online Community and Engagement Scale, an instrument containing 23 items and three factors (i.e., classroom community with instructors, classroom community with classmates, and engagement in learning). They found that collaborative tasks and helpful feedback among peers allow students to participate in interactive activities and enhance participants' sense of connection (Young and Bruce, 2011).

They also found that student engagement varies by discipline, with education majors demonstrating significantly higher levels of student-student and student-instructor engagement than students in other majors (Young and Bruce, 2011). This may be a result of having instructors who design courses that incorporate meaningful collaboration, ensuring that students to work in groups. The students in education and health science

college majors also exhibited significantly higher levels of engagement in learning, which may be because these students were equipped with better organizational skills and know they should learn more than students in other majors (Young and Bruce, 2011). In summary, the research studies above provided a solid basis for my study—three types of interactions were utilized to define student engagement in investigating music education in college level courses with online learning components.

The rationale for choosing Young and Bruce's survey instrument lay in that it fit the social constructivist worldview used to guide the current research. Mucundanyi (2019) also utilized this instrument to investigate difference in student engagement between graduate level and undergraduate level students, between international and domestic students within an online learning context. The class community established between student-student interaction and student-instructor interaction correlated to students' own learning and progress. Three types of interactions covered in this instrument were determined as the research focus of student engagement.

Issues in Online Education

The literatures so far have indicated that online courses have social and technological issues that are problematic not only for the learners but also for the faculty (Bawa, 2016).

Social Issues

Students may not actively communicate in online environments as they would in face-to-face classes, so more feelings of isolation emerge when students are learning on their own (Bawa, 2016). In a recent professional newsletter article, a master's student

majoring in journalism at Hong Kong University reported on her experiences with online learning during the pandemic. She stated that even though she had taken Massive Open Online Courses (MOOC) before with no technical problems and no difficulties adjusting to online learning, her experiences during the lockdown were "quite weird," particularly in terms of peer interactions online. She indicated that some students prefer to turn off their computers' cameras and microphones, leaving teachers to lecture to "black screens" for hours on end. In her experience, students also tend to ask fewer questions online. (Times Higher Education, The World University Rankings, 2020).

Further extending this isolation, instructors of online courses often do not display apathy toward students' emotions and feelings when they encounter problems (Murihead, 2004). Several factors may prevent online learners from interacting including a high level of superficial level message contained in discussion boards and student learners' low intention of participation with peers (Kim, 2015).

Technological Issues

Online learners commonly confront technological difficulties due to the limited Internet skills to navigate educational platforms. At the beginning of this century, Bauer (2001) found that students who had less technology experience indicated that Web-based instruction modes were impersonal. Ng (2012) stated that while students were adept with online activities such as accessing information, getting entertainment, and socializing, they may not be as proficient as institutions expect with regard to educational technology and e-learning environments (e.g., Learning Management System, Google Docs, ePortfolio, etc.). Instructors' overestimation of students' technological skills is a mistake

(Clark-Ibanez & Scott, 2008). Such overestimation may cause teachers to assign Internet-oriented tasks, thus driving students to frustration early in the semester (Bawa, 2016).

In addition, instructors faced similar challenges relating to their own technological challenges. This lack of technical knowledge often results in poorly designed courses that are confusing and dissatisfying for learners. Instructors are reluctant to alter their existing courses and perceive a lack of institutional support for curricular transformation (Clay, 1999; Daniel, 1997). These issues may draw potential research interest in instructor adaptation to technology use in their course design and implementation.

Music Education with Online Learning Components

College-Level Online Music Courses

An increasing number of institutions have offered online education in music. As of 2016, approximately 40% of NASM accredited institutions offered music courses with a certain proportion of online learning components (Johnson, 2017). Studies suggest that there has been an expanding trend to integrate online learning technologies (e.g., synchronous video conferencing, asynchronous learning activities, and LMS) into teaching music courses within universities. A study surveyed 67 online music courses delivered online (both undergraduate and graduate level) according to the 58 respondent universities in 2013, and 76 music courses reported by 43 respondents in 2016, affirming this increasing trend (McConville & Murphy, 2017). Based on existing data, it is estimated that online music courses offered in undergraduate level program will likely continue to increase (Johnson, 2021).

Reasons accounted for this growing trend have been explored. It may result in that technology was discovered to facilitate music learning and cognitive development (Coffman, 2002; Dye, 2007). Draper (2008) and Eakes (2009) affirmed the effectiveness of learning music through technology. Music learners increasingly embrace online formats, probably because computer-based technology and online discussion offer musicians the opportunities to experience collaborative works (Green, 2014; Salavuo, 2006; Biasutti, 2015).

> Based on the definition given by NASM Handbook 2019-20, Distance Learning "involves programs of study delivered entirely or partially away from regular face-to-face interactions between teachers and students in studios, classrooms, tutorials, laboratories, and rehearsals associated with coursework, degrees, and programs on campus. Normally, distance learning uses technologies to deliver instruction and support systems, and enables substantive interaction between instructor and student."

The schools of music must meet all NASM operational and curricular standards for programs if they incorporate distance learning as an instruction delivery system (NASM, 2020). The institution must also determine and publish the requirements of technical competence and equipment for students before they are accepted or enrolled when the programs include teaching and learning through electronic systems (NASM, 2020). Using the NASM directory, Blake (2018) conducted a comprehensive search identifying the current institutions that offer programs in music and music education that incorporate certain proportion of online learning components within the United States. By

2018, there were “3 associate’s programs, 8 bachelor’s programs, 60 master’s programs, 5 post-master’s programs, and 5 doctoral programs in music available online” (Blake, 2018, p. 14). At the time of the study, there were 80 online music degree programs in 32 states in the United States. Master’s degrees in music education were the most with 34 offered online, surpassing other degrees. Blake found only two online doctoral and two online bachelor’s degree programs in music education throughout the entire country.

Schools that offer online degrees and programs leading to teacher certification prepare students for careers in music or equip them to become music teachers. Educational programs that offer training toward business-related jobs such as music producer, manager, and publisher may be able to offer prospective students the skills, knowledge, and experiences needed as they target these types of careers. In addition to the online components of the program, institutions may require students to attend some portion of instruction on campus, including skills labs or other hands-on learning experiences to develop their overall musicianship (Distance Learning Courses and Certificates in Music, 2019).

The development of music courses partially or fully delivered via online formats meets the needs of modern learners. Students who value real-time interactions between professors and students through music-making participation are highly likely to enroll in face-to-face courses and hybrid instruction modes (Albert, 2015). Music courses incorporating online learning components commonly use online exams, assignments submission, discussion boards, pre-recorded instructional videos, and so forth. Such uses

of technology in music learning that enables people to create and share musical experiences attract the new generation of students.

Johnson (2021) studied institutions providing online music courses in undergraduate programs accredited by NASM in the United States. She found the following course themes are commonly taught via online models: music history, music appreciation, musicology, music theory, pedagogy and music education, introduction to music, composition and arranging, music technology, and so forth. These courses are delivered 100% online. It is important to note that institutions label their classes differently, such as online distance, distance, fully online, and so forth.

In contrast, music performance or composition courses have typically not been offered online. This can be explained by the assumption that courses that are lecture-based in nature are more likely to be transformed to an online delivery format than those courses that require experiential and interactive activities (Johnson, 2021). The experiential nature inherent in applied lesson or ensemble performance is more problematic when transformed into an online environment. It is difficult to create ensemble music, either vocal or instrumental, in an online environment because of the communication issues that exist when performers are physically separated. Both students and instructors encounter problems such as poor-quality audio, time delay in different pace. The usual problems that every student and instructor might encounter include poor quality audio, time delay in different pace (Kruse et al., 2013). Current Internet technology has not yet allowed large groups of people to perform collaborative works in real-time if they are apart from each other. Both the music and information technology

fields may be interested in exploring how remote musical collaborations are realized in the future. Internet technology development has great implications for future distributed performance and music e-learning (Turchet et al., 2018).

Pre-service Music Education Courses

Music education undergraduate students are not only achieving goals for academic learning and overall musicianship development, but they are also expected to prepare themselves as music teachers. The Bachelor of Music Education (BME) degree offered in the Mid-west university music school that serves as a focus for this study is accredited by national agencies including, the National Association of Schools of Music (NASM). The program leads to pK-12 certification in music (general, instrumental, and vocal) and prepares students for careers teaching music in public or private elementary and secondary schools. The music education curriculum provides a breadth of learning opportunities that reinforce the rich traditions of school music and support continuing innovations in the music teaching profession.

The BME degree requires a minimum of 120-credit hours including music common core curriculum as well as music education courses. The common core curriculum in music includes Achievement-Centered Education (general education courses), Music Theory (I-IV), Aural Skills (I-IV), Keyboard Skills (I-IV), Beginning Conducting, Music History & Literature (I-II). Students are also required to take Major Instrument Study (e.g., piano, brass, violin, etc.) for six semesters and Skills Classes involving Voice Skills, Strings Skills, Brass Skills, Flute & Clarinet Skills, Percussion Skills, and Double Reeds & Saxophone Skills. Music education courses consist of

Foundation & Introduction to Music Education, Music Learning & Development, Composition Methods, General Music Methods, Instrumental Music Methods, Choral Music Methods, Advanced Conducting, and Music and Special Education.

The students in music education major are not only exposed to on-campus instruction, they also gain teaching experiences from off-campus practice in the form of field experiences. These practicum experiences are done with veteran music teachers in local area schools, scheduled and supervised by the faculty and graduate students in music education department. Students participate in one teaching practicum in the sophomore year, two in the junior year, and one in the senior year, and complete a semester of full-time student teaching. This progression of teaching experience helps establish students' aptitude for a career in music education and gradually equips them with the knowledge and skills to be successful.

Pre-service Music Education Courses with Online Learning Components

In recent years, preservice music education courses with online learning components focus on improving preservice music educators' pedagogical abilities with some extent to technological competency. Topics may include choral or instrumental pedagogy, computer technology for music education, elementary-level music education, multimedia approaches to music education (Distance Learning Courses and Certificates in Music, 2019).

As previously stated in Blake's (2018) study, graduate music education programs in the U.S. adopt online learning models more than undergraduate programs. One reason for this may be that online programs cater to the needs of in-service music teachers who

plan to pursue higher degree but are reluctant to leave their current positions (Groulx & Hernly, 2010). Research has shown that more and more graduate students enroll in online music education programs since they can maintain their professional and financial obligations while learning (Albert, 2015). Albert also found that students' perceived relationships with faculty, flexibility of the online program, and development of musician identity and musicianship are important factors for choosing online education. This reflects what graduate music education students desire, but may not hold true with undergraduate level students.

Undergraduate students are not likely to encounter solely online programs given a lack of online degrees offered in music education in the U.S. Similarly, undergraduate students rarely encounter entire upper-level courses in their major that are delivered online, but they are likely to confront courses that contain online learning components. Among courses included in pre-service music education, some are presumed appropriate to approach in online learning formats, but others are not. In an investigation of online learning as applied to music courses, researcher found out the theoretical training usually offered via asynchronous learning such as courses in the field of Education and Psychology, since material updated relying on constant accessing to the online educational platforms (Koutsoupidou, 2014). This affirms the findings in Johnson's (2021) and Keskin and Ozer's (2020) studies that lecture-based courses are more practical for transformation into online models. Consequently, it is observed that music theory, music history, and introduction to music education are taught with online learning

formats in their studies. These courses are widely presumed important to develop students' musicianship in undergraduate music education program (Bowman, 2007).

However, an accredited music education program is far beyond these courses. Music making experiences equip a pre-service music teacher with performance skills; instructional methods courses facilitate a pre-service music teacher gain pedagogical skills in teaching music—both considered as the essential components in undergraduate music education as well. The former skills are developed through multiple experiential courses, such as applied lessons, chamber music, choir, orchestra classes. The latter skills are obtained through participation in those instructional methods courses, such as general music methods, instrumental music methods, choral music methods, and music and special education. Pre-service music teachers also need to practice these skills with their peers and school-age students to accumulate their own teaching experience and gain improvement. These two types of skills, however, are more challenging when approached in a purely online learning environment rather than in face-to-face classes (Ozer & Ustun, 2020). The current technology is one of the barriers that cannot actualize real-time music interaction by a group of music learners online. In addition, students may face unprecedented problems regarding engagement, motivation, technology adaptation, and so forth.

All reasons above indicate the difficulty to the implementation of transforming all of music education courses into online formats. When music teaching exercises or activities are taken place, face-to-face instruction is more realistic. This implies that the hybrid instruction modes appear more favorable than fully online modes for particular

courses in undergraduate level music education. As a result, an organic combination of various teaching forms should be designed and carried out carefully based on course outcomes and student learning needs in order to maximize the learning environment for both student and instructor (He, 2020).

In an investigation of graduate music education major students' perceptions of online courses in master's level music education programs, students believed that social, in-person interactions with peers and professors were important components of their learning experience (Fung, 2004). However, little is known whether undergraduate music education students would value the interactions between students and instructors as that of graduate students. Additionally, few researchers have explored how students perceive engagement issues when music education courses that incorporate online learning components. Future research may focus on how college students perceive student-student, student-instructor, and student-content interactions in pre-service music education courses incorporating online learning formats.

While undergraduate courses in music education are frequently offered face-to-face, online learning components are becoming more prevalent as an essential part of course design and implementation. While previous studies have examined distance education in terms of whole classes or programs, little research exists regarding online learning components integration. Various organizations and researchers have struggled to agree on what proportion of face-to-face or online experiences must exist to define online education. The National Association of Schools of Music (NASM, 2020) defines a program as distance education when more than 40 percent of requirements are fulfilled

through electronic systems. However, Shelton and Saltsman (2005) assert that at least 80% of the course content must be delivered online before it can be defined as online education. However, in this study, the proportion of online delivery varies within each music education course. Most face-to-face courses with online components exist on a continuum. Therefore, in the present study examining student engagement in music education courses with online learning components, the courses studied all existed on a continuum. Currently, since the study takes place during a global pandemic, the researcher chose the phrase, "with online learning components", both in the title and through the whole article.

Issues Existing in Online Music Education

Five key issues and challenges were discussed in Hebert's (2007) article. Prejudice toward online learning, though weakening, has been held among music educators in higher education. Instructors who were once against online educational programs have been gradually accepting it because large numbers of established reputed institutions have embraced the opportunities afforded by online formats to develop academic excellence (Allen & Seaman, 2006). The second issue is a perceived lack of coordination between distance education departments and music departments, based on the assumption that distance education professionals are separated from music professors. The third issue regards potential conflicts between growing profits generated by increasing numbers of students in online degree programs and the potential expense of exploitation of professors. The fourth issue surrounds the lack of face-to-face contact that may elicit challenges for managing online students as well as novice instructors. The fifth

concern, which is the most relevant issue to the current study, is that students in online courses may feel isolated. Within the framework of social constructivism, a perceived lack of interactions with others may negatively impact students' growth. Each of these issues represents a key factor determining whether an online course succeeds or fails.

Among those challenges above, the feeling of isolation may suppress students from enjoying their learning (Koutsoupidou, 2014). The finding is prominent in the research literature on this topic. The concerns regarding "the lack of real-time fact-to-face interaction and reduced access to professors" are commonly found in the literature (Fung, 2004; Walls, 2008; Albert, 2015). For instance, one of the participants in Albert's study (2015) indicated that "there wasn't a lot of opportunity for collaboration" (p. 60), and another participant added that "online graduate experience is less likely to create professional connections between professor and students" (p. 61).

Koutsoupidou demonstrated when learning requires continuous personal contact and nuanced student observation on instrumental or vocal performance on the part of the instructor, synchronous teaching via real-time applications is more practical. Synchronous teaching, though considered a powerful tool substitute for face-to-face teaching, is not able to meet the demand when students need to sing and clap together or in canon (e.g., the Orff method, Kodaly method, etc.), to imitate movement of instructor or peers, to play Orff instruments along the beat, to improvise music for a certain number of measures.

While these issues were prominent among those already invested in online education prior to 2019, issues related to distance education became the center point of

discussion among every stakeholder in higher education: faculty, students, higher education administrators, communities, and other stakeholders. In a post-pandemic era, the following concerns will continue to be examined and discussed by professionals, 1) whether online learning modes should remain, 2) what proportion of online learning components should be incorporated, 3) what type/characteristic of course should contain what proportion of online learning components, 4) whether lecture-based courses should continue with online learning, 5) how students perceive and evaluate the effectiveness of music education courses incorporating online learning components, 6) what type of technological supports should be provided for students to enhance the online learning experience, and so forth.

Practical Implications

Programs that include online instruction (asynchronous) and synchronous teaching could potentially lead to a higher level of sound teaching practice and to a well-constructed learning environment in order to meet students' socio-psychological needs (Koutsoupidou, 2014). Through watching instructional videos on YouTube®, emailing faculty or classmates, and using Learning Management Systems and tools like Blackboard®, Canvas®, or Moodle® to access reading material, announcements, syllabus, discussion boards, students may continue to be well-informed and well-connected with the course and peers. Through a review of the literature that shapes the contour of quality online learning experience, there are three aspects of recommendations offered to university administrations, professors, and students.

University Administrations

First, universities can provide orientation programs that introduce the rigors and unique demands of online courses that should be offered for students prior to the time when classes begin (Bawa, 2016). Higher education institutions are also obligated to hire outstanding professors and offer them long-term seminal trainings of planning online course (Herbet, 2007). Similarly, studies have shown that instructors are likely to perform better in terms of design modifications and teaching of online courses if they have some form of training before they teach online courses for the first time (Kate, 2009; Ray, 2009). Bawa (2016) suggested that institutions should take responsibility for spending more money, time, and effort in creating good training programs for their faculty. Faculty workshops for developing online course design strategies in a LMS should be supported at all administrative levels (Johnson, 2021). Additionally, colleges need to reconsider the broader musical, educational, and technological contexts in which online education in music is implemented (McConville & Murphy, 2017).

Professors

Bawa (2016) and Johnson (2021) suggested instructors ought to be reflective on their own technological, communication, lifelong learning, and facilitation skills, engaging in professional development if necessary. It should be acknowledged that technology alone cannot improve the overall quality of education, but adaptive pedagogy and a more inclusive education models are ideal solutions, according to New Media Consortium (NMC) Horizon Report (Adams Becker et al., 2017).

Since social factors have a strong impact on students' experience of online learning, Dow (2008) indicated that the "ease of the use of media tools, well-structured interactions, and transparency of computer and internet mediated community helped create a better learning environment" (p. 7). A "live" component" in interactions enable students to feel engaged when they are geographically separated. Instructors must ensure that students' questions are heard and quickly responded to (Herbert, 2007). In addition, instructors should implement an interactive design model for creating an online course that is better suited for collaborative activities and therefore better suited for online learning (Moallem, 2003). Moallem suggested when applying this model, that the focus should be on collaborative problem-solving tasks, personal responsibility, encouraging commitment to the team and its goals, advancing communication among team members, and providing stability so that team members can work together effectively for longer periods of time.

As suggested in the Keast's (2009) study, instructor should clarify the use of technologies and media when outlining course expectations. Considering the adaptation of online course delivery, instructors need to think carefully about the type of subject matter and its characteristics and respond with appropriate adjustments. Paechter and Maier (2010) investigated students' experiences and preferences in e-learning in a sample of 2196 students from 29 Austrian universities. They found that when conceptual knowledge in the subject matter or skills in the application of one's knowledge are to be acquired, students preferred face-to-face learning. However, when skills in self-regulated learning are to be acquired, students advocated online learning. This result implies that

instructors should offer opportunities for self-regulated learning if course content is adapted for online delivery.

Students

Students' full compliance to online learning policy and their honest practice in academic behaviors were considered crucial in online education programs. They must completely devote themselves to online studies and proactively engage with virtual class activities (Hebert, 2007). Students are expected to understand the similar essentiality between traditional learning modes and online learning schemes in terms of rigorous academic requirements and behavioral management. Students are expected to be equipped with sufficient computer and technology skills to meet course requirements including online learning components. Bozarth et al. (2004) revealed that students need to understand their limitations and misconceptions of technological skills that may lead them to resist change or to adapt according to the requirements of online learning. Within an online environment, a self-directed learning style is preferred. This indicates the learning theory of andragogy (Cercone, 2008), that the more they are self-disciplined and self-motivated, the more learning achievement could be obtained.

Time management and adaptation of online technological skills are key elements for students to gain a successful learning experience (Song et al., 2004). Regular self-evaluation of learning was also recommended in online learning (Castle, 2010), indicating the important role of reflection in the learning process. However, there are fewer implications and strategies provided for students in existing literature, possibly because predominant audiences are policy makers, higher education institution

administration and their faculties. Instead, more implications for teachers' pedagogy exist in the literature.

Higher Education under Coronavirus Pandemic

In the United States, over 248 million COVID-19 tests have been conducted in public and private laboratories and nearly 20 million people tested positive (i.e., infected by the disease) by the end of 2020, resulting from a wide spreading both nationally and internationally of this disease (Johns Hopkins University, 2020). Among those infected, over 330,000 have died because of COVID-19 by the end of 2020. Infections mainly occur in when people come in close contact with COVID-19 positive individuals and expose them to the respiratory droplets that contain the virus. Some infections may occur when people come into contact with small droplets that linger in the air for minutes to hours, known as airborne transmission. Infected people may show several symptoms, such as cough, fever or chills, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, and so on. As a result, the ideal protocol to protect people from illness is to take the following steps: stay at least 6 feet away from others, cover mouth and nose with a mask when around others, wash hands often with soap and water, avoid crowded indoor spaces, stay at home and isolate from others when sick, and clean and disinfect frequently touched surfaces (CDC).

Higher Education under the Pandemic

The COVID-19 pandemic forced administrators and governors to close many university campuses and abruptly stop face-to-face learning, turning to online teaching approaches. In spring 2020, distance education has become a critical way to deliver

college courses while ensuring student safety (National Center for Education Statistics, 2021). Since the 2020 fall semester, a majority of universities (e.g., University of Northern Colorado, University of Nebraska, University of Maryland, etc.) have executed hybrid modes of course delivery, implementing both on-site instruction, attendance on campus, and distance learning via online tools (International Consultants for Education & Fairs, 2020). Hybrid learning modes apply a broader application and integration of blending options (e.g., face-to-face, synchronous, and asynchronous communication) (Trentin & Bocconi, 2014) that instructors can make the decision to use which style, or each with a different proportion.

According to the Chronicle of Higher Education, only a quarter (23.5%) of the nation's colleges, planned to offer face-to-face classes primarily in the Fall 2020. Nearly 27.8% of universities employed fully online mode and 16% announced a hybrid of two modes. Universities have implemented enormous safety protocols such as sanitization, leaving more time between classes to do cleanings and disinfecting, social distancing, mandatory mask wearing, and on-campus testing and quarantining.

"The COVID-19 pandemic has impacted education at all levels in various ways", as declared by Carrillo and Flores (2020) in a literature review article of online teaching and learning practices under the crisis. Since the first institution, University of Washington in Seattle, announced that they would cancel in-person classes to keep students safe and have students take courses remotely due to a growing coronavirus outbreak, many other universities around the country followed the similar steps (Weise & Hartocollis, 2020, March 6). As of March 13, 2020, nearly 300 higher education

institutions had announced remote instruction would replace in-person classes. To ensure that students' education is disrupted as little as possible, universities have used a wide range of digital tools, including online learning management systems, video conferencing tools and messaging platforms, ensuring that students can access course materials and communicate with professors.

The applications of Zoom among universities have increased exponentially during the pandemic. Zoom enables synchronous class meetings through its web conferencing feature. Along with its expanding functions such as chat window for live discussion, video recording, screen sharing, and break out rooms, Zoom allows class meetings to be continued within higher education. Many institutions, faculty, and students have participated in classes via Zoom meetings where it helps improve social presence and decrease isolation to some extent during lockdowns (Lowenthal et al., 2020).

Within a limited time for planning and course development, online courses in the second half of the spring semester were offered even though they may not have been designed or modified well. They were modified, only to serve as an emergency remote teaching (O'Keefe et al., 2020). With all face-to-face classes suspended in early 2020, many models of learning have been stopped or significantly adapted to meet the requirements of lockdown learning (Daubney & Fautley, 2020). Teachers and institutions were forced to transition teaching content from face-to-face to remote learning quickly. Regardless of whether student had experienced online learning prior to the pandemic, suddenly they found they were expected to adjust to a mass migration of courses to the online environment.

Only a few months later, the nationwide COVID-19 case count exceeded 4 million people with about 70,000 new cases per day in July and August. Some universities decided to continue moving fall semester courses online with no residential experience, such as American University in Washington, DC., Harvard College, University of Northern Colorado, University of Maryland, and so forth.

Higher Music Education under the Pandemic

Before the pandemic, online education programs in music were most often offered in the areas of music technology and music industry (Distance Learning Courses and Certificates in Music). In 2020, however, almost all music related disciplines and subdisciplines inevitably faced technology-based learning and teaching practices, including instrumental or vocal performance lesson, in-class theory/history classes, music education methods classes, and so forth.

In those top-ranking music conservatories, protocols ensuring students' safety and education quality had to be carried out carefully. For example, New England Conservatory of Music had enhanced online course offerings and held private lessons in larger classrooms to adapt to meet the requirement of social distancing guidelines. The Manhattan School of Music adopted cleaning and disinfecting measures to spray all highly touched areas such as piano keys, elevator buttons, and doorknobs with disinfectant.

Virtual choirs or virtual ensembles were sought to be a method of ensuring ensemble music-making at the beginning of the pandemic spread in many universities. Ensemble music was hosted by online platforms, YouTube, Facebook Live, and so forth,

so students and audience members could participate safely at distance. Web-conferencing video, Zoom software, was one of the solutions of teaching applied lessons and theoretical courses after university's lockdowns.

However, limited number of research studies have been done regarding learning experiences of online education in music due to the timeframe, but still some can be found. Johnson and Merrick (2020) conducted a study investigating music education students' well-being when using weekly Zoom cohort chats under this unprecedented crisis. The success of informal Zoom chats that comprised all program instructors and students indicated the importance of communitive interactions in online learning environments. Kesendere et al. (2020) explored the views of educators who were working in various levels of institutions on online violin instruction of using websites resources and applications (software). Turkish researchers investigated music students' views of learning applied lessons via distance education approaches (Ozer & Ustun, 2020). In their findings, it is important to note, that students who held positive views of their online applied courses tend to communicate with their instructors outside of the class through online applications.

CHAPTER 3: METHODOLOGY

In this chapter, a series of learning theories were reviewed to guide the investigation of students' learning processes within the online education context. The key concepts in mixed methods case study research approach were overviewed. It was followed by the reasons why this method was chosen for the current research. In addition, detailed procedures of data collection and analysis were provided. The significant findings and implications for the current study discovered in the pilot study were outlined. The multiple relevant issues related to the study were also included at the end of this chapter.

Learning Theories

"Theory without practice leads to an empty idealism, and action without philosophical reflection leads to mindless activism" (Elias & Merriam, 1980, p. 4). Theory allows educators to see the big picture and guide practice and research from a broader perspective (Anderson, 2004). Learning theories are developed to explain and understand how people learn. In this study, four main learning theories were considered and applied to learning environments with online elements. As this research employed a mixed methods case study research approach, pragmatism along with social constructivism were used in the paradigmatic framework to conduct the study.

To facilitate changes in what students know and/or do, learning theories provide educators with effective instructional strategies (Ertmer & Newby, 1993). Along the development history of learning theory, there are many branches and paths that appear and are subsequently applied to the educational profession. Behaviorism, cognitivism,

constructivism, and social constructivism, are most relevant to the practices of teaching and learning. In this chapter, these learning theories and their applications to music education and online learning are explored.

Behaviorism Theory

Behaviorism experts, from Ivan Pavlov to B.F. Skinner, viewed individuals learning processes as responding to a particular stimulus that, when repeated, results in behavior that can be evaluated, quantified, and eventually learned (Picciano, 2017). Behaviorism emphasizes cause and effect relationship based on observable events, not on processes of the mind (cognitive processes). In the early era of behaviorism, using a stimulus-response (S-R) approach, a human being's physical behavior (examined by physical parameters) was explained by the action of a stimulus (Mandler, 2002). Behaviorists typically use reinforcement or feedback as they observe changes expected learner behavior (Thompson et al., 1992). The main method of behaviorists used to identify change is by observing (Mandler, 2002). Even as behaviorism became the predominant paradigm, there emerged growing concern that the theories took into account only observable actions rather than regarding how internal states are constructed.

Bloom (1956, as cited in Picciano, 2017) was among the behaviorists who studied learning activity to define elements of learning. He established a taxonomy of learning related to the development of intellectual skills: knowledge, comprehension, application, analysis, synthesis, and evaluation. Anderson (2001), who was Bloom's student, along with other psychologists, created a revised version of Bloom's taxonomy of learning: creating, evaluating, analyzing, applying, understanding, and remembering.

Applying behaviorist theory to the educational environment, it stressed the role of instructional modeling, demonstration, reinforcement, and approximations in the process of teaching (Palincsar, 1998). This philosophical framework relies on a teacher-centered model where the teacher leads or commands what and how students should learn. Though it was believed to be a directive and content-based method, it is criticized for not promoting higher order cognitive skills, such as problem solving in real situations (Peterson & Walberg, 1979).

Behaviorist theory has been applied to music learning, especially instrumental learning (Serafine, 1988). Performing behaviors, such as holding the violin, placing the fingers on the keyboard, and drawing the bow, could be observed and evaluated directly. Indeed, these behaviors can be corrected and changed under the teacher's instruction. However, it is evident that there is something else involved that is inherently internal with regard to one's instrument learning that extends beyond merely observable parts.

Cognitivism Theory

In contrast to behaviorist theory, cognitivist theorists promoted that the human mind played an important role in learning, and they viewed motivation and imagination as critical elements of knowledge acquisition (Picciano, 2017). Aided by computer science and other interdisciplinary subjects, cognitivists determined that the workings of the brain play a pivotal role in learning and acquiring knowledge. Cognitivists usually use feedback for instructing and promoting mental processes toward a desired direction (Thomson et al., 1992). The main interests of cognitivists were individuals' inner mechanisms of thought and the thought processes.

With continuous inquiry regarding human information processing, Bruner (1990) affirmed that cognitivist theory was more meaningful than simply seeking improvement in behaviors. Cognitivists' concern with meaning making, the "cognitive structures such as schemata and heuristics" (p. 347) were introduced to represent knowledge in one's mind (Palincsar, 1998). This representation led to the development of constructivist learning theory with proponents stating that some forms of meaning making are viewed as personalized structures based on specific context.

Guided by cognitivism, Stepich and Newby (1988) asserted that teachers should guide students to connect new information to their previously learned knowledge and experiences, and the new information should be assimilated within the cognitive structure. Similarly, educators should mainly focus on making knowledge meaningful to individual learners and help them organize the new knowledge to the existing frame (West et al., 1991). Compared to behaviorism, cognitivist philosophy began to focus on students' personalized learning progress and allowed teachers to reflect on their teaching model.

Constructivism Theory

Several education theorists including Lev Vygotsky, John Dewey, and Jean Piaget were committed to creating and interpreting constructivist theory in the past decades. Vygotsky (1987) believed the process of learning is affected by the community and culture. He also asserted that an individual's learning precedes development. He explained that a child's mind is social in nature, so the ability to speak in a language moves from communicative social contexts to their inner systems. In contrast, Piaget (1977) posited an opposing idea, stating that a child's own speech matures at first and

then is transformed to social communication. He is known for the identification of four stages of cognitive development, which leads the child psychology filed to this day.

The "constructivist stance maintains that learning is a process of constructing meaning; it is how people make sense of their experience" (Merriam and Caffarella, 1999, p. 260). As demonstrated by constructivists, learners interpret the information based on their personal reality that is formed by observation, processing, and interpretation, and then they transform their individualized meaning into personal understanding (Cooper, 1993; Wilson, 1997).

Keast (2009) asserts when course designers and instructors offer multiple opportunities for interactive online engagement, students have more chances to construct own learning. With constructivist theory as guidance for teaching, educators should consider how to facilitate students to construct their learning based on what they have = know (Amineh & Asl, 2015). Keast stated that, "When a constructivist educator includes scaffolding in a course, they become a facilitator rather than a lecturer, by directing students to appropriate pools of information and enabling them to construct their understanding of a topic" (p. 2).

As applied to qualitative research or mixed methods research, constructivism typically helps researcher shape various participants' subjective views (Denzin, 2012). Individual perspectives—"meanings shaped by social interaction with others and from their own personal histories,"—are formed from the bottom up to higher and broader understandings (Creswell & Plano Clark, 2018, p. 36).

Social Constructivist Theory

John Dewey articulated the social constructivist theory by saying that learning is a social practice in which learning occurs when learners "doing, collaborating, and reflecting with others" (Picciano, 2017, p. 170). As applied to teaching practice, "social constructionism was to describe and explain teaching and learning as complex interactive social phenomena between teachers and students" (Picciano, 2017, p. 170). The teaching practices of facilitating more student discussion during the class is grounded in theories of social constructivism. The sense of working together further affords students to a feeling of community where a unified and collaborative project can be done (Weber et al., 2008). This stands in line with the social constructivist thought that artifacts or learning are created through a group of people engaging with social interactions. The teacher is then tasked with creating a model of instructional procedures that contain interactive and collaborative tasks.

Due to the lack of physical interaction that usually takes place in traditional classrooms, online students learn by interacting with their classmates and instructors virtually (Mucundanyi, 2019). Therefore, the content, structure, and climate of online learning environments are important in order to ensure a successful experience among adult learners (Bawa, 2016). These ideas are confirmed by researchers who concluded that online students who create a learning community, are willing to learn from others, and share knowledge tend to complete their programs (Swan, 2004, 2005; Tallent-Runnels et al., 2006), while online students who feel isolated are more likely to drop (Shea, Li, & Pickett, 2006).

Social Constructivism Applied to Online Music Education. Several researchers have addressed applications of constructivism to online learning. For example, Keast (2009) supported music performance courses grounded in constructivism where "students can apply new knowledge immediately and receive synchronous feedback…" (p. 1). In his trial curricular transformation, he carefully transformed a traditional Music History course to a web-based platform, using constructivist theory framework. In order to reflect social constructivism, in his trial course, he prepared questions that students might ask, scaffolded placement of course content, offered helpful resources for students to access, and provided frequent chances for students to interact.

Any study of curriculum should take learning theory into consideration. Behaviorism, cognitivism, and social constructivism form a theoretical framework to guide the implementation of online education (Picciano, 2017, p. 166). Among these, social constructivism has been studied by many educational psychologists, exploring implications for teaching and learning. Specifically, social constructivism framework was used as the learning theory in Johnson's (2017) study and she also appealed to set social constructivism as mindset for online course design.

In concluding and combining both interconnected theories of constructivism and social constructivism (Johnson, 2017), it is beneficial to understand how an individual learn through all the experience of actions, construction of knowledge, interaction with others, and acquisition of meaning from these all elements (Bandura, 1981; Jonassen, 2013; Vygotsky, 1978). The learning theory of social constructivism is highlighted here because it is applied to the research focus of student engagement in the present study.

Pragmatism Theory

Pragmatism, originally derived from the Greek word for a deed or action, distinguished itself by featuring the practical consequences rather rational thoughts (Magee, 1987; Sahakian & Sahakian, 2005; Hodges, 2016). John Dewey contributed to this philosophy tremendously and explored its application in the educational field. His views were also known as instrumentalism or experimentalism, in that the knowledge or beliefs were considered as the instruments of action (Hodges, 2016). Dewey argued that students should be active learners and engaging in the real problem-solving, as he weighed practical interaction more than theoretical learning.

Holding a pragmatist view, learning music can bring important benefits including patriotism, health, moral influence, and so forth. In the history of school music education in the United States, music was one of the curricular placements considered to be a tool of promoting intellectual effect. Previously, the National Association for Music Education (2014, July 21) stated the role of music education as promoting success in society, "music can shape abilities and character…music education can greatly contribute to children's intellectual development."

The possible goal of holding a pragmatism philosophical assumption is to find solutions to real-world problems and to appreciate for diverse approaches to collecting and analyzing the contexts in which research takes place (Creswell & Poth, 2018). Under such a philosophical framework, the present study implemented both qualitative and quantitative methods and integrated these two data strands to explore solutions for the research questions.

Mixed Methods Research Approach

In order to employ mixed methods research as study approach, researchers need to understand what mixed methods research is, how mixed methods research is defined, and what type of research problem can be addressed best by mixed methods research. The definition is commonly accepted as the approaches that combine methods of data collection and data analysis associated with quantitative research and methods of data collection and data analysis associated with qualitative research (Creswell & Plano Clark, 2007; Greene, Caracelli, & Graham, 1989). Additionally, the term mixed methods research has largely been settled down for it reinforces the combination (quantitative, qualitative, and integration) of multiple methods within a study (Hesse-Biber, 2010), as used in the current research. Creswell and Plano Clark (2018) defined mixed methods research:

> Mixed methods research collects and analyzes both qualitative and quantitative data rigorously in presence to research questions and hypotheses, integrates (or mixes or combines the two forms of data and their results, organizes these procedures into specific research designs that provide the logic and procedures for conducting the study, and frames these procedures within theory and philosophy. (p. 5).

It is known that qualitative data provide more detailed descriptions of a problem while quantitative data offer more generalized results. “Quantitative results can net general descriptions of the relationships among variables, but the more detailed understanding of what the statistical tests or effect sizes actually mean is lacking”

(Creswell & Plano Clark, 2018, p. 9). Qualitative research approaches and quantitative research approaches have their own limitations. The qualitative method examines a small number of individuals, the result falls short in generalization. Likewise, the quantitative method examines a larger population but the understandings of any one individual is limited. “Hence, the limitations of one method can be offset by the strengths of the other, and the combination of quantitative and qualitative data provides a more complete understanding of the research problem than either approach by itself” (Creswell & Plano Clark, 2018, p. 8).

Mixed methods research provides more evidence for studying a research problem than either quantitative or qualitative research alone (Creswell & Plano Clark, 2017). A single type of data source may not tell the whole story so either one may be deficient to address the research problem. One type of evidence is inadequate, especially when two forms of data are divergent. The advantages of using mixed methods are more than this. Mixed methods research realizes the possibility of answering questions that could not be answered by quantitative or qualitative approach alone. For example, the question might look like, “To what extent do qualitative interviews and quantitative survey converge or diverge to each other?” By combing the approaches, “researchers gain new knowledge that is more than just the sum of the two parts” (Creswell & Plano Clark, 2018, p. 13). Another advantage of employing mixed methods research as preferred mode for addressing problems lies in its practicality. Morgan (2007) believed that it is practical for researcher to combine both inductive and deductive thinking to understand and solve the problem.

Case Study Research Approach

Case study research has a long, distinguished history across many disciplines, which can be traced to the origin from the anthropology and sociology (Creswell & Poth, 2018; Hamel, Dufour, and Fortin, 1993). The identification of a specific case is described and analyzed in the beginning of case study research, and typically the case may be the current, real-life cases that are in progress so that the information gathered is accurate and not lost over time (Creswell & Poth, 2018). Since the identification of case(s) is/are bounded, meaning it/they can be defined or described within certain parameters. Examples of parameters for bounding a case study can be places where the case takes place or the timeframe of when the case occurs. As stated in Yin's (2014) text, case study can be bound within a unique institutional unit of analysis.

A good qualitative case study tends to develop an in-depth understanding, so it relies on a wide range of data forms, drawing from interviews, observations, documents, and audiovisual material (Creswell & Poth, 2018). Case study includes substantial and detailed qualitative and quantitative data about the case (Luck et al., 2006). The findings of a case study would involve both a description of the case and themes generated from analyzing data, and issues that the researcher has revealed in studying the case. Stake (1995) recommended the case studies often end with assertions or Yin's (2009) suggestion of building "patterns" or "explanations."

Case may refer to a concrete entity, an individual, a small group, an organization, or a partnership, thus, case study research involves the study of a case within a real-life (Yin, 2014; Creswell & Poth, 2018). A qualitative case study is an in-depth analysis of a

bounded system (bounded by time and place) (Merriam & Tisdell, 2016). Case studies can be historical or biographical, wherein "the researcher conducts extensive interview with one person for the purpose of collecting a first-person narrative" (Bogdan & Biklen, 2011, p. 63). Three types of case studies are distinguished by the focus of analysis for the bounded case, and also are distinguished by the intent of the case analysis such as the single instrumental case study (Baxter and Jack, 2008), the collective or multiple case study, and the intrinsic case study (Creswell & Poth, 2018). Many qualitative research experts have advocated a general approach to qualitative case studies in the field of education and provided systematically procedures for conducting a case study research (Merriam & Tisdell, 2015; Stake, 1995, 2006).

Case study focuses on developing an in-depth description and analysis of a case or multiple cases (Creswell & Poth, 2018). Case study's unit of analysis can be an event, a program, an activity, or more than one individual. The strategies of data analysis in case study also vary in other types of qualitative approaches. Case study analyzes data through description of the case and themes of the case as well as cross-case themes (Creswell & Poth, 2018). One unique feature possessed by case studies is that comparative cases, also called multicases or multisite case studies, can involve data collection and analysis from "several cases and can be distinguished from the single case study that may have subunits or subcases embedded within" (Merriam & Tisdell, 2016, p. 40).

Mixed Methods Case Studies Research Approach

A mixed methods design intersected with another type of methodology, namely mixed methods case study approach, is gaining popularity recently (Creswell & Plano

Clark, 2018). Researchers who implement mixed methods case study are interested in "forming cases, such as medical clinics, schools, or families, in a study, where the quantitative and qualitative data collection, results, and integration are used to provide in-depth evidence for a case" (Creswell & Plano Clark, 2018, p. 116). The basic idea of this complex mixed methods design is consistent with that of a case study focusing a detailed understanding of a case through identifying, describing, and interpreting the case based on diverse sources of data (Creswell & Plano Clark, 2018).

"Both mixed methods and case study research offer unique methodological advantages for researchers wanting to address the complexity of these research problems and issues" (Plano Clark et al., 2018). In a conference committed to promoting an international forum for interdisciplinary mixed methods research, Carolan et al. (2016) was quoted as saying, "case study and mixed methods research are not separate entities but rather the boundary between them is permeable and fluid allowing each to either support or lead in a research endeavor."

The most prominent approach is to use a convergent design to build or interpret the case (Curry & Nunez-Smith, 2015), indicating that simultaneous data collection of quantitative and qualitative is more applicable to the mixed methods case study. Creswell and Plano Clark (2018) also advocated the convergent design by stating "often both qualitative and quantitative data are gathered at the same time and then brought together to form distinct cases for analysis" (p. 11). In a convergent mixed methods design, "the data collection and analysis happened at the similar timeframe for the baseline survey and

interviews of all or a subsample of the participants of the survey" (Fetters et al., 2013, p. 2140).

The procedures for implementing a mixed methods case study design were as follows: state quantitative research questions and determine the quantitative approach (e.g., survey instruments) and then collect closed-ended quantitative data; at the same time,, state qualitative research questions and determine the qualitative approach (e.g., case study) and then collect open-ended qualitative data (Creswell & Plano Clark, 2018). It is common in mixed methods case study research to analyze two strands of data with respective analysis strategies, such as using descriptive statistics for quantitative data analysis and theme development for qualitative data analysis. To merge or analyze the two sets of results, joint displays and/or transforming the qualitative data into quantitative variables are usually used. In the final stage of analysis, the understanding of the cases is enhanced by forming and interpreting integrated conclusions that result from combining the two databases together (Creswell & Plano Clark, 2018).

Using a convergent parallel mixed methods case study in the current research, both quantitative and qualitative data were compared and combined to comprehensively understand how college students engage in music education courses incorporating online learning components that would not be captured by quantitative data only. For this approach, quantitative data was used to measure three types of interactions (student-instructor interaction, student-student interaction, and the student-content interaction) to be examined as student engagement for college students who have been taking music education courses containing online learning components. At the same time in the study,

interviews were conducted to collect the qualitative data to explore the in-depth understanding of students' perspectives of their engagement in music education courses learning experience.

Themes were identified through analyzing qualitative data, offering nuances and details for better understanding of student engagement in music education with online learning components. Qualitative data were mainly analyzed by using Descriptive Coding method and In Vivo Coding method (Saldaña, 2016). As demonstrated by Saldaña, a "theme is an outcome of coding, categorization, and analytic reflection" (p. 198). A unit of analysis or a phrase, was often used as the proposal of a theme, bringing similar meanings, and unifying the nature of a certain experience into a larger scheme.

After quantitative data and qualitative data were analyzed using individual approaches, the researcher merged two strands of results to identify the cases. Conceptualized by Creswell and Plano Clark (2011), integration occurs through connecting, building, merging, and embedding two methods of data collection and analysis. Subsequently, the cases were identified based on the criteria selected to compare both strands of data. After analyzing the merged quantitative and qualitative data, the researcher usually creates the criteria for distinguishing a case between cases (Creswell & Plano Clark, 2018). The sequence that current study design follows was shown in Figure 2.

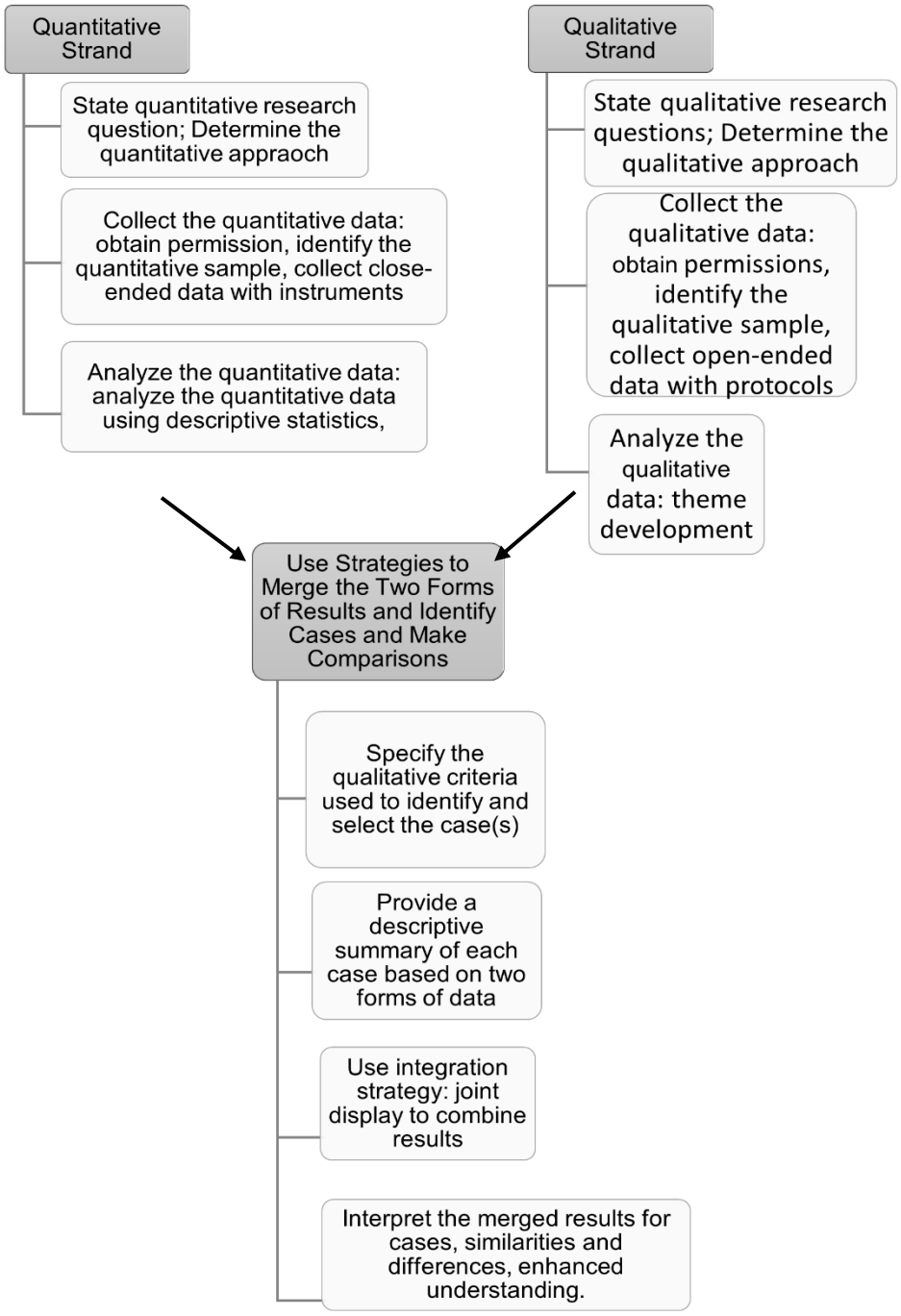

Figure 2

Adapted Flowchart of the Basic Procedures in Implementing a Mixed Methods Case Study Design with a Convergent Approach

Choice of Mixed Methods Case Study Design

The reason of choosing the mixed methods case study approach is that "mixed methods design is based on the researchers needing to use both quantitative and qualitative information to best describe a case or to compare cases" (Creswell & Plano Clark, 2018, p. 117). Collecting both quantitative and qualitative data was to compare results the two forms of data to bring better insight into the problem than would be obtained by either type of data separately (Creswell & Plano Clark, 2018). The core design of a mixed methods design was based on the mixed methods convergent design, as was often the most popular core design for case study projects (Creswell & Plano Clark, 2018).

The attribute of the present mixed methods case study focused the central phenomenon of student engagement in music education with online learning that college students currently have been experiencing. The unit of analysis (case) in this present study was individual students' engagement in an online-based learning context, transforming from the face-to-face model. In this research, the cases were within the bounded system that the investigation's focus is undergraduate music education students at a Midwest university music school under a global pandemic-induced environment so that it fit one of the defining characteristics of case study that the case is real-life and in progress. As stated earlier, student engagement is a dynamic continuum process that the researcher recommends is "best understood through in-depth qualitative work" (Kahu, 2013, p. 764).

Secondly, the researcher has access to diverse data collected from quantitative survey and qualitative interviews to be able to illustrate different situations of students' engagement in music education with online learning components. These situations were described as different cases indicating the comparable engagement characteristics of music education students' online learning experience. In addition, the researcher is equipped with quantitative research expertise and qualitative case study research procedures so that the mixed methods case study design was chosen as the research approach.

The choice of mixed methods case study design was reflected by the need of constructing a multidimensional measurement of student engagement (i.e., learning activities, instructors, classmates, etc.). Fredricks and McColskey (2012) believed "it is important to incorporate additional quantitative and qualitative methodologies that allow researchers to measure longer-term engagement and variations across activities, as well as engagement in both individual and group contexts" (p. 2).

In reviewing the existing literature, only a limited number of studies have explored student engagement in higher music education that incorporates online learning components. Furthermore, fewer resources have been found to address the similar problem using mixed methods case study research, which enables the researcher to provide both quantitative and qualitative results. The integration of both forms of results contributes a deeper understanding of the problem.

Procedures

Data Collection Procedures

Quantitative Data Collection. For the spring semester in 2021, the university in the present study has implemented completely web-based courses. Hybrid courses, or face-to-face courses, but in these face-to-face courses, safety protocols were observed carefully, such as the use of a facial covering, use of social distancing, and so forth. The participants in this study were college students who have been enrolled in music education program at a higher educational institution in the Midwest region in the United States of America. Due to the COVID-19 spreading nationally, attending online courses have been expected or required by university administrators and courses' instructors. Some courses have been delivered fully remotely and accomplished via online learning management systems (e.g., Canvas) and internet-based synchronous conference applications (e.g., Zoom, etc.). Other courses were delivered by the hybrid approach with a certain percentage of learning content to be accomplished via online learning applications, either synchronous or asynchronous, and by in-person instruction within the classroom settings. The researcher contacted the department of music and acquired the email addresses of students who were taking music education courses with online learning components. The researcher acquired faculty permission prior to the start of the study.

Participants in their sophomore year were enrolled in a music education course named Music Learning and Development; those in their junior year were enrolled in Instrumental Music Methods, Choral Music Methods, and Professional Practicum

Experience; those in senior year were enrolled in Student Teaching Seminar. All participants completed the survey online in Qualtrics using personal computers. Survey participation took place either during a scheduled class on campus or an online Zoom meeting. The present researcher recruited 55 participants (N = 55) who have taken at least one music education course that incorporated online learning components in the 2021 spring semester.

The researcher acquired the permission of the instructors of the music education courses and asked them to conserve approximately 20 minutes during a regularly scheduled class meeting either face-to-face or online. Spending 10 minutes to present the research project, the researcher shared the consent form and a link embedded with the Qualtrics survey was displayed on the classroom screen or shared screen in Zoom meeting. Students were asked to download the consent form for their records. Participants indicated their consent to participate by completing the Qualtrics survey. Survey data were stored securely in Excel with an encrypted account.

Self-Report Survey Rationale. Self-study was examined as the provision of "strong personal reference in that it involves study of the self and study by the self" (Samaras & Freese, 2006, p. 12) for practitioners. Blake (2018) echoed the legitimization of using students' perceptions of online learning, more specifically, in the music education profession. He stated that student perception may help understand which parts of online learning experience that students value and which they do not. It allows the investigators to better understand students' minds about the intricacies of online learning (Blake, 2018). Several researchers have utilized self-report style surveys to investigate

students' perceptions of online learning experiences (Pintrich et al., 1993; Keuthen et al., 2000; Freeman, 2004; Bell & Naugle, 2007).

The Instrument of Student Engagement. It is the Likert style survey, that consisted of three factors: student-instructor interactions (seven statement items); student-student interactions (eight statement items); and student-content interactions (seven statement items). In the original version of the Online Community and Engagement Scale, there were 23 items. The reason that the item 23, "I feel isolated in class," was removed from this study was that it was too general a description to be clear about which factor it was. In Young and Bruce's study, the factor analysis of "Feel isolated" was tested .34, .21 and .21 of individual factor, the lowest loading value among all variables.

In the current study, there were totally 22 variables (e.g., contact with instructor, committed to working with classmates, complete all assigned work, etc.), presented in a random order instead of clustering. Each item contained one variable and presented as descriptive items (e.g., I enjoyed interacting in my class; I am well organized in my learning, etc.). Thus, participants were asked to indicate the extent of agreement to each item, (i.e., Strongly agree; Agree; Neutral; Disagree; Strongly Disagree). This instrument has been used as main instrument in several studies, such as in the article of Dean et al. (1999). In current study, this instrument was involved in the pilot study prior to actual study.

Qualitative Data Collection. A subset (20%) of individuals of sophomore through senior, resulting in 11 (n = 11) participants who had participated in the quantitative survey were randomly selected to the one-on-one interviews and answered

qualitative questions. The size of this subsample fits the requirement of providing a credible research results in the qualitative strand, as the suggested sample size is 8 to 20 (Castro et al., 2010; Creswell & Plano Clark, 2018). The qualitative sample size is normally much smaller than the quantitative sample, which enables the researcher to gain a rigorous and in-depth qualitative understanding (Creswell & Plano Clark, 2018). A difference in qualitative and quantitative participant size is common to mixed methods designs especially if the research goal is to compare and synthesize two sets of data into a complementary picture.

The individual interviews were conducted via Zoom meeting at a time convenient for the students. The researcher consulted with students in advance via email. Survey questions and interview questions are attached in appendices. Maximal variations sampling, one of the sampling strategies (Creswell & Plano Clark, 2018), also known as maximum variations sampling, was used to diversify individual perspectives regarding student engagement in online learning with music education courses so different grade levels of participants and male as well as female participants were selected for the study.

Stratified sampling of 20% of sophomore through senior students, respectively, a total of 11 students were invited to attend one-on-one interview with the researcher. Consequently, 4 sophomores, 4 juniors, and 3 seniors were involved in the qualitative data collection. The interviews were conducted individually via Zoom meetings and each one lasted approximately 30 minutes. Only audio files were stored electronically in an encrypted folder. The interviews were transcribed through a web-application, and the transcriptions were read thoroughly to ensure accuracy.

Interview questions were designed beforehand based on three types of interactions. The protocol of interview questions were vetted by a panel of qualitative research experts to examine its validation. In the first part of the interview, the participants were asked a few questions including, “What courses have you enrolled in this semester?”; “How many courses are incorporating online learning components?” (explaining that online learning components may refer to any asynchronous or synchronous lessons or material access through online learning management system), “Have you ever taken any online courses before COVID-19?”; “Why did you choose to take the courses when you were aware that they would largely contain online learning components?” and so on. The aim of asking these personal questions in the first part of the interview was to obtain each participant’s personal academic information and shorten the distance between interviewer and interviewee.

In the second part of the interview, the researcher asked 21 open-ended questions in total regarding three main factors of student-student interaction, student-instructor interaction, and student-content interaction. For example, to obtain participants’ perceptions of their interaction with the instructor, the researcher asked, “Are your instructors’ responsive to your questions? Quick? Effective? Is the problem solved?”; “Would you comment on your instructors’ feedback on your homework/projects?” and so forth. To understand participants’ perspectives of their interaction with peers, the researcher asked, “Do you communicate with your classmates out of the class time? Is it related to the course material or personal topics?”; “Would you speak about working with classmates to benefit each other’s learning? (prompting examples such as class meetings,

online discussion boards, collaborative assignments, etc.)" To understand participants' opinions of their interaction with the learning content, the researcher asked, "How enthusiastic do you think you are about learning content and why?"; "What specific strategies do you use to organize yourself in your online learning courses?" and so forth.

As suggested by Castro et al. (2010), qualitative interview questions can be designed as similar or parallel as quantitative instrument of the survey with a series of scales. Similarly, Creswell and Plano Clark (2018) found that, to better merge the two databases, parallel questions in both quantitative and qualitative data collection should be asked. In present study, the researcher constructed the interview questions based on the Young and Bruce's Online Student Engagement Survey instrument. For example, one of the survey questions asked participants to indicate their extent of agreement, articulated as "I complete all of the assigned class work," and the parallel interview question was "How do you see yourself completing assignments?" For another example, one survey question asked, "I am well organized in my learning," and the parallel interview question asks, "What specific strategies do you use of organizing yourself in the course learning?" In summary, quantitative questions ask "what" and qualitative questions ask "how" and "why."

In order to obtain more relevant response from participants in qualitative data collection, Castro et al. (2010) recommended researchers to ask questions narrowly. A focused question followed by a general question benefits a respondent's self-identification of a particular topic. In the current study, for example, to gain a specific self-identification of student-student interaction beyond the class, a general question was

asked first, “Do you communicate with your classmates out of class?” then the question was narrowed down to “Is it related to course material or personal topics?”

Data Analysis Strategies

Quantitative Data Analysis. In mixed methods research studies, quantitative data analysis must follow a system of rigorous rules and steps if the researcher intends to draw generalizations to a population from quantitative data collection. (Creswell & Plano Clark, 2018).

Exploratory Factor Analysis. To answer the quantitative research question, survey data were collected and saved in Excel. First, Exploratory Factor Analysis (EFA) was used to identify the variables common to each factor. EFA provides the eigenvalues and Factor pattern. The eigenvalues will display the percentage of variation explaining each factor. For example, the factor pattern will identify each item that contributed to student-student interactions the most and the least, showing the participants’ valued characteristics of peer’s interactions. Similarly, the factor pattern will demonstrate which item contributed most to student-instructor interactions and which item contributed most to student-content interactions. In previous studies, the observed variables were found loaded under factors as shown in Table 1.

Table 1

Factors and Observed Variables in Previous Studies

Student-Student Interaction	Student-Instructor Interaction	Student-Content Interaction
Committed to working with classmates	Contact with instructor	Well organized in my learning
Interact with classmates	Instructor is responsive	Give effort to the class
Help fellow classmates	Trust instructor to handle inappropriate interactions	Complete all assigned work
Connect personally with classmates	Instructor provides a well-organized course	Maintain assigned readings
Enjoy interacting	Instructor consistently enforces rules	Visit course website
Share personal concerns	Clear course rules	Earn good grade
Participate actively online	Instructor is present & active online	Desire to learn
Ask questions when needed	Feel isolated	

Analysis of variance (ANOVA). Responses to each individual participant's survey responses were given a numerical value (5—Strongly Agree; 4—Agree; 3—Neutral; 2—Disagree; 1—Strongly Disagree) in Excel. Statistical calculations, mean scores, medians, and standard deviations, and so forth., were carried out using SPSS as well as Excel to ensure the reliability of results from both brands of analysis software. ANOVA will be done by using SPSS.

A one-way analysis of variance (ANOVA) was conducted to determine if student perception of interactions (student-student, student-instructor, student-content) was different for students at each of the three grade levels. To be specific, each grade level students' scores of three types of interactions (student-instructor interaction, student-student interaction, student-content interaction) were summed up. ANOVA was used to examine a statistically significant value existing to defer to others. Then, three types of

interactions were divided up separately—each grade level students' student-instructor interaction scales, student-student interaction scales, and student-content interaction scales—was tested to discover if there is a significant difference of individual aspect of student engagement among three levels. ANOVA was again used to examine a statistically significant value existing to defer to others.

Qualitative Data Analysis. In qualitative strand, researcher employed audio transcription installed in Zoom to transcribe interview videos into document files. The researcher organized the transcriptions by individual participant, taking notes and memos, reading these in their entirety several times. In the first cycle of qualitative data analysis, initial categories were generated. The researcher corrected mis-transcribed texts and converted textual data to MAXQDA. Initial codes were first developed, then clustered, and finally, categorized for all transcripts.

The present study aimed to explore individual participant's perspectives on student engagement in music education courses with online learning components so Descriptive Coding and In Vivo Coding were mainly utilized in this study for qualitative data analysis. The Descriptive Coding method, also known as "topic coding," stems from the "hashtag" symbol in social media, indicating its identifiable content. A word or a short phrase can be used to represent a topic with Descriptive Coding when summarizing qualitative data (Saldaña, 2016). Descriptive Coding, as a basic tool, is appropriate for coding interview transcripts, journals, documents, and dairies in the first cycle of data analysis (Saldaña, 2016). Though Descriptive Coding was not recommended by Saldaña in case studies, it is an approach to analyze the basic topic of data to facilitate the

subsequent categorization. Turner (2014) argued that the Descriptive Coding develops "basic vocabulary" of data and forms the fundamental level categories for further analytic work (p. 199). Wolcott (1994) supported this and claimed Descriptive Coding's goal is to help the researcher to grasp what had seen and heard in general, "rather than scrutinize the nuances of people in social action" (p. 55, 412).

In the present study, when participants answered the interview question, "What specific rules do your instructors use to manage teaching?" a Descriptive Coding method was used to summarize what was mentioned in participant responses. For example, in response to this question regarding specific rules, one participant talked about assignment completion rules and Zoom meeting attendance guidelines. Another stated the rules were clear for camera use in Zoom classes. From analyzing the interview transcriptions, the code "Instructor's Rules in Synchronous Online Classes" was generated to describe regulations established by the instructor in managing synchronous classes.

The meaning of In Vivo is "the terms used by participants themselves" (Strauss, 1987, p. 33), In Vivo Coding is preferred for case study data analysis by qualitative researchers (Strauss, 1987). It refers to a word or short phrase from the actual language used "by participants themselves" (p. 33). In Vivo Coding is also known as "literal coding," "verbatim coding," "inductive coding," "emic coding," and so forth. In Vivo Coding is preferred because it creates the response codes in an interactive way, and it identifies and labels codes in thematic categories (Strauss & Corbin, 1990).

As claimed by Saldaña (2016), In Vivo Coding is appropriate for all types of qualitative studies and particularly fits "studies that prioritize and honor the participant's

voice" (p. 106). In Vivo Coding is applicable to studies that seek to enhance and deepen the subjects' understanding of their lives (Saldaña, 2016). Charmaz (2014) suggests that In Vivo Coding can provide a means of verifying that the researcher has grasped issues of significance, and it may "may help crystallize and condense meanings" (p. 135). Saldaña's most important recommendation is to code data inspired by the participants themselves, rather than created by the researcher.

Several In Vivo Codes could be clustered under one category since the codes are connected in a hierarchical way. Charmaz (2014) suggests that the In Vivo Coding method, which captures participants' views and actions, may be a very powerful approach for first cycle of data analysis. For example, participants provided their insights of synchronous classes that several In Vivo codes (e.g., "Awkwardness," "Lack of Authenticity," "Privacy Concern," etc.) were gathered into a higher-level code "Inadaptability."

The integration of quantitative and qualitative data can considerably improve the value of a mixed methods study (Fetters et al., 2013). In a convergent mixed methods case study, the analyzed quantitative and qualitative data are merged to generate a case(s) and compare multiple cases, where integration is occurring (Creswell & Plano Clark, 2018). Merging typically happens "after the statistical analysis of the numerical data and qualitative analysis of the textual data" (Fetters et al., 2013, p. 2140). There are a series of strategies to merge two sets of results. The procedure is to "specify the qualitative and/or quantitative criteria used to identify and select the case(s)"; "provide a descriptive summary of each case based on the qualitative findings and the quantitative results";

"compare the cases in terms of the selected criteria and combined results using integration strategies" (Creswell & Plano Clark, 2018, p. 119).

The current study employed data transformation by converting qualitative codes and themes into counts and variables in order to establish criteria for each student engagement factor (three types of interactions) with an aim of identifying cases and case boundaries. This is a common approach to data reduction. Aiming to identify the cases of different student engagement levels, the dichotomous variable was applied. The researcher dichotomized each code and assigned the score of 1 or 0 for each participant, showing whether the code was indicated by the individual.

Interpretation of Integrated Data

In a convergent design of mixed methods case study research, it is also common to present the integrated results through joint displays. This approach consists of "analyzing the data to create a table or a graph that jointly displays the quantitative and qualitative results side by side" (Creswell & Plano Clark, 2019, p. 227). The advantage of using the joint display is that it provides a more direct and nuanced comparison of the results. The joint display has been frequently employed in convergent design mixed methods research as well as in mixed methods case study research. The most important element in a joint display graph is to present how quantitative and qualitative results are congruent and discrepant. Quantitative scores are displayed next to qualitative quotes to provide a complete view of both strands of data. In the current study, joint display was used as final representation of cases and more discussion of divergency and convergency are in the results session.

After presenting two strands of data and their combination, the researcher needs to elaborate on the integrated data and interpret based on the cross-cases comparison. Creswell and Plano Clark (2018) suggested the following steps for interpreting merged results for cases, such as "draw interpretation about the individual cases," "draw interpretation about the similarities and differences among cases," and "interpret how the understanding of the cases is enhanced by the integrated conclusions" (p. 119). Along with explaining the commonality between cases, the investigator ought to discuss the borders of individual cases. An in-depth understanding of discrepancies between cases was also developed at this point.

Reliability and Validity

When using Bruce and Young's Online Student Engagement Survey, 22 variables were randomly presented to ensure validity of instrument for the current research. Each of three types of interactions were not clustered together and were arbitrarily displayed. According to the past use of this instrument among the large population, substantial evidence of reliability and validity were determined. Young and Bruce studied reliability of the instrument, reporting that "internal reliability for each factor was found to be .87, .90, and .81" (p. 223).

A series of conditions are determined to guarantee a valid and reliable self-report survey, which are as followings (Baird, 1976; Pace, 1984): (1) the information requested is known to the respondents, (2) the questions are phrased clearly and unambiguously, (3) the questions refer to recent activities, (4) the respondents think the questions merit a thoughtful response, (5) the information requested is potentially verifiable, and (6) the

question asks for information that is known to those answering the questions, and does not threaten, embarrass, or violate their privacy, or encourage the respondent to respond in socially desirable ways.

Qualitative questions were designed parallel to quantitative survey questions, so validity threats were limited. The current research employed joint display to present data integration in which further minimizes validity threats. Specifying the boundary of cases, appropriately describing each case, explicitly merging the quantitative and qualitative databases for each case, and conducting cross-case analysis of integrated results for multiple cases may also enhance validity (Creswell & Plano Clark, 2018).

Mixed methods research scholars frequently address major issues pertaining to validity. This dialogue is not limited only to validity, but also includes legitimation (Onwuegbuzie & Johnson, 2006), inference quality (Teddlie & Tashakkori, 2009), and so forth. Validity issues in mixed methods research involves both quantitative and qualitative approaches. Data integration procedures are also a focus of validity consideration. This includes “sample integration legitimation,” “weakness minimization legitimation,” and “paradigmatic mixing legitimation” (Onwuegbuzie & Johnson, 2006, p. 56, 57, 59). Teddlie & Tashakkori (2009) suggest that validity ought to be addressed in both the design and interpretation stages of research. After their evaluation by a panel of experts, the current research questions in the quantitative and qualitative and mixed methods were determined appropriate and suitable.

Ethical Issues

Ethical issues may occur in a study during any procedure, such as prior to

conducting the research, at the beginning of the study, during data collection, in conducting data analysis, and so forth (Creswell & Poth, 2018). Weis and Fine (2000) advise researchers to consider circumventing ethical issues by establishing supportive and respectful relationships with participants and assessing concerns that participants may be fearful of disclosing. In this study, the researcher sought institutional review board (IRB) approval and various instructors' permission before starting the study (Appendix A). The participants were well-informed of the research purposes, and they received informed consent forms before providing their responses. The participants were also informed of the probability of potential participation in the qualitative interviews after they completed surveys.

Data from each strand of collection were safely stored and the researcher indicated willingness to share research results with participants (American Psychological Association, 2010). This project made adequate provisions to maintain confidentiality of data by keeping electronic records (e.g., survey responses in Qualtrics, interview audio files in Zoom) secure and only available to the researcher for the duration of the data collection and analysis portion of the study. Records that contained all personally identifiable information was stored in an encrypted file on a secured server designed specifically for use in research. Due to the face-to-face element of the individual interviews (Zoom), anonymity could not be guaranteed for qualitative interview participants. However, every effort was made to protect the identity of the participants and all information remained confidential. Survey and interview data will be kept indefinitely to aid in the dissertation process as well as for professional presentations.

Identifiable records such as interview recordings and transcriptions were deleted one month following the completion of the study and pseudonyms were assigned for reporting interview participant data in order to protect their identities (Appendix B).

Additionally, the researcher secured permission to use the Online Student Engagement Survey from the developer who is associated with University of Minnesota. All data resources were only accessed by the researcher during the study.

Pilot Study

Prior to conducting the actual research, a pilot study was implemented, and it followed each procedure of a mixed methods case study rigorously. Five participants completed the survey, and the researcher interviewed each of them subsequently. The pilot study provided various guidelines for the formal investigation. Specifically, a better protocol of questions was explicitly articulated to inspire participants to offer rich perspectives in experiencing the online learning components.

When experimenting data integration, the researcher used the transforming qualitative data to create criteria and multiple cases. According to Onwuegbuzie and Teddlie (2003), one purpose of transforming data from qualitative data into quantitative data is to build dichotomous categories. The researcher defines “a dichotomous variable that indicates whether a theme or code is present (scored as 1) or not present (scored as a 0) for each participant” (Creswell & Plano Clark, 2018, p. 225). The graphic of joint display was employed to display separate strands of data in this trial data presentation. The procedures illustrated above enhance the operations in the subsequent research that consisted of a larger set of data.

CHAPTER 4: RESULTS

The current research study aimed to explore student engagement in music education courses with online learning components. In this chapter, quantitative data results, qualitative data results, and mixed methods data were presented accordingly. Descriptive data and inferential statistics were used to answer quantitative questions, aiming to answer questions regarding generalized student engagement within the online learning contexts. Qualitative findings consisted of an overview of how music education courses were offered during the course of this study. Qualitative data are exhibited by analyzed themes, domains, subdomains, parent codes, codes, and participants' quotes. The qualitative strand of investigation portrayed a nuanced and comprehensive understanding of how students participated in three types of interactions within an online learning environment.

Through the process of data integration, the criteria for differentiating cases of student engagement were generated, and three individual cases representing different levels of student engagement are presented through the graphics of joint display. At the end of this chapter, cross-case analysis of the three types of interactions provides an insightful understanding of individual student engagement in adapting themselves to music education courses implemented through online learning components.

Quantitative Data Results

Descriptive Data

Descriptive data including participants' grade level, gender, applied area, ideal teaching area, and the number of previous online courses taken by students prior to the

study are shown in Table 2. Quantitative data analysis results are provided in the order of research questions. The total number of participants in the quantitative strand was 55. All surveys were fully completed and there were no missing data.

Table 2

Sample Descriptive Statistics

Demographic Information			Student Engagement Total	Mean	SD
	n	%			
Grade Level					
Sophomore	20	36.4	1762	88.100	0.846
Junior	18	32.7	1512	84.000	0.904
Senior	17	30.9	1448	85.177	1.025
Gender					
Male	28	50.9			
Female	27	49.1			
Applied Area					
Voice	26	47.3			
Brass, woodwind, or percussion instruments	24	43.6			
String orchestra instruments	2	3.6			
Piano, guitar, or harp	2	3.6			
Composition	1	1.8			
Ideal teaching area					
Vocal music	18	32.7			
Instrumental Music	21	38.2			
Elementary/General Music	15	27.3			
Number of previous online courses					
0	23	41.8			
1	16	29.1			
2-3	11	20			
4 or more	5	9.1			

Music Education Course Delivery

According to students' responses in interviews, all participants indicated that all the courses they enrolled in incorporated online learning components but varied in extent of each type used. Specifically, sophomore students have taken Foundations and Intro to Music Education, professional practicum experiences, and Music Learning and Development in the 2020-2021 academic year. Foundations and Intro to Music Education was primarily delivered via the synchronous Zoom classes, through Canvas. The accompanying practicum experience was executed by synchronous observation and in-person music teaching at primary or secondary school settings. Music Learning and Development was delivered via in-person class attendance, asynchronous instruction via video lecture, and the use of Canvas.

Junior music education students experienced General Music Methods, Composition Methods, Instrumental Music Methods, and Choral Music Methods. General Music Methods and Composition Methods were principally delivered through face-to-face classes, aided by asynchronous instruction videos and the use of Canvas. Instrumental Music Methods was primarily implemented by synchronous Zoom classes, facilitated through Canvas. Choral Music Methods was delivered via Zoom classes in the first half of the class, face-to-face classes in the second half, and facilitated through Canvas. Junior level practicum experiences were in-person and included music teaching at assigned elementary and secondary schools.

Senior music education students enrolled in Music and Special Education, Student Teaching Seminar, and Student Teaching. The academic courses were delivered via

synchronous Zoom classes, facilitated through Canvas. Both the senior level practicum and full-semester student teaching were in-person music teaching experiences at assigned elementary and secondary schools.

Quantitative Data Analysis Results

Reliability statistics for each factor inside the instrument scale were tested. Cronbach's alpha for student-instructor interaction (seven items) was .741, student-student interaction (eight items) was .837, and student-content interaction (seven items) was .806. These reliability statistics indicated a high level of internal consistency for the scale.

(1) What are the correlated factors of student engagement in music education courses with online learning components?

Before answering this research question concerning the correlation between three types of interactions, scatter plots were drawn between each pair of interactions. A linear relationship was found in each pair. Results presented in Table 3 showed student-student interaction has a significantly positive correlation to student-content interaction ($r = 0.309$, $p = 0.02$); student-instructor interaction has a significantly positive correlation to student-content interaction ($r = .344$, $p = .01$), at alpha level of .05. However, there is no significant correlation found between student-instructor interaction and student-student interaction.

Table 3

Correlation between Three Types of Interactions

	Student-Instructor Interaction	Student-Student Interaction	Student-Content Interaction
Student-Instructor Interaction	--		
Student-Student Interaction	0.170	--	
Student-Content Interaction	0.344*	0.310*	--

Note. * Correlation is significant at the 0.05 level (2-tailed).

(2) What are the dominant items within the factors of student engagement in music education courses with online learning components?

Exploratory Factor Analysis was conducted to answer this question. Eigenvalues and factor patterns are shown in Table 4. Each item under its corresponding factor was slightly different from results in studies by both Bruce and Young (2011) and Mucundanyi (2019). Eigenvalues that are above two are retained as factors based on the scree plot. The first eigenvalue, 5.405, for factor one accounted for 24.6% variance in the data. The second eigenvalue, 3.578, for factor two accounted for 16.3% variation in the data. The third eigenvalue, 2.126, for factor three accounted for 9.7%, so the three factors examined explained 50.5% of the total variance.

Table 4

Factor Pattern and Loading Values

Student Engagement Item	Factor Loading		
	1	2	3
Factor 1:			
Clear course rules.	**.668**	.294	-.035
Instructor is responsive.	**.541**	-.114	-.124
Instructor is well organized.	**.524**	.044	.186
Instructor consistently enforces rules.	**.506**	.420	.079
Contact with instructor.	**.500**	.075	-.058
Trust instructor to handle inappropriate interactions.	**.487**	.042	.206
Ask questions when needed.	**.392**	.199	.267
Instructor is present and active online.	**.376**	.101	.014
Factor 2:			
Interact with classmates.	.147	**.821**	-.176
Committed to working with classmates.	.124	**.743**	.092
Connect personally with classmates.	-.065	**.727**	-.037
Share personal concerns.	-.101	**.687**	-.043
Enjoy interacting.	.150	**.656**	.207
Help fellow classmates.	.238	**.642**	.112
Participate actively online.	-.040	**.404**	.270
Factor 3:			
Complete all assigned work.	-.192	.290	**.716**
Well organized in my learning.	.116	.233	**.715**
Earn good grade.	-.156	.418	**.712**
Visit course website.	.102	-.161	**.667**
Maintain assigned readings.	.375	.159	**.530**
Give effort to the class.	.385	.056	**.437**
Desire to learn.	.335	-.017	**.364**

Note. $N = 55$. Factor loadings above .30 are in bold. The extraction method was principal axis factoring. The rotation method was varimax with Kaiser normalization.

In the current research study, “Ask questions when needed” was clustered under the factor of student-instructor interaction, whereas it was loaded under student-student interaction in the studies of Bruce & Young (2011) and Mucundanyi (2019).

According to the factor analysis, “Clear course rules” is the dominant item within the factor of student-instructor interaction, loading of .668. Subsequently, “Instructor is responsive” loads .541 and “Instructor is well organized” loads .524. This finding indicated that a well-managed (regulated), responsive, and well-organized instructor is appreciated by students in the courses with online learning components. The item “Interact with classmates” is contributed the most within the factor of student-student interaction, loading of .821. The item “Committed to working with classmates” loads .743 and “Connect personally with classmates” loads .727. These results suggested that students understand they would practice social communication and collaborative works with peers in the online learning environment. “Complete all assigned work” is the dominant item within the factor of student-content interaction, loading of .716. Then, “Well organized in my learning” loads .715 and “Earn a good grade” loads .712. These three items weighted similar values. This result indicated that full assignment completion, a well-organized learning routine, and sufficient self-efficacy contributed to student engagement with learning content.

(3) Quantitative Central Question 2: Is there a significant difference in overall student engagement among three grade levels of music education students?

One-way ANOVA was used to answer this research question and the results of four quantitative research questions were presented in Table 5. Tests of homogeneity of

variances were conducted prior to carrying out the analysis. There is no statistically significant difference in overall student engagement among three grade levels of students with online learning components incorporated in music education courses. There is no statistically significant difference in student-instructor interaction among three grade levels of students. Similarly, there is no statistically significant difference in student-student interaction among three grade levels of students. It is obvious that student-student interaction gained lower score compared to other two types of interactions, indicating less interaction between classmates was acknowledged. Additionally, there is no statistically significant difference in student-content interaction among three grade levels of students.

Table 5

Means, Standard Deviations, and One-Way Analyses of Variance in Student Engagement among Three Grade Level Music Education Students

Measure	Sophomore		Junior		Senior		F	Sig.
	M	SD	M	SD	M	SD		
Overall Student Engagement	88.100	0.846	84.000	0.904	85.177	1.025	1.024	.366
S-I	29.150	0.736	28.167	0.743	29.706	0.701	1.113	.336
S-S	25.638	0.938	25.521	0.935	24.654	1.095	0.237	.790
S-C	29.65	0.706	26.667	0.977	27.294	1.085	2.812	.069

Qualitative Findings

Qualitative data consisted of descriptive data results, infrastructure for student engagement, students' mindset of readiness, student engagement containing three types of interactions, and three cases generated to represent three-level of student engagement.

Demographic Profile of the Participants

Participants in the qualitative strand consisted of 11 students through sophomore to senior, in which there were six self-identified females and five self-identified males. Based on stratified sampling extraction, four sophomores were randomly selected among the total number of 20 participants who were available to be involved in the qualitative strand. Similarly, four juniors were randomly selected among 18 juniors, and three senior participants were chosen from 17 seniors. Based on interview responses, seven students indicated their applied area are brass, woodwind, or percussion instruments; three were in voice area; one was in string orchestra instruments area. Participants also denoted their future planned teaching area: four participants selected instrumental music, four chose elementary/general music, and three opted for vocal music.

Two overarching themes emerged through coding the qualitative data: "Infrastructure" and "Student Engagement." Under the theme of "Infrastructure," two domains and four subdomains were generated to serve as a basis of student engagement within music education courses incorporated with online learning components. The domains include students' mental preparation and instructors' overall organization in a course, which are "Students' Mindset" and "Instructor's Management Tools."

The theme of "Student Engagement" has three domains— "Interaction between Student and Content," "Interactions between Students and Students," and "Interaction between Students and Professors." The domain of "Interaction between Student and Content" contains five subdomains as followed, "Self-Organization," "Efforts and Consistency in Learning," "Asynchronous Learning Settings," "Synchronous Learning Settings," and "Canvas Usage." The domains of "Interactions between Students and Students" and "Interaction between Students and Professors" have four subdomains individually. The Appendix E mapped the qualitative data analysis, displaying the frame for the following texts of themes, domains, subdomains, parent codes, and codes.

The Infrastructure for Student Engagement

The infrastructure of a course referring to instructor's rules, reinforcement of rules, expectations, organization of course materials, and set-up in learning management system platform is essential to course execution. A well-constructed infrastructure with consistent reinforcement is fundamental to effective student engagement. The following texts will display the establishment of infrastructures in multiple music education courses with online learning components from students' perspectives.

Instructors' Rules in Synchronous Online Classes. To manage orderly teaching practices and ensure meaningful student engagement, instructors usually generate rules in online learning environments. In investigating participants' responses of what specific rules their instructors use to manage teaching in online aspects of learning, students provided details of rules. For example, during synchronous class meetings, three out of four sophomore students claimed their instructors set a strict rule that the camera should

be on all time. Instructors asked all students to enter the Zoom classes on time with microphone on mute until they need to unmute and speak.

Understanding the instructor's rules is the first step for students to engage with the class appropriately. One of the sophomore interviewees indicated her awareness of rules that "being aware of video on and when to turn on and off microphone." However, juniors and seniors also mentioned that the camera should be on but this was not rigorously required even though they shared the same instructor as sophomores. Therefore, the instructor might alter synchronous class rules based on the consideration of developmental stages or privacy protocols. For instance, one junior expressed his understanding of the instructor's perspective on this rule, stating, "Try [your] hardest to have your camera on to be present in synchronous meetings and discussions." The instructor also allowed students to have five-minute breaks with their cameras off every hour, indicating that students in upper-level classes were given more leniency with regard to the camera requirement.

Additionally, full attendance of all synchronous classes was required in a senior-level music education course. One senior commented, "Classes meetings are mandatory. To receive a passing grade, all five of those [class meetings] are required." Instructors also employed strategies to keep students engaged through the synchronous teaching process. One sophomore posed that, "Sometimes the instructor posts a math question that everyone has to give an answer in the chat…or drawing names out of a hat and asking questions to random people." Such interactive methods revealed that the instructor was adapted to ensure students' attention and continuous engagement in the Zoom class.

Reinforcement of Rules in Synchronous Online Classes. Once the instructor's rules were clearly outlined either in the course syllabus or announced at the beginning of the semester, consistent reinforcement of rules becomes vital to proceed with teaching and learning practices. To reinforce the rule requiring cameras to be on during synchronous classes, the instructor revised area-wide professionalism requirements that impact student grades. Prior to the COVID-19 pandemic, the "Professionalism" component included requirements for punctuality for class meetings, fulfillment of assignments, communication between professors and students, and participation in professional organizations. Currently, it further added to clarify how many points would be deduced when the camera is off without reason during the synchronous classes. A junior declared her awareness of this policy and the consequences of violation, "If students don't tell professor why they don't have camera on, professionalism points would be deducted. Or [the instructor will] get an email or message to inform that students need to turn camera on." Besides, a graduate teaching assistant also took responsibility for making sure of the students' camera on during the class.

Precise requirements for assignment submission, strict adherence to assignment submission practices, and consistent application of consequences for delayed assignment submission are standard tools for managing online aspects of courses. Instructors outlined such regulations on Canvas. Participants jointly mentioned that their instructors were clear about requirement details related to assignments. One junior student admitted that his instructor "put exact dates and requirements on Canvas's Assignments." Students understood the consequences for late submission, because "Delayed submission caused

deducted credit." To enforce these rules, the instructor also sent reminders of assignment deadlines and updated emails about changes to homework requirements. Participants collectively claimed that their instructors reminded students about updated assignment information during synchronous class meetings or they created an announcement of any changes through emails or Canvas.

Instructors' Expectations. Compared to rules, instructors' expectations are less rigorous strategies to administrate teaching. When the professor posts a question in discussion during synchronous class, students are aware that they are expected to answer that question by unmuting themselves to speak or type in the chat window. Such awareness raises more chances of interactions because there is a lack of authentic conversation with instant ideas exchange in synchronous class. As junior students noted that she is aware of the instructor's expectation, "[She] asks [us] to type in the chat to stay us engaged." Students commonly understand that typing in the chat serves to stimulate the class interaction.

Course Materials Organization on Canvas. A well-organized course website helps students locate content materials and reference those resources as needed. If course information and resources are easy to find, students may find online course navigation and assignment completion less overwhelming or challenging. For example, students may need to use a lesson plan template daily for practicum teaching preparation, so they may prefer easy access to frequently needed documents like this one. In this study, students reported that their professors provided content-related resources on Canvas by gradually unlocking this content throughout the semester. A well-structured flow of modules

facilitated students' comprehension of the overall frame of one course. For example, one sophomore student recalled that his professor outlined Modules by weekly topics. He clearly knew that once a set of three modules were introduced in class, they would have an examination immediately following. Consequently, he stated, "I think [our] music education course is organized very specifically and structured. Last semester's music education course was structured well too."

The efficient organization of course materials may streamline students' use of Canvas. If frequently used materials can be found in multiple places, such as the syllabus and assignments, it may result in redundant readings or downloading. As a sophomore student pointed out,

> In some classes, the syllabus file can be found ranging anywhere from in the Syllabus tab on Canvas to Files, Pages, Modules, and the homepage, which I ended up literally downloading all of them to my computer. … Assignments, are the same way, where they're posted either under Pages, the Home screen, Files, the Modules, in the Assignments tab itself, and in the Grades tab. … It is just a very roundabout very much like clicking on different things until you find what you need. … I don't remember which one is which and it's clicking through every single tab until I find it, for every class.

Similar comments came from other participants in every grade level. They reported materials and files "jam packed" on Canvas, making it is difficult to find a particular file. Students found it confusing and frustrating when they were unclear about

which files could be found within each course's navigation links[1]. A junior stated, "[It is] a little frustrating to know what are under Assignments, and what are under Modules." Excessive use of navigation links may also worsen the situation, particular if a student wanders around on Canvas but cannot access desired materials. A senior described his experience on Canvas, "All the documents in Canvas [were] laid out, syllabus, files, and so forth. It has been super confusing to find them. There are just so many in there, so many folders. I click and click, and notice I am still back here." These comments above imply that it is beneficial for students to be able to access each resource presented concisely and in a predictable manner.

Canvas has been integrated for years to facilitate curriculum construction in this Midwest university music school. Given its extensive and powerful functions, there are many possible design combinations that allow individual instructors to organize course syllabi, assignments, quizzes, materials, and assessments according to their individual needs and preference. This limitless customization, however, can make it difficult for students to use Canvas efficiently when they enroll in various courses within one semester. Multiple students reflected their confusion when they encountered diverse approaches to various course platform construction practices used by different professors.

Moreover, students also found it helpful when their assignments were linked to the To-Do list that Canvas automatically generates so that they can view their upcoming assignments by timeline. A junior claimed, "All courses' assignments are listed in To-Do list are really helpful. Assignments and To-Dos should be linked, but sometimes in

[1] The following course navigation links will still be visible to instructors even if they have been hidden or disabled: Home, Announcements, Assignments, Collaborations, Conferences, Discussions, Files, Grades, Modules, Outcomes, Pages, People, Quizzes, Rubrics, Settings, and Syllabus.

several classes, they are not, I cannot access every To-Do." Students appreciated it when the navigation links of Module on Canvas were structured chronologically. A junior student suggested, "Modules tabs and Assignment tabs are sorted by date/time. The upcoming assignments come up first. Very helpful."

Instructors' Consistency in Canvas Set-up. One of the online learning environment infrastructures relies on a well-constructed and consistent layout of the course website. The instructors' consistency in Canvas organization provides support for meaningful student engagement. Usually, instructors create and publish syllabi on Canvas, including all necessary information, such as an instructor's contact information, objectives, content outlined by topics or dates, assignments' requirements, course schedule, grading procedures, and so forth. Upon completion of their syllabus design, they add Canvas navigation links accordingly, such as Assignments, Modules, Quizzes, and so forth.

However, if the information displayed in course syllabi differed from what was exhibited on Canvas, students found it confusing. For example, several students reported that it was frustrating when an assignment's submission deadline in the syllabus did not match with the due date listed in Canvas. One sophomore student recalled, "There has been a scheduling issue in theory class. The syllabus did not match what we talked about in the class. The professor got back to us with a clarification email." A senior student stated, "if due dates are unclearly presented in different places, such as Canvas Assignment and syllabus, I would go for one and maybe miss the other." One sophomore added, "One of the courses, we have all due dates incorrect, which confuses students. For

online learning, it's necessary to have everything easy to find and to see so we know what to expect. Because we can't always reach instructors."

Students in this study reported that their instructors often reference the syllabus to help them understand the requirements of assignments more clearly, which is a convenient way to maintain consistency. One junior student proposed, "Instructors make sure to reference the syllabus and let us understand if there are questions about the assignments."

Students' Mindset

In order to be prepared for any new learning environment, it is important for students to be equipped with a mindset that positively affects their cognition and behavior toward transformation (Taylor & Gollwitzer, 1995; Mahoney, 2009). A notable theme that emerged in the current study related to mindset and self-regulation. Students acknowledged the need to take ownership of their learning with the understanding that much of their work would be done independently. Students in the current program articulated their desire to stay on track in the program, which meant that in order to progress in their program, they would need to take required courses regardless of the format in which they were offered. The desire for continuity in a student's individual program of study, coupled with the mindset of "on my own," set a premise for student engagement regarding three types of interactions in music education courses with online components.

The determination to continue to progress toward degree completion as well as desire to maintain continuity in their area of study contributed to a mindset that promoted

student engagement. Due to the COVID-19 pandemic, students experienced a sudden transition from traditional face-to-face instruction to the online learning. Participants in this study were aware that their progress in the music education program depended on taking courses as they were offered, no matter the delivery models. This awareness added to their determination and adaptability to new learning environments.

When participants were asked why they chose to take those courses even when they became aware that the courses would contain more online learning components than they used to, participants shared similar understandings of the situation. Students stated that they had no alternative options because music education courses would be adapted to model that would better ensure their safety. They also articulated their determination to progress in their course of study as planned. A junior commented, “That is the only way these courses are offered, [I do] not have a choice, just go with the flow.” Similarly, a senior commented, “They are all my requirements for the degree.” Students also chose to stay, regardless of unprecedented learning contexts, because they were concerned about their scholarship funding if they opted for a gap year. “It is not conducive to take a year off for scholarship,” stated one student, and another echoed the desire to, “Finish my degree in four years and to keep my scholarship.”

Only three students showed specific interest in participating in online learning. Based on their previous online learning experiences, they showed confidence in navigating this new education model. A junior student said, “[the] music education program has everything laid out for us and class is set in each semester.” A sophomore student stated, “Online learning is interesting.” While a junior student said, “I am not that

daunted by online learning. It does not really bother me that much." Students' mindset regarding desire continuity may have also stemmed from a collective sense of community that most would go through this period altogether. One sophomore student expressed her social interaction readiness by saying, "I felt I was comfortable knowing that I have done online courses in the past. I also know that people around me were doing the same thing, that I am not the only one."

In addition to the establishment of consistent external/environmental infrastructure, a student's mindset regarding self-regulation and responsibility is critical for engagement in learning within online contexts. Researchers widely agree that students need to be self-directed, organized, motivated, and responsible in order to achieve in online learning environments (Bates, 2000; Mahoney, 2009). An understanding of "on my own" is derived by listening to student voices as they describe previous online learning experiences. Successful students develop technology proficiency and understand how to engage with self-paced content. Having the mindset of "on my own" affords students a smoother transition from regular face-to-face classes to the technology-based learning formats.

To better understand self-regulation and responsibility, the researcher in the present study asked whether students had experienced online learning before COVID-19; and how their previous online learning exposure impacted their current learning during the university-wide transition to remote instruction. Again, a variety of formats of online learning were taken into consideration (synchronous, asynchronous, and hybrid learning). Among 11 interview participants, only two students indicated that they never experienced

online learning; two students had taken one online course prior to this semester; one had taken two online courses; four indicated they had four or more online learning experiences; and two approached Google Classroom as a learning platform during high school. A junior student indicated, “I’ve used Google Classroom in high school. … I used that for assignments, and I became an expert.” One senior also pointed out, “Google Classroom helped me get familiar with online materials, navigating myself in technology and stuff, because it is similar to Canvas.” A sophomore shared that she adapted quickly because she had already been using online learning platforms when she was in high school.

Students with previous experience with online courses stated they were less reliant on instructors and were more self-reliant. Participants across all grade levels shared similar comments on this topic, and some provided more extensive details about how they adapted to meet online course requirements. For instance, one sophomore expressed,

> They taught me a lot of how to learn on my own, which I feel has been a big part of this past year, either on my own or through peers that are also in the same class. I rely less on an instructor than normally would when we can physically see them. It helps with pacing, online assignments, and so forth.

Another sophomore indicated,

> It made me more accountable for my online learning. There was not a professor reminding me of due dates in person. All of my assignments, my exams were up

> to me, so I think transitioning into online learning was a little bit easier because of that.

Each grade level of participants admitted the advantages of acquisition of self-responsibility from their earlier online educational experience. One junior acknowledged, "We have to take more responsibility for our own learning." A senior student stated, "I know it [online learning] is self-paced and I structure myself. That helped me a lot." From another student's perspective, online learning means less interaction with students and professors. It is more self-paced. She claimed,

> I know how it is set up, I am able to go at my own pace, and dive into the content. I do well learning on my own pretty decently. I'm definitely, by no means, engaging with other students or really engage with the professor. It's like here is the coursework and I have to manage it and do it. It is up to us having to figure it out on our own; to go into the course and look it up ourselves.

Students explained that knowing self-regulation and personal responsibility in learning helped them apply strategies to meet academic goals. A senior student articulated, "Those courses help me figure out a good pace…how to break up larger chunks of work and manage my time to complete the assignments. I am not doing the entire thing the night before it is due."

Student Engagement

After coding interview transcripts, domains and subdomains were generated regarding student engagement with online aspects of music education courses taken during the pandemic. Under the domain "Interaction between Student and Content,"

students' "Self-Organization" and "Efforts and Consistency in Learning" represent students' self-reported engagement in learning content. In addition, this domain includes students self-reported participation represented by subdomains, "Asynchronous Learning Settings," "Synchronous Learning Settings," and "Canvas Usage." The second and third domains are "Interactions between Students and Students" and "Interactions between Students and Professors," consisting of five respective subdomains. These domains encompass situations and issues surrounding interactions that occurred both within and outside of classes.

Self-Organization. Most qualitative participants possessed a set of self-organization methods and comfortably used those to organize their academic and personal lives. Students placed assignments, due dates, events, scheduled tasks, for every class in their planners. Several interviewees reported that they have been able to organize their academic study and daily lives well without any negative impact due to COVID-19 or new delivery formats in music education courses. Task and time management allowed students to plan ahead and evaluate their accomplishments afterward, which are necessary steps in learning.

There are generally three systems that students use to organize themselves: "Physical Planner," "Digital Planner," and a mix of both. Students who employed the former, exported that they enjoyed the motion of physically writing items down and then crossing them off. They enjoyed the process of writing all their plans down because they believed doing so facilitated memorization and plan execution. For example, one sophomore student indicated, "I have everything written down on paper because I am

more likely to remember when I have it written down"; another mentioned, "I have a whiteboard calendar to write down a whole month plan and a journal book documenting weekly plans." One other senior provided more details of how he used written planner,

> I have a written planner with different color bars/marks representing different tasks. Whenever I change my schedule, I write it down immediately. I am better about keeping something physically written down, and then I remember it more. Writing helps me remember things.

"Digital Planner" refers to all digital tools used by students to help with organization. Several students reported that they rely on the Calendar feature and the To-Do list features in Canvas as well as and reminder emails sent by their instructors using Canvas. The To-Do list automatically lays out upcoming assignments and events; Canvas Calendar consolidates important information and dates for all of their classes. Five participants cited both Canvas Calendar and To-Do to help them organize their study. For instance, a junior student shared, "I use the Calendar on Canvas a lot more and reference the syllabus for all classes for assignments, and so forth." Students also use various planners on their cell phones, tablets, or computers. As this junior posed,

> Calendar and Notes app on my phone and computer… my entire life is in them. I write down everything that is happening; how long that work is going to take approximately. I use in the bottom for extracurricular things and the top for education courses in Calendar. I put notes to make sure to do this and that.

One of the juniors mixed the use of physical and digital planners, "I use the Whiteboard and the To-Do list on Canvas, and I set a reminder in the app on my phone so

I can bring it to class." Two students highlighted the weekly Canvas notification emails (a customized setup) that help ensure their assignments are submitted successfully. They also review upcoming to-dos, and comments made by classmates or instructors. A senior added, "I check Canvas To-do list and get weekly Canvas updates emails."

Efforts and Consistency in Learning. Parallel to the domain "Self-Organization," students provided their perception of their efforts in learning content provided online. These are clustered within the domain "Effort and Consistency in Learning." In this domain, two subdomains emerged to represent students' perspectives regarding their engagement with course content, "Efforts in Assignments Completion" and "Grades and Rewards." Most of the participants were confident in their ability to manipulate technological aspects required for assignment completion, and they reported that efforts paid off in terms of their learning. Despite these favorable responses, students also encountered various problems while approaching assignments.

Efforts in Assignments Completion. All music education college students in this Midwest university music school started to approach Canvas and had been extensively exposed to it when they were enrolled in the first semester. Most of the participants selected to participate in this current study were proficient in using Canvas as a learning tool. Because of this previous experience, students were technologically capable of completing and submitting assignments on Canvas during the pandemic, though they needed to use Canvas more extensively as a result of the shift to remote learning.

Students shared similar comments about completing assignments on time and doing so consistently. A sophomore student noted, "I am very consistent with completing

assignments. … I make sure all my assignments are done." A senior indicated, "I try to put my best foot forward regardless of the situation," and another added, "I am consistent. I don't really miss deadlines or ask for extensions." One of the junior students even claimed that he was better about completing assignments on time than he was before the pandemic.

More interestingly, two junior students suggested they are currently investing more in learning because online learning platforms require more formatting operations (e.g., creating PDFs, video recording and uploading, creating shareable links, etc.). One junior student suggested, "It takes more work. I have to write and scan to meet a requirement." Without live performances typically required in traditional music classroom, students could try multiple times to record assignments that included video recordings of performances. One mentioned, "I definitely worked harder, since I don't have only to give one-shot [e.g., conducting an imaginary ensemble] in front of the class, so I prepare as many times as I want."

However, several students reported that they encountered a variety of problems while completing assignments. Three types of challenges emerged that impede students' progress as they work to complete course requirements, including difficulty understanding assignments requirements, transferring previous knowledge into learning new concepts, and managing homework due to busy schedule. Specifically, students may not understand assignment requirements but hesitate to seek help. For example, one sophomore mentioned,

> I don't necessarily quite understand what it's asking, and I don't want to go out of my way to like set up a meeting with a professor. I am going to do the part of it that I understand. I kind of fluff the rest of it in a way that sound believable.

Some students claimed that they understand the importance of submitting assignments on time, but they struggled to do so. Course assignments are useful tools for the evaluation and consolidation of students' learning. However, to apply and synthesize what an individual has learned from a class or assigned reading materials to homework assignments is easier for some students than others. A sophomore stated,

> I tried to put effort into all my assignments unless the assignments were super stressful. I just try to do everything I can and just get it done. Sometimes I don't know how to go about the assignment. It is too confusing. Maybe they didn't explain well.

Students also perceived it stressful to complete all assignments on time due to the large number of classes in which they are enrolled. A senior pointed out, "Last semester, I had so many online classes, 19 credits in total, so I lost personal touch, and I was late with a lot of assignments and classes."

Grades and Rewards. Students offered their positive thoughts on the rewards of learning, including perceived achievement and good grades. A sophomore reviewed her two years of study, and commenting, "I definitely, especially since the start of this year, I have seen better grades and have a better understanding of the material." Students acknowledge a connection between effort and achievement, as another sophomore indicated, "I think my grades definitely reflect a lot of my effort, attention, and care."

Many concluded that they have progressed in their commitment to assignment completion, their self-discipline, and their confident in their ability to successfully navigate future careers as music teachers. A junior stated, “I’ve definitely gotten better at it. Back in the beginning of my sophomore year, I was much more frequent to have late or missing assignments. … this whiteboard calendar … helped me stay organized a lot better.” A senior student teacher stated confidently, “If I put more effort into making an arrangement, like for elementary music, it definitely pays off more—I can use it now, so like building skills—putting in the effort—pays off later.” Another senior student talked about the rewards that accompany improved self-discipline, “I feel like the self-paceness of it makes me a little bit more discipline and trying to work harder throughout the day…”

Synchronous Learning Settings. The frequency of synchronous learning has exponentially increased since the onset of the COVID-19 pandemic when universities were compelled to shift away from face-to-face learning. A considerable number of classes were quickly transformed and delivered with Internet-based tools. Students were suddenly exposed to synchronous classes, remote meetings with instructors, and web-based discussion with peers. Such sudden transformation seemed to allow the courses proceed without interruption, however, students gradually identified both benefits and challenges with their sudden shift to synchronous class meetings.

Benefits. Participants provided several advantages with attending synchronous classes attendance via Zoom, including convenience, opportunities to interact with classmates, and varied options to interact with course instructors. For example, a senior was thankfulness for the availability of synchronous classes that allowed her to take a

larger number of courses. Otherwise, she would not complete those classes in a traditional education model. She said, “On the other hand, if there were no online elements in last semester, I would not have been able to take those 19 credits all in person. It saved my energy and was not physically exhausting.”

Students also were compelled to participate when assigned to breakout rooms in Zoom classes. They also noticed that the random distribution of members into small groups rooms allowed them to meet a broader range of classmates. A junior student observed, “There is less wiggle room to hide. It is interesting to be assigned in random groups to meet people who you otherwise wouldn’t see.” A senior student indicated there were more flexible paths to engage with the class. Students could either unmute to speak or they type a question in the chat window where everyone could read their comment without interrupting the class. She said, “In Zoom class meetings, if anybody has a technology issue, they can type into the chat instead of interrupting others. The instructor answers the question in the chat.” A junior student agreed with this and stated, “If I am nervous, I can just type in the chat and not even say anything out loud.”

However, students perceived many more disadvantages and challenges than benefits while participating in synchronous classes. There are eight codes that emerged from the analysis of students’ interview transcripts. These codes represent students’ reluctance to adapt themselves to the synchronous learning environment even though there were no alternative options.

Inadaptability. By analyzing qualitative data regarding students' perceptions regarding synchronous class meetings, eight types of reasons why they dislike Zoom classes were gathered into codes below.

1. "Location Preference." One sophomore student indicated her preference for having multiple physical locations for learning. Having only one place to learn kept her from being able to use separate spaces for different tasks (i.e., separate atmospheres for taking lessons, attending academic classes, or practicing instruments.

2. "Lack of Efficient Communication." A senior student noted that instructors can easily miss questions raised in chat windows. He notes that when the instructor shares his/her screen with all class members, the chat window is invisible. He said, "It [communication] is a little slow. The instructor might miss it. It is hard to see a question, or someone gets stuck out of the meeting if screen is sharing."

3. "Unstructured Class." If the Zoom class is not well planned or only focused on one activity, students can quickly lose their energy and concentration. During the course of one interview with a junior student, the student referenced being exhausted five separate times. "Everything happens over Zoom. It's so packed. … Energy is dispersed if a 90-minute class only has us discuss what we have read. Not productive."

4. "Distraction." Students indicated that they were distracted during Zoom classes, especially when they were situated in their own living spaces, with personal devices nearby. Students acknowledged that they were distracted by their cell phones when they are nearby. They perceived that their instructor as well as their classmates would not recognize when they were not paying attention. A junior student said, "In Zoom, the

professor says something, and students do their own stuff like text, or comment on whatever." A senior student also expressed, "There are more distractions around in my room, it's hard for me to focus."

Internet variability may also cause interruptions with content learning. One senior student indicated, "If there is an Internet issue happening, I miss half the conversation and get confused." Students might not want to ask the instructor to repeat what has been missed due to Internet instability. A junior student stated, "[The] problem may be irrelevant to class content, maybe technology like a camera or non-stable Internet issue. It's a waste to ask the instructor to repeat if it's only a tech issue."

5. "Privacy Concerns." Only one participant addressed privacy concerns while attending Zoom classes, but it may be another factor decreasing engagement. This junior student worried about being exposed in front of the webcam. He stated, "I don't want to keep my camera on for that long. It is about the privacy issue. If I am in my bedroom, not a practice room, I don't want to have the camera on all the time."

6. "Fatigue over Time." Some students expressed their feelings toward Zoom classes have changed from interest to exhaustion. A sophomore student stated,

> When the pandemic started, Zoom was new, novel, and [it was] so cool that we can do all of this, and we adapted to everything so seamlessly. Now I am getting to the point where I am realizing that I have not learned barely anything in the past year.

Other students agreed with this, reporting that they lessened their webcam use over time. "When the pandemic first started, I was very alert and present, then I started to turn my

camera off." A junior student stated a similar idea, "Back last March [one year before], I was definitely more inclined to keep my camera on. Now, I am not, if it is not necessary."

Students frequently mentioned the length of their Zoom classes as being problematic. A junior student pointed out, "Zoom meetings are really long for two hours." Another junior agreed, "Two-hours of Zoom can be super exhausting. … It is a bit of burnout."

7. "Awkwardness." Some students reported that having their cameras on in Zoom made them feel awkward. They reported that this awkwardness stems from the feeling of being watched by both their classmates as well as the instructor all the time and staring at themselves. A sophomore stated, "It was just kind of weird to always have that [camera] on me, kind of feel like someone's watching me all the time." Students perceived it weird that talking through the Zoom class forced them to be watched by everyone. One senior said, "It is kind of intimidating to unmute in front of everybody." Students shared that they struggled to adapt to the Zoom interface projecting their own images and facial expressions. One senior suggested,

> It was just so weird when I was on Zoom all day, every day, staring at myself and watching my own reactions and kind of like manufacturing my own reactions to things. I felt so in-human on Zoom all the time, because it is impossible to look at yourself while talking in real life.

8. "Lack of Authenticity." One of the apparent differences between a synchronous virtual classroom and a traditional on-campus classroom is its lack of authenticity. Interview participants voiced their frustration with specific aspects of Zoom for music

classes, describing a lack of authenticity commonly found in traditional music classrooms to include a participant's physical appearance, instant call and response in music-making activities, and the ability to engage in real-time music making activities. A junior student described how difficult it was to implement a call and response activity in the virtual classroom, "It's awkward when teaching others, I cannot hear any of them. They are singing along, probably, but it is silent because they're on mute." A sophomore shared her concern about the difficulty in operating the instant call and response in music teaching within a Zoom class. She stated, "There is no means to have given and take, bouncing things off between teacher and student in moment like in-person setting."

Further, this lack of authenticity impeded students' motivation to engage with the instructor and classmates in the virtual classroom. However, both two formats of classrooms have distinctive features that the one cannot be compensated for the other. If students were aware of each classroom's characteristics earlier, they would have more adaptability.

A sophomore revealed that the intangible pressure of instructor-student interaction that occurs in the traditional classroom moved her to engage more. In addition, the organic problem-solving typically done through a side-by-side conversation with classmates ensured more meaningful interaction with instructors. She suggested,

> It relates to the online things not feeling real because when I'm in person, and there's like a physical person standing there explaining it to me, I feel much more obligated to understand the concept. … For face-to-face class, one of the great things about class is that if you don't understand something but it's like not a

> major thing and you don't necessarily go to the teacher for it, you can look over at your friends. They can maybe give you a short explanation that they know you're going to understand.

Adaptability. Although students offered negative feedbacks regarding synchronous learning settings, they also revealed their ability to adapt to new learning scenarios in this challenging year. For example, a student identified a problem that led her to be distracted and she applied strategies to solve the problem. She was struggling with staring at herself while on camera, as in the above text, and then she found a way to deal with the issue, saying,

> Throughout time I decided like to try to not look at myself, but then I just tried to not to think too deep about it, just like not care as much about it… and keep it more on the Speaker View[2], rather than the Gallery View[3], so I can just focus on the one person who is talking.

A junior student, for another example, adapted herself by working through the embarrassment she felt when she asked questions in public. She confessed, "I feel a lot more used to it and comfortable. It felt less like an interruption to unmute, add something to the conversation, or ask question." Several students acknowledged that they felt less worried about engaging with the class at the time of the interview than they did during the initial transition to online contexts.

---

[2] Speaker View will only show a larger image of who is speaking and 3 or more smaller images of participants on the screen. Students can view the instructor's screen-sharing with the Speaker view.

[3] Gallery View will display all participants' thumbnail images in a grid pattern. One single screen can show up to 49 participants in the meeting.

While the previous section detailed inadaptability while adjusting to new learning environments, some participants demonstrated that they not only adapted to the new learning format, they also offered help to others, helping to ease an embarrassing moment and showing care. A junior student stated, “Everyone knows how awkward it can be [if no one raises their hand to answer a question], so we try and help each other.” A senior student wanted to keep her camera on because she wanted to “let people know I pay attention to what is happening because we all know each other, and we care about music class.”

Instructor’s Role in Zoom Classes. A careful plan for class activities and time used is needed to organize a well-constructed synchronous class via Zoom. According to the students’ perspectives in the qualitative strand of the study, the teacher serves a variety of roles in a Zoom class: “Information Provider,” “Visitor in Breakout Rooms,” “Lecture-Discussion Balancer”; “Prepared Presenter”; “Question Distributor,” and “Patient Questioner and Answerer.”

“Information Provider” refers to the instructor offering correct and relevant information to students’ learning. A junior student complimented, “They’ve given the right information: all set out nicely, and it all makes sense.”

“Visitor in Breakout Rooms” means that the instructor is present in the individual discussion rooms. A junior student mentioned, “In breakout rooms, the professor and teaching assistant would join us, providing a summary before small group discussion.” A senior student pointed out how her instructor would let students ask questions when joining the breakout room. She said, “[the] instructor pops into each breakout room to see

what we are talking about and to listen. She asks us if we have any questions." Students appreciated the instructor's presence, but also acknowledge that it may sometimes be more appropriate for the instructor to stay out of the breakout rooms. A senior commented, "Sometimes she [the professor] does, sometimes she doesn't. I think it is good she does both. When she does not, she gives us more freedom to freely talk with our peers. When she does, it is also a good time to run down more personalized discussion with her."

"Lecture-Discussion Balancer" is attributed to the role instructors play when they arrange a certain amount of lecture as well as discussion in divided groups. If the instructor balanced the time between explaining course content and initiating relevant discussion, students were more engaged. A sophomore student described typical Zoom sessions, "The professor did both talking and discussing, as opposed to being just told." Another sophomore shared, "In Zoom class, the teacher would teach and then lay out breakout rooms for us." A junior agreed that instructors did a good job organizing more discussions to engage more students, "[When they] do a lot of discussions, in my view, it's to make sure that everybody's staying on track."

The role of "Prepared Presenter" refers to a teacher's professionalism demonstrated through preparation or presentation materials. Students recognized that the Zoom classes were delivered smoothly when multi-media and materials were well-prepared. A senior explained, "In whole group, it is lecture style. She has her PowerPoint pulled up and with links for videos; she shares her screen while talking."

"Question Distributor" represents student observations regarding the ability of the instructor to provide questions that encourage students to exchange ideas and elicit critical thinking in a Zoom class. It is necessary for an instructor to pose questions leading a meaningful discussion among students. A junior student pointed out, "The instructor gives us good questions when we break up into small discussions."

"Patient Questioner and Answerer" denotes the extra time it takes to answer questions, wait for answers, or solve issues in a Zoom class because of Internet lag. A junior student noted that her professor was clearly aware of it, claiming, "In whole group Zoom, [the instructor was] respectful in waiting for an answer."

In addition, it is as easy to express emotions or communicate nonverbally through the Internet as it is in traditional in-person classrooms, but students still value an instructor's energy in synchronous classes. A senior student observed, "My professor is very, very enthusiastic about all of the classes, always trying to lead and energize students."

Asynchronous Learning Settings. In contrast to synchronous learning settings, asynchronous learning was used less frequently. In the current study, asynchronous learning refers to time-bound, self-paced instruction that may include videos that are made by instructors to augment or supplement synchronous and face-to-face classes (if available). It may also include Discussion boards, where instructors allow students to share ideas and present individual work, without needing real-time interaction. Interestingly, according to students' responses, the use of instruction videos and discussion boards were less favorable. Students provided their perceptions of

asynchronous learning opportunities by stating their individual preferences, offering criticism, and making suggestions for better use of asynchronous learning settings.

Instructor Videos. Instructors invest time and effort in recording instructional videos to make up course content that would otherwise be lost with fewer face-to-face classes. However, students did not address faculty efforts in their comments and instead provided observations articulating why they view instructor videos as inferior replacements for face-to-face instruction. A sophomore student shared, "I don't see the asynchronous videos to view them as like being in class. It is just like supplemental extra information that's going to help with like a specific assignment." Second, they perceived different energy levels from the instructor. Another sophomore student stated,

> I need enthusiasm and energy expressed by the professor. If we are always asked to watch a video about how to play oboe, they are not as enthusiastic as they are in person. Content delivered via videos is hard for me, not energetic and passionate.

More importantly, participants indicated that they lose focus quickly. Students embraced shorter videos rather than longer ones because "If it is a longer video, it is difficult to focus." A junior echoed, "If we are asked to watch a video, I tend to zone out sometimes."

Only a few students identified the benefits of pre-recorded instructional videos, citing instances where they used them as a reference for content learning or when preparing for exams. A sophomore student explained, "Recorded lectures are available when I need to reference back to them." In contrast to instruction videos, students offered more welcoming comments with regard to reading materials. A sophomore student

commended their instructor for their use of reading, “For reading, I really like reading because I can move at my pace a lot more versus watching a video.”

Discussion Boards. Discussions is a platform for class discussion on Canvas, allowing both instructors and students to initiate and contribute to a topic. Students provided valuable insights into how they view effective and ineffective use of discussion boards. Students believed the Discussions should unfold as follows:

1. Consistent grading policies and criteria ensure the participation. When discussion board was established graded assignments, students are motivated to complete them. A junior student suggested, “If discussion boards are graded assignments, we’ll have to do those.” Two senior students provided detailed grading parameters, suggesting that they connected grading with participation. One senior said, “It gives participant points based on how many words you use. [You need to] get a certain number of points to pass the assignment.” In students’ view, a non-graded discussion means little feedback from the instructor. A junior student stated, “If they [Discussions] are not assignments, the instructor would not give feedback.”

Students indicated their preference for specific guidance and clear grading criteria for discussion participation. A sophomore student expressed her eagerness to know the requirements for participating in Discussions, such as whether peer responses are required, how many posts are required, and so forth. Another sophomore student argued that if students are not provided guidance on how to interact in Discussions, they might assume it is sufficient to merely compliment each other. She said, “We just phrase

[commending words] differently, where it's like 'Oh yes, very good point. I think you articulated very nicely,' because none of us know what to say."

2. The discussion board should be a place for sharing new ideas or resources. Students preferred Discussions as a platform for them to exchange novel ideas than basic information. A senior student claimed, "It is helpful when discussion boards are new ideas, not just a copy and paste of what a textbook said—rather than just writing definitions." Superficial interaction seems to cause students to lose interest in the material since they perceive this type of participation as less meaningful.

Students appreciated that the discussion board serves as a sharing space for well-researched resources. A junior student stated, "[Each discussion board is] a huge thread and I can add some more resources—or a place where we can put a subset of things."

3. Discussion board contributions should be revisited on other occasions. It is less effective when the discussion board is used as an interactive platform but never revisited/reviewed in classes. A senior summed this very well, "I don't like to write something in the discussion board and [instructors] never talk about it or revisit it." Some students articulated that they felt their professors could discuss which post they most resonated with and why. A senior student recalled a professor who utilized Discussions ideally, "In previous class, the instructor commented under our discussions boards and brought those to class to elaborate on them."

4. Discussions should include relevant topics that coincide with current content. To consolidate student learning, participants suggested that their instructors could develop guiding questions to reinforce students' freshly acquired knowledge. A junior

student believed, “I think a good use of the discussion board should be relevant to something we are learning.” A senior believed Discussions were more effective when the professor extended what a lesson covered, adding extra material, “such as providing feedbacks and putting links or websites to for us to check out,” offered by a junior student.

Canvas Usage. As an essential learning management tool, most interview participants reflected they have significantly increased their use of Canvas during the pandemic. Students compared their utilization of Canvas before COVID-19 versus their current status. According to participants’ descriptions of Canvas utilization within this period, they now place more importance on organizing a well-constructed and clean layout for a course website on Canvas. In the following section, four facets related to Canvas usage are discussed. Participants also provided their in-depth thinking regarding the benefits and perceived drawbacks of learning with Canvas.

Frequency and Flexibility. Before the pandemic, students viewed Canvas as less as crucial than they do now. Only on a few occasions would students access Canvas, logging in to check grades and submit assignments, but now, “Everything is on Canvas,” stated a sophomore. Several students described it as a “Homebase,” where they routinely manage and organize learning. For example, a junior student stated, “Canvas is pretty much my everything. It is the thing that helps guide everything else that I need to do.” Similarly, another junior indicated, “I check Canvas probably 10 times a day, making sure I’m not missing anything.”

Students expressed appreciation that they can browse Canvas not only on their computers, but they can check on Canvas content with their mobile phones. Notifications regarding comments and grades on Canvas kept students updated on school information. A senior student addressed,

> Canvas gives me a summary for daily review. I get notifications on my phone too that somebody commented on my discussion board or a teacher commented on an assignment. To have a mobile note is easier to access when I don't bring my computer.

Purpose of Use. Participants addressed almost every feature of Canvas. One of the most popular functions is to reference course syllabi. They also check the Calendar (or To-Do list), look at announcements, complete assignments, find Zoom links, read file resources, compose or reply to Canvas emails, take quizzes, check grades, and view My Plan (a communication and advising platform students, faculty, and staff).

Students appear to have maximized efficiency while using Canvas in order to prevent being overwhelmed by many features and resources. A senior student applied strategies to manage time spent on Canvas and said,

> I try to be more efficient on Canvas. Last semester, I had all of these classes online and it was very overwhelming. So, I try to limit my time to be more efficient. I figure out a routine and don't waste my time on Canvas—so I just tried to stick to what's most pressing with my assignments.

Advantages. Multiple categories of advantages were generated by analyzing participants' enthusiastic responses about using Canvas. From learning students'

perceived benefits of Canvas, a more complete understanding of students' self-organization approaches and learning preferences has been obtained.

1. Safety Concern. In terms of reducing virus transmission, online material distribution seems much safer. A sophomore claimed, "It [Canvas] is very crucial now. Even if the class is in person now, handing out papers might spread germs."

2. All in One Place. Nearly every interview participant expressed their gratefulness that Canvas enables all learning materials to be placed on one platform. Students believed Canvas was a concrete and reliable site that displayed everything together, including homework, grades, and resources. "All in one place" allowed more efficient organization and eased their learning. For example, a sophomore stated, "It is very helpful for me to have everything in one place. Even if I click through all the things, I know that it is all there." Another suggested, "All the things in one place makes learning a lot easier." Another sophomore favored having everything on Canvas because she "lose[s] things rather easily… so to keep all things in one place motivated me on track."

3. Staying on Track. Students repeatedly shared comments such as "Canvas helps me stay on top of things." Various features on Canvas enabled students to organize their learning chronologically, using such tools as Calendar, the To-Do list, and Assignments. One junior participant suggested, "Using Canvas is really good for helping us stay on top of due dates and things. … It is a lot easier, personally, for organizing and getting things done." A senior indicated, "It helps me learn by compartmentalizing what I have to get done throughout this semester."

4. Resource Bank for Later Reference. The robust storage of teaching materials characterizes Canvas. Students identified this value and desired to make good use of course materials in the future. An LMS facilitates students learning by presenting rich resources without access limitations. One junior expressed this with passion, “I am enthusiastic about Canvas. [I will] come back and visit it when graduate. [There are] a lot of resources, [they are] *very useful*.” A senior valued that she would be able to revisit past courses when needing them after that semester. She said, “It helps me look at my past courses from other semesters. It is easy to use.”

5. Compatible Independent Learning and Help-Seeking. Beyond providing numerous learning materials, students noted the value of Canvas communication tools, enabling students to interact between their instructors and classmates. One junior expressed, “Canvas helps me prepare to work independently and reach out for help.” She concluded how she considered Canvas as a learning facilitator that “helps me keep on track and plan to give myself adequate time to thoroughly complete things. It is also a positive that we are able to share ideas and resources between students and instructors.”

Disadvantages. While students reported far more advantages than disadvantages of using Canvas, two students offered negative comments regarding the technology required to complete the assignments. For example, a sophomore expressed, “If files are too large, it is hard to upload, which is frustrating.” Another student offered an idea for the development of the notification feature of Canvas, suggesting, “If Canvas would send a reminder several hours before an assignment’s due, that will be awesome!”

Situations that prompt Student-Instructor Interaction. Students have diverse reasons for initiating conversations with their instructors within an online context. From investigating the situations that prompt students to interact with their instructors, there are several scenarios were revealed during the qualitative phase of this study. There are various procedures used for questioning and problem-solving, including Zoom class meetings and emails. Students evaluated the quality of student-instructor interactions and mentioned several barriers to effectively communicate with instructors in an online environment.

According to the interview data, students may initiate interaction when they misunderstand aspects of the schedule or when they have a particular question for the instructor, when asking for clarification when peer/instructor ideas or instructions appear to be in conflict, when troubleshooting technological issues, when requesting extensions, and when attempting to solve problems that arise in practicum settings.

Field experiences—or practicum experiences—in music classrooms play a vital role in the developmental transition wherein college music education majors are equipped to become certified music educators. Throughout the process of interviewing participants, the most frequent situation mentioned that prompted student interactions with their instructors was related to problem-solving various processes related to these practicum experiences. Consultation with practicum instructors and supervisors, helped students solve problems related to the tasks of writing lesson plans, selecting assessment tools, and articulating objectives. A junior student offered, “The professor set a time and went above and beyond to help me improve lesson plan writing. The professor sent me a

PowerPoint that helped me flush it out and do [guide me reading] a couple of paragraphs." The professor also provided alternative teaching strategies after observing the students' practicum teaching. A senior student shared, "I get feedback when I have observation lessons, such as how to write objectives better, or write sequence in this way—[when my choice of] assessment could be better."

Students reported that interactions with their instructors were vital to their development as future educators. A senior student recalled, "I correct [the problem] and continue to adjust it because I know what the instructor expects." Two students expressed gratitude when they recalled how their instructor provided extra steps to solve problems related to their practicum placements. A junior stated,

> For practicum, [the instructor] observed one of our lessons at our practicum setting over Zoom. Then later we had a Zoom meeting with her. It was probably an hour long. We talked about different strategies and things we can work on.

Another junior shared, "I had talked with the instructor over an hour to help me handle a negative experience in my practicum."

Due to the fewer opportunities to meet with instructors in person during the pandemic, some students took several steps before interacting with their professors. A senior student articulated this very well,

> [There are] a set of sequential steps before reaching out to the professor: [I first] check to make sure the resources are already provided. [Then I need to know] where they are, and what can I do; what can I learn from them. [Finally,] if they are not available, then I need to email the professor.

The student above indicated that she communicated with the instructor only when she had an explicit purpose.

Questioning and Problem-Solving Procedures. Students interact with their instructors via Zoom classes (either by speaking or by typing in the chat window), sending emails messages, meeting during office hours, and using discussion boards. Since synchronous classes replaced face-to-face modes early on during the pandemic, student-professor interaction was limited to occasions when classes met together over Zoom or when instructors held Zoom office hours. As a result, many students proposed that they regularly encountered question-answering sessions in Zoom. A junior student addressed, “In Zoom classes, professors leave time and hang back to wait for questions.”

Interviews revealed that email is still the most common communication tool for student-instructor interaction. Instructor responses to questions are characterized by detailed instructions that enable students to reference as needed. A senior student described, “The instructor replies back to emails within 12 hours. The instructor gives me step-by-step instructions and helps me locate something on Canvas.”

Barriers to Student-Instructor Interaction. Even though Zoom classes accounted for a large proportion of interactions between students and instructors, some students reported being unwilling to ask questions, citing Internet latency as a rationale. A sophomore claimed, “I don’t want to ask as many questions over Zoom. Due to lag, technical issues seem awkward to ask.” Another sophomore student viewed this as a major concern as well, stating that she eventually quit asking questions.

> I might be hiding things like glitches. They might not understand that my internet is out, so I just have to—I guess—give up on the question and give up trying actually to know the answer. Because it's not worth trying to get through the technological struggle.

Quality of Interactions. Most students reflected that answers to their posed questions of high quality and delivered in a timely manner. A sophomore commented that her instructor replied to her with an answer as quickly during the shift to remote learning in comparison to before the pandemic. A junior believed, "Questions are solved pretty quickly. I always found the solution with their help." A senior agreed, "It is a really quick turnaround. Questions are answered in a timely manner and in high quality."

Multiple characteristics of preferred answers have emerged from analyzing participants' responses concerning their instructors' problem-solving.

1. Constructive and Specific. Students preferred specific and constructive feedback that provided instructions to improve a particular skill. For example, a sophomore mentioned how her instructor prompted suggestive comments for her essay writing. She recalled an example of her instructor's suggestion, "How could things be interpreted differently? But I see where you're coming from. Have you thought about it this way? Also, this can be beneficial in your teaching. Or I hadn't thought of it that way, but what if you add this to…"

2. Personally Connected. The type and quality of an instructor's communication may personalize online learning environments, helping students feel a sense of connection. One senior suggested, "I always appreciate it when they write something in

there. Those feel like a more personal connection." Another believed his instructor showed care through their communication. He said, "The professor cares about me and actually is going an extra step to help a student."

3. Encouraging. An instructor's encouraging words may provide incentive and affirmation for students' efforts. A sophomore addressed, "Encouraging words in feedback are helpful." A junior student perceived an increase in trust, based on communication from his instructor stating, "It (his communication) is really encouraging and [I could tell he] had complete faith in me to do a good job."

4. Referenceable and Transferrable. An instructor's constructive communication may help students learning skills that can be applied throughout the semester. A sophomore student stated, "[The professor's] advice really helps me get information and retain it for the future." A junior student liked the way his professor provided an expected scheme for accomplishing a semester-long project at the outset. He suggested, "The professor set the tone for the whole semester when we started to write a term paper at the beginning of the semester."

5. Timely and Clear. Lastly, students favored instructors that sent clear and straightforward reminders of what is expected next. A junior student offered, "I like when the professor sends out a message in the preceding week and head us up on what it is going to look like next week." One other junior appreciated his instructor's clarity notification with headers capitalized.

Interactions between Students and Students. Students reported scenarios and procedures while interacting with classmates. They talked about their roles in completing

collaborative assignments. Similarly, quality and barriers to student-student interaction were described. With fewer opportunities to interact with professors in person, students turned to mutual problem-solving with their peers. Students in this study did not appear to fall into isolated learning.

Students appreciated being able to form relationship with other peers, sharing commonalities and learning about other's perspectives through their interactions with classmates using multiple online applications. Specifically, a sophomore student explained why she enjoyed interacting with her peers stating, "It is just kind of nice to interact, especially with people I don't really see as much in person, and just kind of bond with them." Students demonstrated that they became more acquainted with others through working together when assigned to do collaborative tasks with random groups of people. A junior student offered the similar thoughts about the benefits of working intimately with peers. He stated, "I am a lot closer to my class this semester, specifically. It is really helpful and nice to have a different way to stay connected with my classmates." Students reported that they could broaden their horizons when hearing others' perspectives that differed from their own. A sophomore observed, "I am able to absorb and gain [a] new perspective and new ideas —and to be able to understand people, [and] where are their ideas coming from." A junior remarked, "I get to know them better as people. I enjoy hearing different perspectives, teaching ideas, and lesson plans."

Situations that Prompt Student-Student Interaction. Students interact with their peers for a variety of reasons. The teamwork required within course-level work weighted most in student-student interaction. Besides academic interactions, students also

connected with peers on a variety of personalized topics, such as job applications, social gatherings, and casual daily conversation. One of the most frequent circumstances was to accomplish a collaborative task with peers, such as to prepare a peer-teaching lesson, a peer review paper, a group presentation, and projects involving specific collaborative tasks like recording separate videos and combining them to a complete one, and so forth.

For instance, one senior student concluded their peers' interaction was very comprehensive when they met in classes. She indicated, "We worked on interviewing each other, discussing [class topics], or [doing their] action research projects—asking for ideas with writing it. If anyone has any exciting things to say, or successes in student teaching to share, or general frustrations that could apply to everyone." A junior student posed, "We talk about peer teachings, group projects, or practicum assignments. We use it [our time together] to ask each other questions about homework or upcoming due dates."

In addition, this senior provided many details regarding group chat topics, including daily class topics and other professional conversations. These pre-service music teachers used their time to share teaching tips and achievements with classmates who will eventually be their future colleagues. She stated,

> In [the] group chat, we talk to each other, including the professional topics tab and the everyday conversations tab. If I found job opening opportunities, I put the link in the professional group. … [I] asked [my classmates] to take picture in front of stadium before graduation or shares the good mood I was in because my students finally learned how to match pitch. … I asked for help to find a way to teach my high school choir. My classmate told me a trick, and I used it the next day, and it worked.

Roles in Group Works. Participants described what role they play in a group when doing collaborative work. Students indicated they might serve as a leader, a follower, or a flexible contributor who can provide anything worthy.

Leaders in the group might take more task responsibility. A sophomore student said, “I am kind of a leader. A lot of them look up to me there. I get a lot of questions from them.” Another sophomore student stated, “I am a forefront person and am going to break the silence. We make decisions—[we] don’t want to sit there wait for someone to do it.”

Interviews revealed that when students are involved in a group task, everyone is expected to accomplish their assigned work. One sophomore mentioned, “I am fairly active, and it depends on what the material is, but at least I try to contribute something worthy.”

Some students indicated that they would be more comfortable following others’ directions. A senior student suggested, “I learned to follow others’ ideas and I let other people learn how to lead. I still participate and work hard.”

Sharing Commonalities. Commonly, individuals share a collective identity when committed to working in a group. In this study, participants developed mutual recognition when they recognized that they are experiencing similar situations and events. The pandemic triggered a vast number of students to alter their learning environment from in-person to online-based models. Several participants described that they shared the commonality of experiencing the current situation with others in the same situation, stating this perception using identical words— “We are all in the same boat.” Such

commonality encouraged them to help others and connected with classmates even more than before. A sophomore student stated, “If I’m struggling, someone will totally understand. … [We are] having the same issues.” A junior student also claimed, “We are all in the same boat. We are all willing to help each other out. That’s been really great, especially in this semester.” Another junior along with a senior student both shared that they became closer to classmates in this semester, specifically.

Interaction Procedures. Synchronous settings provided a classroom-like place for students to interact with their peers when in-person meeting was limited. Outside of class, conveniently accessible smartphones and various applications facilitated faster communication with classmates.

Zoom Classes. As discussed previously, instructors assigned students to breakout rooms where they engaged in discussion, peer teaching, collaborative tasks, and so forth. As a sophomore shared, “We use a lot of breakout rooms and group assignments—peer teaching. … We meet over Zoom to write our lesson plans and material.” A junior echoed, “Break out rooms are big parts of instrumental and choral methods. [We] do peer teachings, sharing Google Docs or PowerPoint presentations with classmates in breakout rooms to share with the class.”

Other Applications. Students indicated that they maintain interaction with classmates outside of Zoom classes using other online applications, such as social media, messaging software, and collaboration tools. A junior student stated, “We use group chat or email to discuss ideas for peer teaching—Google slides that we can all edit.” Students developed a series of approaches for interacting with peers, several of which relied on

apps that were not under the umbrella of Canvas. “In the app, where I ask a question in group, it has a feature so you can like a message. It means someone else has a similar question,” said a junior student. Knowing multiple students held similar concerns regarding a particular problem prompted them to solve it sooner.

A senior mentioned that several online collaborative office tools were used to collect members’ separate work, allowing everyone to work together in realtime. She indicated, “GroupMe was really helpful. We were using a platform like Google Docs or Google Drive.” One other senior described how they used their group chat, “All seniors are in there and we ask questions, share comments, or find something confusing—room number, Zoom link, and pages for reading., and so on.”

Barriers to Student-Student Interaction. While the majority of students enjoyed interacting with their peers, there were a few who showed reluctance to interact with their classmates in a learning environment that primarily incorporated web-based components. As a sophomore confessed, “I didn’t like outwardly participating. It causes a lot of anxiety.”

Some students prioritize personal commitments when facing multiple tasks simultaneously. If these tasks conflict with responding to peers, they may choose to complete the task at hand—in the moment. One sophomore shared an instance where she had to make this type of choice, “If I am in class, I can’t necessarily give a response right away, but as soon as I have a second look down at my phone, then I can get a response back out.” Another senior agreed and provided similar points, “I rank my classmates reaching out to me as my top priority. When I have an assignment due, or I teach students,

to help them is my second priority. I respond to them within several hours." The previously mentioned perception of a lack of authenticity caused some students to be reluctant to communicate with their peers. Similarly shown in the section regarding student-instructor engagement, there are a few students that may reject the virtual classroom since they perceive that they cannot engage with classmates authentically as they usually can in the face-to-face environment. They observed that it was even worse when several students turn their cameras off during synchronous meetings. As a sophomore student commented, "It's just the genuine social friendship interactions that you would normally get that just aren't there."

Responsiveness in Student-Student Interactions. Nearly all participants indicated that they responded to their classmates' messages very fast and think others reply to them the same way in group chat. A senior stated, "In GroupMe®, we communicate with each other as fast as possible." A sophomore described it in a surprising tone, "I answer someone within 30 seconds. Even a random time in the middle of the night, someone is always awake, and you get a response." A senior student pointed out, "I respond fast too. It is almost like a competition, sometimes to see who can type it out first. … If I didn't know what's happening, I'd want someone to respond fast to me, so I try to respond fast."

To help the group chat operate better, students kindly contributed their efforts to it. A sophomore student mentioned, "I am pretty responsive. I like to answer anyone's questions, whatever they may be, so I try to talk to more people just so there's more responsiveness." Multiple students stated that they would provide more information and

help if their classmates are in need. A sophomore student claimed, “I am very responsive if they are having an issue they are not familiar with. I will try a quick Google search and see what I can come up with, and experiment with it myself.” One junior student described his problem-solving process, “I will make sure to tell my classmates that I am working hard to answer their questions when they ask me. [I want] to avoid them asking more people or just sitting there confused.”

Data Integration

Integration is the essential core of the mixed methods case study design. Quantitative descriptive statistics for all survey participants are presented variable-by-variable alongside qualitative data. Both strands of data are displayed and interpreted in Table 6.

Table 6

Joint Display of the Quantitative Descriptive Statistics and Qualitative Data

Quantitative Variables		Qualitative Codes			Interpretation
	Quan Participants		Qual Participants		
Student-Instructor Interaction	Mean (SD)	Qualitative Codes Categories	Number of Codes	Mean (SD)	
Clear course rules	3.8 (0.869)	Assignment instructions and due dates. Be in class on time with video on. Rules match information in syllabus. Deduction of points for rule violations.	6 8 4 3	3.455 (0.820)	Participants reported that they clearly know synchronous class participation policy, assignment requirements, location for referencing rules, and consequences of rule violations.
Instructor is responsive	4.291 (0.599)	Problems are solved quickly. Questions are addressed clearly. Comments are personalized and specific. Feedback is positive. Communication is slow and inconvenient.	10 6 7 4 2	4.182 (0.603)	Participants revealed that they received help from professors in a timely manner. They also describe the instructors' problem-solving characteristics: clear, encouraging, specific, personal tone. However, some students provided opposite views.
Instructor provides a well-organized course	3.945 (0.678)	Canvas is well organized by instructor. Difficult to find materials. Scheduling issues. Course material organization differs by instructor.	7 6 1 3	4 (0.894)	Participants provided insights regarding instructors' course organization in Canvas. They also offered comments regarding preferred use and structure of Canvas.
Instructor consistently enforces rules	4.073 (0.634)	Sent reminders or announcements of rules. Teaching assistant checks camera use.	4 1	4 (0.632)	Participants conveyed that their instructors employed strategies to assure rules were implemented.
Contact with Instructor	4.382 (0.680)	Awkward to wait for lag. Loss of a sense of in-person quality. Inconvenient communication procedures.	2 1 1	3.909 (0.831)	A few participants mentioned barriers to making contact with their instructors.
Trust instructor to handle inappropriate interactions	4.255 (0.7)	Not identified.		4.182 (0.603)	

(continued)

Quantitative Variables		Qualitative Codes			Interpretation
	Quan Participants		Qual Participants		
	Mean (SD)	Qualitative Codes Categories	Number of Codes	Mean (SD)	
Ask questions when needed	3.2 (0.989)	Technological issues.	1	2.909 (1.136)	Participants reported several situations that led them to communicate with their instructors.
		Asked questions when they needed clarification for issues (due dates, etc. for clarification for issues (due dates, etc.)	3		
		Asked for help to solve problems.	2		
		Asked for extensions.	1		
		Asked for learning strategies.	4		
Instructor is present and active online	4.255 (0.775)	Professors have office hours.	1	4.273 (0.905)	Participants revealed their instructors' presence via a variety of online components.
		Instructors answer questions over Zoom.	2		
		Question-and-answer is similar to previous Q&A.	2		
Sub-Total Mean (SD)	4.025 (0.827)			3.864 (0.899)	
Student-Student Interaction					
Interact with classmates	3.673 (1.037)	Participated in group chat.	5	4 (0.775)	Participants stated several situations prompt peer-interactions: class assignments and personal connections. Two reported that they struggle with initiating the student-student interaction. Most report that they rarely have problems participating in group chats and collaborative tasks.
		Sought factual information.	2		
Committed to working with classmates	4.018 (0.782)	Participated in peer teaching, group assignments for classes.	10	4.273 (0.467)	
		Awkward to teach music when students are on mute.	1		
Connect personally with classmates	3.691 (1.086)	Commonality sharing— "We are all in the same boat."	4	4.091 (0.701)	
		Anxious to interact with peers out of classes.	1		
		Not very interactive with classmates.	1		

(continued)

Quantitative Variables	Quan Participants	Qualitative Codes	Qual Participants		Interpretation
	Mean (SD)	Qualitative Codes Categories	Number of Codes	Mean (SD)	
Share personal concerns	3.618 (1.045)	Alleviated peers' job application concerns. Gained emotional support.	1 1	4.182 (0.603)	Participants shared perceived advantages of interacting with other classmates.
Enjoy interacting	3.436 (1.067)	Hear different perspectives. See random classmates instead of a fixed circle of friends. Better to know my classmates as people. Gained a closer relationship with classmates.	5 2 2 3	3.455 (0.522)	
Help fellow classmates	3.964 (0.666)	Helped activate class discussion. Helped encourage group participation. Helped answer classmates' questions.	1 1 6	4 (0.632)	Participants not only answered classmates' questions, they also offered extra encouragement to engage in discussion and group chats.
Participate actively online	3.309 (0.909)	Answered others' questions quickly. Wished to be more active. Cited technology fatigue as reason for slower responses.	3 2 1	3 (0.894)	
Sub-Total Mean	3.690 (0.905)			3.857 (0.773)	
Student-Content Interaction					
Complete all assigned work	4.309 (0.836)	Consistent in assignment completion. Inconsistent efforts completing different assignments. Submitted assignments late. Tried to put effort into assignments unless they thought the work was too difficult.	5 2 1 1	4.273 (0.647)	Participants reported that they complete assignments on time and try to do their best work. A few students also revealed that they had problems accomplishing assignments.
Well-organized in my learning	3.691 (0.998)	Made planners on calendar or to-do list. More organized in time managing. Still work on self-organization.	11 2 1	3.727 (1.009)	Participants described several self-organization procedures that supported their learning process.

(continued)

Quantitative Variables	Quan Participants	Qualitative Codes	Qual Participants		Interpretation
	Mean (SD)	Qualitative Codes Categories	Number of Codes	Mean (SD)	
Earn a good grade	4.4 (0.655)	Felt confident in skills for future teaching positions. Felt their grades matched their effort.	1 5	4.182 (0.603)	Some participants claimed their efforts paid off.
Visit course website	4.255 (0.865)	Visited Canvas a lot more than before. Canvas became a "home base" for learning.	9 4	4.455 (0.522)	Participants mentioned multiple purposes for Canvas use and how they approach it differently post-pandemic. They also provided reasons why they view Canvas as the "home base."
Maintain assigned readings	3.527 (1.103)	Better understanding of the learning material. Love reading and learning.	1 1	3.546 (1.036)	Participants reported their improvement in learning knowledge, and skill, and thus they desired to invest more effort. Participants also held different opinions regarding synchronous class participation.
Give effort to the class	3.691 (0.920)	Some put in more effort post-pandemic while others report they put in less effort after the pandemic. Less engagement or attention to class.	2 1 3	4.182 (0.603)	
Desire to learn	4.073 (0.790)	Value education-centered classes. Value pedagogical tools.	1 1	4.364 (0.674)	
Sub-Total Mean (SD)	4.002 (0.942)			4.091 (0.768)	

Note. Quantitative survey is rated in the 5-point scale. 1—Strongly Disagree, 2—Disagree, 3—Neutral, 4—Agree, and 5—Strongly Agree.

Case Development through Data Integration

The procedure of data integration uses combined data to generate an in-depth understanding of cases. After analyzing quantitative and qualitative data separately, criteria for differentiating cases ought to be developed to facilitate the identification of cases. In this study, the researcher employed qualitative codes to establish borders between cases. In the following text, both criteria and joint display graphs of individual cases are presented.

Criteria

The procedure for identifying criteria is situated within the participants' qualitative responses. The criteria include three domains used in the qualitative data analysis. These cases, selected among all interview participants, provided an immense amount of detail regarding participant engagement with the emergent learning models. The researcher gained a great deal of information by gathering student feedback in order to understand different levels of student engagement as they adapted to online aspects of learning. Participants' interview responses that contained two extremes were selected to examine three levels of engagement. For example, in the domain of Interaction between Student and Content, "Highly-Engaged with Content Learning" or "Poorly-Engaged with Content Learning" is the either-or code used to distinguish participants' engagement status with content learning. Complete criteria are found in Table 7.

Table 7

Criteria Distinguishing Three Cases

Domain 1: Interaction between Student and Content Codes:	Domain 2: Interaction between Student and Student Codes:	Domain 3: Interaction between Student and Instructor Codes:
"Highly-Engaged with Content Learning" or "Poorly-Engaged with Content Learning"	"Highly-Interacted with Classmates" or "Poorly-Interacted with Classmates"	"Highly-Interacted with Instructor" or "Poorly-Interacted with Instructor"

When identifying cases, a dichotomous numbering method was used to transform qualitative codes to quantitative values. Each code designated as "Highly-Engaged with Content Learning," "Highly-Interacted with Classmates," and "Highly-Interacted with Instructor," was scored as 1. In contrast, each code of "Poorly-Engaged with Content Learning," "Poorly-Interacted with Classmates," and "Poorly-Interacted with Instructor," was assigned 0. Cases were scored 1 or 0 for student-instructor interaction, 1 or 0 for student-student interaction, and 1 or 0 for student-content interaction, for a possible combined score from 0 to 3.

A Poorly-Engaged case was an individual who scored 0 after the calculation. The Moderately-Engaged case was a student who gained 2 points in the computation. The Highly-Engaged case belonged to a student who scored 3. The results of quantitative and qualitative In Vivo codes are shown in the joint display presentation as shown in Table 8.

Table 8

Joint Display of Cross-Case Comparison of Student Engagement in Music Education Courses with OLC

	Quantitative Data	Interaction between Student and Content Example quote	Interaction between Student and Student Example quote	Interaction between Student and Instructor Example quote
Poorly-Engaged Case	Overall Average of Student Engagement: 3.864 The Average of Each Type of Interaction S-C: 4 S-I: 4 S-S: 3.625	"Inconsistent" "Barely learn anything" "A waste of time" "Very tired" "Do fluff"	"Anxiety" "Awkward" "Little interaction between students"	"Awkward and impersonal" "Anxiety" "Less inclined to have camera on" "Fatigue"
Moderately-Engaged Case	Overall Average of Student Engagement: 3.773 Average of Each Type of Interaction S-C: 4 S-I: 3.429 S-S: 3.375	"Struggle with reading" "Hard to stay enthusiastic" "Motivation went down" "Learn to cope better" "Work on self-organization"	"Moderately active" "Responsive" "100% camera on"	"Nice to interact with instructor"
Highly-Engaged case	Overall Average of Student Engagement: 3.727 Average of Each Type of Interaction S-C: 4 S-I: 3.429 S-S: 3.75	"Try more efficient" "Know how to navigate" "Comfortable to have online classes" "Very confident in future position"	"Share ideas" "Skim everyone's response" "Focus on listening" "Responsive all the time" "Communicate as soon as possible"	"Asking question in chat" "Leave to ask question privately" "Normal sending emails"

Poorly-Engaged Case

A poorly-engaged individual's interview revealed that her refusal to adapt was attributed to her hesitance to communicate with instructors when needed, her problem to complete assignments inconsistently, and her reluctance to accept the content delivered from synchronous and asynchronous learning settings. The poorly-engaged case, could not accommodate the courses delivered primarily through various Internet models used in the past year, and indicated that she was "barely learning anything." According to the interview, this sophomore, had experienced online learning in previous summer semesters, which guided her to be self-regulated. She had no problems organizing herself through the extensive self-paced learning during the past year. She had all plans written down physically and was aware of related elements of every assignment. In addition, she expressed that she valued Canvas as a necessary tool to enable her to use diverse resources. However, she stated that she experienced challenges with complicated operations as well as confusion when attempting to find materials. She indicated that this was difficult because professors had different preferences for utilizing Canvas.

She indicated that she had problems completing assignments consistently. She was also reluctant to seek help when perceiving difficulty in accomplishing assignment-related tasks. Her usual solution involved surface-level completion of assignments coupled with attempts to fill knowledge gaps with material she designated as "fluff." "I am going to do the part of it that I understand. I kind of fluff the rest of it in a way that sounds believable. I very heavily rely on what I already understood." The student perceived that there were few opportunities to meet with professors in person and,

subsequently, she was reluctant to ask for help. As she indicated, “I don’t necessarily quite understand what it [an assignment] is asking, and I don’t want to go out of my way to like set up a meeting with a professor.” Therefore, she acknowledged her quality in completing assignments was very inconsistent.

Her comments were particularly negative as she referenced synchronous classes. She repeatedly addressed the ample benefits found in equivalent in-person offerings of her classes but perceived that these benefits failed to be replicated in the synchronous classes. Her self-reported pain associated with her perceptions of loss resulted in consistent reluctance to adapt herself to Zoom classes. She stressed how awkward, impersonal, and anxious feelings pervaded her Zoom class participation and perceived her Zoom classes were a waste of time. Similar thoughts about participating in various asynchronous learning settings were also articulated. Even though she viewed instructor videos as assigned, she indicated that she did not value the content as crucial information. She based her reasoning for this not on the content in the video, but rather on the delivery system alone. She also resisted reading or replying to others’ responses on discussion boards.

This student did not struggle with peer interaction. When there were only a small number of members in breakout rooms, she reported being more comfortable while engaging in discussion with classmates than with the whole class. She devoted herself to contribute to collaborative work very well. She believed she could gain emotional support from working in a group. According to interview data, her responsiveness in the group chat was fast, and she was always ready to help others.

Moderately-Engaged Case

A moderately-engaged individual's interview revealed that his ability to eventually adapt was attributed to his knowledge about course structure, commitment to continuously communicate with peers, his willingness to seek help from the instructor, and his organizational skills, and his active presence in synchronous classes. This moderately-engaged case was a sophomore student who initially showed resistance to the courses delivered mainly via Internet-based modes at the beginning of the pandemic-induced mass transition, but over time adjusted and improved. He reported proficiency using Google Classroom in high school and also indicated that he was comfortable with Canvas, but he had no other previous online learning experiences. As he pointed out, "Google Classroom helped me get familiar with online materials, navigating myself in technology and stuff, because it is similar to Canvas." With more exposure to Canvas during this past year, he referenced syllabi regularly and learned to use Canvas as a tool for navigating the flow of the course.

He believed his courses, both this semester and last semester, were more structured than before the initial lockdown occurred. He was clear about how course contents were constructed and competent to follow the flow. He was well-organized, attributing this organization to the use of the Canvas Calendar and other applications on his phone. However, he claimed that it was difficult to complete all assignments on time, which he perceived was a constant challenge. Occasionally, he was confused about assignments and reported that this confusion caused stress. He indicated that he failed to complete an assignment because he could not understand what it required.

When he struggled with readings, he asked his professor for guidance outside of class. His professor offered strategies for approaching reading materials. He found these suggestions to be helpful and planned to transfer these strategies to future reading assignments. He explicitly expressed little enthusiasm about synchronous, indicating a preference for being in traditional classes. He described that his motivation toward learning decreased sharply at the beginning of the mass transition, but soon he began to value the content that was delivered online. As he indicated, "Throughout this time, I am learning to cope with it better—[my] motivation is increasing." In his interview, he articulated the importance of treating Zoom classes as if they were in face-to-face classes. He was very adamant on this point, repeating the italicized phrase in the following quote three times for emphasis. He said,

> I feel like we should definitely emphasize the importance of attending Zoom meetings. *They are just as important as attending them in person.* It is still a class, and class is class. Participating in Zoom makes it more challenging than in person. You should even be more serious about attending.

Additionally, in Zoom classes, his endeavors to maintain engagement with the class demonstrated his extra contributions, not only toward better student-student interaction but also for his own learning. He continued to speak,

> I like to keep my camera on all the time to show that I am 100% engaged, because turning on and off without a specific reason usually indicates I am not being as engaged as I should be, and I won't retain all the information that's being thrown at me.

He reported an intention to interact with a small group of classmates who shared similar courses and music ensembles. These close friends were responsive to each other's questions and would meet in person to discuss course-related content. Within this circle, he reported that he knew who to contact when faced with a particular question or problem. However, he also indicated that he was willing to respond to anyone in larger class group chat, even though they were not his close friends. He articulated a perceived connection between his responsiveness to his classmates and improved peer interaction stating, "I talk to more people, so there is more responsiveness." This offer demonstrated that he was likely to think about others and, subsequently, contributed more to student-student interaction. He also expressed his eagerness to participate in every opportunity for discussion because, as he observed, "The more sharing, the more engagement."

Highly-Engaged Case

A highly-engaged individual's interview revealed that her ability to adapt early on was attributed to her extensive prior experiences, continuously evolving efficiency using Canvas, organizational skills, active presence in synchronous classes, and an understanding that her investment would yield returns during her student teaching as well as during her transition to being a professional educator. During the interview, this senior revealed her efforts to efficient adapt early on, right when the pandemic-induced mass transition started from on-campus education to the online learning environment.

First, she attributed her early and rapid adjustment to the shift partially as a benefit of her previous online learning experiences, including her familiarity with Learning Management Systems and learning in synchronous settings. Due to her

proficiency in Google Classroom in the high school, and her extensive familiarity with Canvas, she expressed confidence in navigating all types of operations within online platforms. Moreover, she kept adjusting her efficiency in using Canvas by limiting time and establishing routines. Second, she performed self-organization effectively, using the Canvas Calendar and writing down plan lists regularly. She ordered individual assignments chronologically and planned to complete them accordingly.

In synchronous class meetings, especially in music education courses, she stated that she intended to keep her camera on no matter whether others chose to remain on video. In so doing, she believed others were aware that she was paying attention to the class. She preferred to see all her peers' faces, and she contributed her part to this effort by allowing others to be able to see her presence. In her own words, "We all know each other, and we care about music class." In addition, silent awkwardness that occurs when no one speaks in synchronous classes made her uncomfortable, so that she encouraged classmates to participate more by texting her friends in another chat application. She stated,

> I really try to be present in our music classes. I don't like that painful feeling when people don't respond to the teacher. … I texted my friends/classmates in another group chat saying, "Hey guys, come on, let's make this less painful."

In asynchronous discussion boards, she focused on reading other classmates' responses and desired to learn from their responses in addition to her own. When interacting with instructors, she did not hesitate to launch a private conversation after a Zoom class or to use any tools available in order to ask questions. Her highly adaptable

capability was also attributed to the instructor's carefully organized course website. She shared that all the related course material was easily accessible in Canvas, such as Assignments, Zoom links, lesson plan templates, and so forth. Since she enrolled in fewer courses in her final year of college, she was less troubled by differences in Canvas use by her multiple professors. Furthermore, she expressed pride when describing all her achievements and improvements in the past years, including this challenging year. Her satisfaction regarding academic accomplishment was also reflected in her confidence in her preparation for her future career. She indicated, "With everything, I have learned a lot, so I feel like my efforts throughout these four years have really paid off. I feel like in my student teaching position, I'm just very confident."

Three Cases Brief Interpretation

The three cases presented above shared a commonality of self-perceived high-level performance in self-organization and high-levels of interaction with classmates. The border between the poorly-engaged case and the moderately-engaged case lay in synchronous class participation and communication with instructors. The moderately-engaged student highlighted his efforts to adapt himself to participate in the synchronous learning environment even though both students resisted new learning modes for a while. However, the poorly-engaged student displayed little evidence of such adaptation and held a passive view about self-learning. Furthermore, the mass transition to online learning did not impede the moderately-engaged student from contacting the instructor. By contrast, the poorly-engaged case eventually ceased contact with her professor.

The border between the moderately-engaged case and the highly-engaged case

primarily resided in student-content interaction. The former student repeatedly referred to the challenges he perceived with self-pacing as well as to problems he faced regarding assignment completion. These two cases could be representative of respective developmental characteristics that must be considered when gearing course contents to accommodate various levels of self-learning. In the present study, the youngest student needed more time and support to adjust to the new learning environment. A detailed discussion of quantitative results, qualitative results, integrated results, identification of cases, and differences between cases is carried out in the next chapter.

CHAPTER 5: DISCUSSION, IMPLICATIONS AND CONCLUSIONS

Overview of the Study

This mixed methods study aimed to investigate student engagement in college music education courses during the pandemic-induced mass transition from face-to-face learning to hybrid learning. A concurrent mixed methods case study design was used to generate distinctive cases by collecting, analyzing, and integrating quantitative data and in-depth qualitative data (Creswell & Plano Clark, 2018). The two strands of data were combined to portray a comprehensive understanding of students' individual engagement and their adaptative strategies as they experienced emergent education models.

The quantitative portion included a survey of all sophomore through senior level music education students in a Midwest university, with the goal of investigating three types of interactions. In the qualitative strand, participant interviews were conducted in order to hear the voices of students who experienced an educational system transition unlike any other in the past century. Because of the pandemic, students experienced a variety of educational models, all sharing a common characteristic—all courses were primarily supported with online learning components. Three individual cases were generated to represent different levels of student engagement during this educational transition. These cases provided a detailed understanding of students' participation in synchronous, asynchronous, and hybrid courses, all three of which relied on a common Learning Management System. Exploration of this transformative learning context was carried out to fill a gap in the existing research literature surrounding student engagement.

Conclusions: Quantitative Strand

In the quantitative strand of this study, the researcher utilized inferential statistics to explore student-instructor interaction, student-student interaction, and student-content interaction within online learning environments. Two correlated relationships were found between student-content interaction and student-instructor interaction, and student-content interaction and student-student interaction. The loading value of each questionnaire item was examined in each of the three factors. Variance analyses were conducted to identify whether the omnibus student engagement and each type of interaction differed among the three grade levels under investigation.

Quantitative Research Central Question 1 and Sub-Question

Quantitative Research Central Question 1. What are the correlated factors of student engagement in music education courses with online learning components?

Results showed that student-instructor interaction and student-content interaction were positively correlated. This result suggests that more communication between student and professor aligns with more engagement with content learning. This result reflected the research of Bryson and Hand (2007) shedding light on that premise that faculty could impact student engagement through their communications with students. In the present study, participant interviews addressed important characteristics of effective student-instructor interaction that were based on clear rules and expectations, active presence in class, and active discussion. This aligns with previous research (Mazzolini & Maddison, 2003; Rovai, 2007), concluding that an instructor who is highly responsive in

synchronous class meetings (large group and individual breakout rooms) and asynchronous discussion boards may contribute to enhanced student-instructor interaction.

The result that student-student interaction and student-content interaction were positively correlated indicated that the more communication between peers, the more active self-learning was inspired. This finding is in line with Young and Bruce's (2011) study that students committed to working with others are more likely to enhance their engagement in learning. Collaborative tasks may also increase the opportunity for students to participate in peer interactions outside of class and not merely during formal class meetings. This encouraging finding may relieve concerns about the possibility that students may experience increased feelings of isolation when they are exposed to more online learning.

Sub-Question. What are the dominant items within the factors of student engagement in music education courses with online learning components?

The dominant item clustered within the factor of student-instructor interaction was "Clear course rules," which suggests the importance of an instructor's rigorous administrative approaches and procedures. Explicit rules serve as roots for appropriate behaviors and learning practices in education models with online learning components, ensuring effective student engagement. Assignment deadlines, exceptions, and adjustments should be announced regularly, not only on the course website, but also during synchronous classes (if applicable). In addition, instructors ought to provide guidance or netiquette expectations to manage synchronous class attendance, such as keeping the camera on and typing answers or unmuting to speak when asked to share

ideas. Furthermore, a detailed grading policy with regard to participation in discussion boards or other types of asynchronous interactive settings should be articulated clearly.

In the current research, one of the interesting findings to emerge from the factor analysis was that the item "Ask questions when needed" loaded under the factor of student-instructor interaction, contrary to findings by Bruce and Young (2011) or Mucundanyi (2019). In both of these studies, "Ask questions when needed" was found within the factor of student-student interaction, it is important to note that in both of these studies, the researchers were investigating student engagement in fully online courses. On the one hand, this divergent result may be because the statement item did not articulate well, and students assumed they should ask their instructor questions when needed rather than their classmates. Therefore, a more specific statement of the survey question is needed to resolve its ambiguity. On the other hand, this result may also suggest that students were well-aware of their instructors' involvement both remotely and physically since these courses were initially delivered face-to-face but then redesigned for hybrid delivery. When encountering a problem, students may have already been accustomed to reaching out to their instructors by scheduling a meeting or coming up to the professor in person after class. However, when running a fully online course, students may perceive that it is more difficult for students to reach out to their instructors for real-time problem-solving. Consequently, this finding reflected the difference in students' tendencies to seek help when a course is structured using a hybrid model—as in the present study—rather than in a highly asynchronous learning format—as in the aforementioned studies listed above.

The dominant item loaded in the factor of student-student interaction was "Interact with classmates," which indicated students' commitment to proactive and persistent peer interaction. The other items under this factor were close to what previous researchers had investigated. This finding reinforced the essentiality of collaboration among students, adding weight to a broader acknowledgment that peer interaction in online education should be thoroughly integrated into online learning experiences (Song & McNary, 2011; Xia et al., 2013). Peer-to-peer interaction, however, should extend beyond superficial idea-exchange or simple positive peer affirmation. More meaningful student-student engagement relies on carefully designed collaborative tasks that require students to explore and possess in-depth information that will be synthesized and applied toward a cooperative project.

The dominant item loaded in the factor of student-content interaction was "Complete all assigned work," which illustrates students' commitment to finishing assignments. This was closely followed by "Well organized in my learning," also found as the dominant item in previous research (Bruce & Young, 2011; Mucundanyi, 2019). Indeed, one needs to be well-organized in terms of managing tasks and planning schedules. Organization enables students to complete each assignment on time. The item "Earn a good grade," ranking third, indicating a strong relationship between self-efficacy and one's organizational ability, prompts students to plan for study time and work toward timely and scholarly assignment completion. This finding highlights what Hodges et al. (2008) concluded: self-efficacy serves as an essential component in achieving online learning. Shen et al. (2013) investigated the variable "complete an online course with a

good grade" was loaded 84.9% within the factor of "self-efficacy to complete an online course" (p. 13). Self-efficacy was a primary factor for approximately 50% the total variance in achieving successful online learning. The current study confirms this finding.

Quantitative Research Central Question 2 and Sub-Questions

Quantitative Research Central Question 2. Is there a significant difference in overall student engagement among three grade levels of music education students?

Study results did not indicate a statistically significant difference in overall student engagement among sophomore, junior, and senior students. Similarly, there was no significant difference in student engagement between graduate and undergraduate students in Mucundanyi's (2019) study. In this particular study, grade level did not result in a major difference in overall student engagement. Differences between sophomores, juniors, and seniors may be subtle when comparing any characteristic between grade level. Within each grade level, however, there is likely more variability between individuals. Even when investigating differences between undergraduate and graduate students, Shen et al. (2013) found very little difference in self-efficacy between these populations in the following areas: complete an online learning, interactions with instructors, and interactions with classmates.

Sub-Question 1. Is there a significant difference in student-instructor interaction among three grade levels of music education students?

When examining the individual types of interactions between students and instructors, no statistically significant difference was found among three grade levels of students. The descriptive statistics within the factor of student-instructor interaction in

each grade level are similar, indicating a large extent of agreement in assessing the engagement with their professors (Table 5). The qualitative strand results confirm this and provide more details regarding student engagement with their instructors.

Sub-Question 2. Is there a significant difference in student-student interaction among three grade levels of music education students?

There was no statistically significant difference in student-student interaction among the three levels of students. It is notable that the average score for student-student interaction was lower when compared to the average for student-content and student-instructor interactions. It is understandable that young adults felt less connected when they had fewer chances to meet in person on campus. The qualitative data still revealed that students continued to utilize informal social media communication with peers across all grades.

This is particularly noteworthy for seniors as their formal synchronous meetings only took place five times throughout the semester during which this study was conducted. During the pandemic, Internet-based peer interaction allowed students to be bound together. The results indicate that sophomore students quickly established an identity as a member of their particular class within music education community. Throughout the year, they extended their social connection from face-to-face communication to a more online-based environment. Even though students in their senior year had fewer shared courses compared to sophomore and junior students during the semester the study was conducted, they still rated their student-student interaction

similarly as other grade levels. This can be attributed to their existing and solid relationship with their peers constructed during the past years.

Social interaction among peers may include academic communication or personal conversation. In this current study, most students were part of a pre-existing community where they are all familiar with each other. This is because students participating in this study were all music education majors who had already established themselves as members of the community with their same grade peers. This finding suggests that students who have already established an identity as a member of a group may be more likely to stay well-engaged with peers in online learning environments. Not only have they participated in formal classes together, they have attended in-person social activities that enable them to establish interrelationships with others, connecting with each other through ensemble participation, multiple academic classes together, planning social gatherings out of school, and even living together. Because they are already familiar with each other personally, they are likely more comfortable reaching out to each other when they have a question or when they have a problem related to their academic work. Because they already use social media to communicate with each other informally, they may be more likely to use the same social networking platform to ask and answer academic questions or to ask for help with a problem related to shared courses. They also may have reached out to peers for answers since their instructors were less physically present in their lives.

In any academic year, but especially during the pandemic, social media platforms provided a space for the discussion of ideas as well as simple question and answer

exchange. This expanded peer relationships, especially when there was a shortage of physical classroom communities. Psychologically, students gain emotional support and fulfill the need to belong within social media communication (Kim, 2016). Findings in the current research literature support previous findings regarding social media and interpersonal interactions: the rich interactive options and quickly accessible information distribution systems of social media platforms could strengthen interpersonal relationships (Wang et al., 2012).

Sub-question 3. Is there a significant difference in student-content interaction among three grade levels of music education students?

Finally, there was no statistically significant difference in student-content interaction among the three levels of students. The current study yielded three grades of students who held similar views of their own performance regarding seven aspects of learning. However, it is uncertain how much difference existed within each grade. This raises the need for more objective measurements (e.g., disengagement data in the synchronous class meetings recording) to verify self-report evaluation. A more comprehensive model for measuring students' self-learning is also needed.

It is accepted that there is no single, all-encompassing rubric for self-regulated learning (Zimmerman & Martinez-Pons, 1988). Zimmerman and Martinez-Pons (1986) developed self-regulated learning strategies that address multiple facets of students' learning processes. These more nuanced elements may provide a possible direction for future research in this area. Their work reflects the contributions of a variety of psychological experts and researchers, covering 1) self-evaluation, 2) organizing and

transforming, 3) goal-setting and planning, 4) seeking information, 5) keeping records and self-monitoring, 6) environmental structuring, self-consequences, 7) rehearsing and memorizing, 8) seeking peer, teacher, or adult assistance, and 9) reviewing notes, tests, or textbooks. Except for the social aspects related to seeking peer, teacher, or adult assistance, all other items dealt with the learners' own self-paced learning processes. To investigate students' self-regulated learning in online environments, the aspects above could be considered. In the present study, qualitative interviews were used to further investigate student engagement.

Conclusions: Qualitative Strand

Qualitative strand research findings portrayed a more nuanced, comprehensive picture of the three types of student engagement in different technology-based learning formats. Parallel to the quantitative survey, participants provided details of interactions between student-instructor, student-student, and student-content. Participants (n = 11) offered insightful responses, some of which resonated with existing literature research and brought about innovative directions for future research.

Qualitative Research Central Question

What are the participants' perspectives of student engagement in music education courses with online learning components?

To answer the qualitative central research question, two major themes were created: "Infrastructure" and "Student Engagement." In response to the COVID-19 outbreak, which led students to adapt to an unprecedented emergent education system, the theme of "Infrastructure" was used to describe the newly constructed models of music

education courses. The researcher possessed a complete overview of three grades of the music education curriculum supported with online learning components, first through a pilot study and then through the current study.

Infrastructure for Student Engagement. A carefully constructed course with remote learning component needs rigorous rules, reinforcement tools to help enforce these rules, clear expectations, and organization of materials on a LMS platform. More importantly, a course should be designed in a way that leads to effective student engagement with instructors, peers, and self-regulated learning of content.

Rules, Expectations, and Reinforcements. Student interviews provided insights detailing specific rules are used by their instructors to manage online aspects of course delivery. The initial aim of these rules was to advance students' participation in class and to avoid irrelevant conduct. Students frequently addressed the "Camera on" rule as an example of such a rule for synchronous class meetings. Recent research suggests that students adopt to turn off their own video cameras if it is not mandatory to keep them on (Gherheș et al., 2021). While several students understood that it was necessary for the instructor to regulate synchronous class behaviors and monitor class attendance, several students in this study would like to see their instructors regulate milder rules for synchronous attendance. Their desire for more leniency with the "Camera on" rule appeared to be connected to their age group, privacy concerns, technology availability, the number of total online classes per day, and so forth. Clearer articulation of course rules might help students use tools like a virtual background to mitigate privacy concerns that surround using their personal spaces for learning. Proactive reminders for webcam

use issued before class may also be part of a solution. Gherheș et al. (2021) suggested that video-conferencing platform companies could offer more flexible options where participants could choose who they see on camera, or where only the teacher could see the other students while everyone has their camera on. This is confirmed by the findings of the current study.

Based upon these well-developed rules, instructors then need to implement logical and consistent reinforcement of these rules to ensure that they are carried out. The instructor could send reminder messages or emails for uncompliant class participants in order to highlight the importance of complying with the rules. They could also deduct points from specific grades (professionalism grades, for example) for each violation of attendance rules as well as for each late assignment submission. Consistent reinforcement of the instructor's well-articulated expectations could create a more predictable learning environment and better personal connections with students. Previous research discovered that a misalignment of expectations between students and the instructor leads to ambiguity in learning processes (Bork & Rucks-Ahidiana, 2013). These results suggest that it is necessary to provide a course-specific orientation that helps students understand what to expect from a particular instructor before the course begins. This orientation could emphasize communication, class attendance expectations, and so forth. The professor could also regularly reinforce these expectations throughout the course as it is delivered.

Course Organization on Canvas. While students did provide positive comments about specific professors or course organization structures, they also reported that their

frustration with varying Canvas models increases along with their total number of courses. It is beneficial for instructors to introduce their specific plan and structure for using Canvas, such as how their navigation links are structured, the purpose of each course tool used, and how specific content is organized. For example, professors tend to use Modules in a variety of ways so it would be helpful to inform students of specific organization schemes (module content lined up by topic or chronological order of presentation) at the beginning of a semester. The instructor can also make sure that only essential material is visible to the students and assignments are linked to the To-Do sidebar.

Within one particular course, students reported that the instructor needs to organize course materials more consistently, especially regarding assignment due dates, project requirements, and so forth. When information on the syllabus is consistent with what appears in Canvas, students may use their time more efficiently, spending less time asking unnecessary questions. Consistency in course set-up is imperative and allows students to progress seamlessly through course content without unnecessary confusion.

Inadaptability in Synchronous Learning Setting. Multiple aspects of students' inadaptability to adjust to synchronous classes were identified through data analysis. Participants in the current study knew that they would not make progress in their current academic program unless they took their required courses as they were offered. Because of this, students enrolled in courses offered, regardless of any alignment with their preferences. Some students adapted quickly and with relative ease, while others struggled to adapt, particularly in synchronous environments. Synchronous learning was the most complicated among all types of online learning components. It is not surprising that

students offered both compliments and complaints about their participation in synchronous meetings since the pandemic evolved.

Aiming to serve as a substitute for traditional face-to-face classrooms, synchronous learning environments were employed as a primary platform in most universities as these institutions attempted to sustain higher education during the pandemic. Students were required to separate physically, and virtual environments became a prevalent part of not only the landscape of higher education, but also of students' everyday lives. Based on this rationale, it is understandable for students to constantly compare Zoom classes with the conventional classes. Bawa (2016) illustrated that students can become frustrated with the disparities between their long-held memories associated with face-to-face courses and their synchronous counterparts. The current study affirms this opinion and compartmentalizes the reasons behind it. Highly adaptable students seemed to understand that many face-to-face classroom scenarios are not comparable and further, that synchronous classrooms would not replace face-to-face classrooms.

Students reported a lack of authenticity in their synchronous classes citing that they could not physically interact, participate in instant call and response in music-making, engage in side-by-side chats, or read the atmosphere. For some students, this inability to adapt not only seemed to discourage them from participating, their perceived lack of authenticity resulted in near disengagement. These students keep contrasting their previous in-person learning experiences with the current, even though this situation has lasted for a year. While faculty should do their best to make every learning experience as

authentic as possible, students also need to understand that many face-to-face classroom scenarios are nearly impossible to replicate in virtual environments, and to some extent, vice versa. In line with Hebert (2007), students need to devote themselves to the emergent learning format by accepting all the similarities, differences, limitations, and unique characteristics within the web-conferencing class meetings. After all, synchronous classes saved commuting, ensured students' safety during the pandemic, allowed flexible options for engagement, and allowed them to meet individuals outside of their fixed group of classmates.

Synchronous learning settings magnifies a students' existing social-emotional status and, because of variances among students, requires each student to adapt differently. Hedlund and Sternberg (2000) defined practical ability as "the ability to accomplish personally valued goals by adapting to the environment" (p. 138). Seal et al. (2011) applied this definition to conceptualize social emotional development (SED). Self-awareness was one aspect of the Social-Emotional Development (SED) model, concerned with assessing one's own knowledge and understanding emotional state (Seal et al., 2011). Students who reported that they were shy, kept from unmuting or asking questions in the synchronous class. Such awareness made them recognize their own discomfort with speaking in public while everyone focused on them—they perceived this as very awkward. Therefore, they reported a fear of facing this intimidating situation and sought to avoid interacting with others and subsequently, failed to adapt to the new environment or to achieve their personal goals. For some students in this study, the computer screen showing the students' a grid of thumbnail images for all participants,

including the instructor, creates a perception of being stared at all the time, lessening students' initiative to speak in public. In reality, however, students may not actually be the sole focus of attention by others. Being stared at is an illusion produced by a two-dimensional computer screen. Students may not understand this so it may be helpful if instructors explain this phenomenon as a perception error. Further, most students at the collegiate level are at various points along the continuum of adolescent development. Students in later stages may see themselves as but one part of a larger whole. Students in earlier stages may view themselves as the sole focus of attention, even when this is not the reality of the situation. This may be seen as a concern for their success in future music teaching endeavors as an educator must be able to focus their attention on others rather than on themselves. Thankfully, most students in music education program undergo this final stage of adolescence prior to their appointment in future positions within the field of education.

On the other hand, those who indicated they were too shy to speak publicly but still wanted to contribute, adapted to synchronous meetings by choosing to type their comments or questions in the chat window so the instructor or classmates may read their comments or answer their questions. Some develop an adaptive strategy in Zoom classes by changing what they were able to see (Speaker View vs. Gallery View). This enabled them to adapt to the learning environment by eliminating distractions. In one particular instance, the student's reported distraction was a preoccupation with their own image in Gallery View. Switching to speaker view helped them reduce the distraction. These instances can be explained as evidence that students learned to adjust to the new learning

environment. In the long run, students who are reluctant to adapt may fall behind those who seek out and find ways to adapt. As a result, persistent resistance, stemming from inadaptability, may widen an achievement gap in learning.

Students who refused to adapt to be more engaged in their synchronous classes may benefit from small group learning, using tools like Zoom breakout rooms that contain no more than 3 or students. This result may inspire future researchers to investigate possible relationships between the number of group members and levels of active participation in synchronous class meetings. Further examination of additional factors such as students' total number of courses enrolled within one semester, the proportion of synchronous class meetings may lead to a more comprehensive understanding of student engagement.

Problems in Asynchronous Learning Settings. Higher education systems have grappled with the decisions regarding appropriate alignment between course content and course delivery mode. Students have different expectations for learning environments depending on the course content alone. When online learning components are considered, there should be a good fit between content and delivery model. Koutsoupidou's (2014) explored content type and delivery models used for a variety of online courses, concluding that courses with outcomes related to theoretical training were appropriate for asynchronous learning design models. Courses with theoretical rather than practical aims may be more conducive to asynchronous online models since achievement of course outcomes rely more on direct student-content engagement rather than student-instructor or student-student engagement.

For courses that are implemented in a hybrid model, especially those that started out as face-to-face courses and migrated abruptly, purely asynchronous content delivery design models may not be sufficient to bridge the space between student expectations and student learning. One of the courses explored in the present study, a course exploring theoretical aspects of learning and development in music, was offered using a hybrid model. According to the findings of Koutsoupidou (2014) study, this course would typically be a good choice for either partial or full implementation of an asynchronous learning model. In the current study, the course used instructor videos and discussion boards along with face-to-face meetings wherein the instructor offered additional explanation and engaged students in live discussion. Students who had preconceived notions that the course would be delivered as a traditional face-to-face course had to adjust their expectations to the new model. Some students indicated that they thought the instructor videos were more supplemental than central to their attainment of course outcomes.

This is an important finding, especially for instructors and institutions engaging in curriculum development and course design. In hybrid models, students may prioritize information presented or reinforced in face-to-face meetings while viewing asynchronous content supplemental less crucial to their learning. The findings of the present study also confirms that even though lecture-based courses were suggested as being more appropriate for transformation into asynchronous courses that use tools like pre-recorded videos (Johnson, 2021; Kestin & Ozer, 2020), students still value the potential interaction with the professor and opportunities of real-time question and answer exchanging.

Instructors facing similar course design and implementation decisions may benefit from suggestions based on the present study. It is not possible to transfer the findings of all aspects of this study due to the unusual circumstances that forced such a sudden transition to increased use of web-based instructional models, however, several valuable insights may be of benefit to both instructors and researchers.

When designing asynchronous or hybrid courses or course elements, instructors often rely on video recordings to serve several functions. Videos may be related to course infrastructure[4] or they may be used to deliver subject specific course concepts. Instructors should consider using instructional videos related course infrastructure, mentioned earlier in this chapter, sparingly, so that the instructor does not repeat similar instructions.

The instructor should also be discerning with the length of each video, the content presented, and presentation delivery style. Instructors should also consider the length of their instructional videos. If the instructor feels that shorter videos would not allow for sufficient depth in content, shorter video segments could be interspersed with interactive questions or activities that serve to further reinforce the content. Additionally, instructors should consider presenting with similar, or even increased, animation to what they would present if lecturing in person. A perceived lack of engagement may make students lose concentration quickly. Finally, videos related to controversial topics within the discipline, or topics that require in-the-moment discussion should be reserved for synchronous or face-to-face meetings where true dialogue can take place in real time.

Discussion boards stock substantial potential to be used more effectively between students and instructors. Discussion boards are not limited to only those incorporated in

[4] Infrastructure refers to rules, rule reinforcement tools, and organization of materials on a LMS platform.

LMS, they include any other platforms that allows class participants to discuss or share resources. An instructor's explicit grading procedures should be provided because otherwise, it means less participation and less effectiveness. Earlier research explored positive relationships between the number of students' posts on the discussion board and the number of instructors' posts and the level of question (Bloom's Taxonomy Level) (Ringler et al., 2015). This result indicates that the instructor's active presence with high-level questions and frequent responses to students' posts are vital to increase discussion board involvement. Furthermore, it is plausible for the instructor to review and synthesize student contributions to the discussion board during class meetings, elaborating on content that represents either a lack of understanding exhibited through the inclusion of misinformation or, alternatively, content that represents higher order thinking and engagement with content. This may be a particularly helpful approach for larger classes where the instructor would be unable to consistently engage directly in discussion. The expectations of students' participation in the discussion board could be created beforehand, such as to avoid simple agreement or repeated ideas in posts, polite discussion courtesy, well-researched answers, concisely worded posts, and appropriate citation (Dailey-Hebert, 2018).

However, it is acknowledged that faculty time is sometimes limited because they have research expectations, face-to-face teaching demands, grading and commenting to students' assignments, and so forth. It is not realistic for professors to interact with each student within classrooms and also reply to individual discussion response. The proportion of discussion boards used during the course of a semester ought to be

considered carefully. Instructors should also clarify earlier in the course how they intend to play a part in the discussion board.

Problems Related to Canvas Setup. Full-time students are enrolled in various courses within one semester and because of this, they encounter different professors' course organization practices on Canvas. While a LMS may provide incredible opportunities for course management and content distribution, an emerging problem is that students might spend too much time finding materials or being distracted by repeated information, because professors organize files in diverse ways. As one senior student mentioned,

> They sometimes used different functions of Canvas and went in totally different ways. For example, one person puts all their things like in this area. Someone else will have all their important things in a different one, and sometimes it's confusing to keep track of all of it.

In the present study, some students stated that varying structure and use of Canvas by individual instructors caused them to feel like they were stuck in a state of confusion. While one professor may use excessive use of navigation links, others set up Canvas as if they are sharing a hard drive where they "put all things in a Files folder."

Interactions between Students and Instructors. Faculty serve as connection points between the student and academic community. A student's relationship with their instructors is an important component of establishing a sense of community. The qualitative results of the current research reflected students' perceived issues with communication, citing that it was sometimes inconvenient to communicate with their

instructors (Keengwe & Kidd, 2010). The interviews capture several reasons why students had fewer interactions with their instructors. With fewer face-to-face interactions during or surrounding on-campus classes, students have had to communicate with professors using the Internet-based applications as a primary path. This process of professional communication between student and instructor requires multiple procedures that students need to plan on asking, complying with netiquette, and composing messages to promote questions answered and issues solved properly. Unlike a naturally flowing in-person conversation with spontaneous give and take exchanges, emails between students and instructors tend to formulate a one-time turnaround of question-answering. Nonetheless, relying on email as a primary form of communication may hinder a sense of satisfaction regarding interactions with instructors. Relying solely on online communications may be perceived as tedious.

Understanding the procedures of communicating with the instructor, students may adjust strategies with seeking help when needed. Provided with the course-related factual information on syllabus, students are expected to ask a "higher-order" question rather than simple fact-seeking ones (Donohue-Smith, 2006). The current study participants are aware of such expectations. They reflect that they identify what kind of questions are appropriate to ask the professor and what kind of questions are proper to ask classmates.

Interactions between Students and Their Peers. Departing from previous studies that students in online environments have limited interactions with peers (Cochran et al., 2014; Bowen, 2019), the current research participants did not report feeling isolated while continuing with their program of study. Both quantitative and qualitative data

affirm this finding. Students understood that learning on their own was indispensable. This understanding, coupled with reported connections with peers, seemed to lessen student-reported feelings of isolation in the past year. Although rare participants reported that they perceived a lack of a sense of community, most students collectively bonded both academically and personally.

Results of this study, indicating that students did not feel isolated, is contrary to previous research indicating that more exposure to online learning resulted in the appearance of more feelings of isolation. Contrasting Bawa's (2016) assertion that students did not actively communicate in online environments, most participants in this study believed that they and their classmates offered feedback and support, proactively and efficiently. This may be that as digital natives, they were already poised to utilize a number of communication tools prior to the migration of their courses to online environments. It may also be because it is sometimes more convenient to get responses from peers, particularly when aided by digital technologies and the Internet. Except for experiential music-making activities like ensembles or peer teaching in music, participants reflected that their collaborative work among peers proceeded smoothly. Students developed a series of strategies to ensure successful completion of cooperative assignments, such as setting deadlines for specific tasks for everyone in their respective groups.

Further, a mindset of continuity within their individual program of study, coupled with a gradual return to face-to-face activities contributed to this promising result. Given

hopeful signs that their lives will return to a pre-pandemic state, students reported feeling confident that on-campus learning will be possible again—and soon.

Research Sub-Question

What characteristics (themes) of student engagement will emerge from participants' experience of music education courses with online learning components?

In analyzing qualitative data, the researcher developed themes, domains, sub-domains, parent codes, and codes to organize participants' perspectives in experiencing music education courses incorporating online learning components. See Appendix E for themes/codes matrix.

Conclusions: Mixed Methods

The integration in the current mixed methods case study research occurred after the quantitative and qualitative data were analyzed. Results were brought together to form the criteria that are used to identify and select the cases. Three cases were generated and compared based on the two strands of data. When comparing the differences between the three identified case's overall engagement mean scores (QUAN) with the emergent learning environment, little difference was found (Table 8). The qualitative strand of analysis, however, revealed a more nuanced and complete portrait of student engagement. These three cases, representing different student engagement levels under an unprecedented shift to a multiple web-based learning models, helps to fill a gap in the literature examining online student engagement.

Mixed Methods Central Question

Mixed Methods Research Central Question: To what extent do the quantitative and qualitative results converge or diverge?

The joint display (Table 6) includes the whole sample's quantitative statistics, variable-by-variable, alongside corresponding qualitative code categories. The mean scores for the entire sample align with those of the qualitative interview participants. This supports the choice to randomly select interview participants from the entire pool. The qualitative strand contains categories of codes as well as the total number of codes per category. The qualitative categories were developed by classifying all participants' interview transcripts into a variety of codes, which broadly extend the quantitative variables. The qualitative strand data also provide nuanced details regarding student engagement in various online learning components, where the quantitative strand lacks. The qualitative categories in this joint display confirm the framework for the previously illustrated qualitative analysis: themes, domains, subdomains, parent codes, and codes. For instance, the researcher established the theme "Infrastructure" in the qualitative analysis, the domain "Instructors' Management Tools," and its subdomains "Instructor's Rules in Synchronous Online Classes," "Instructor's Expectations," and "Course Materials Organization on Canvas" used to describe the instructor's management tools in online classes.

Despite the quantitative results indicating no significant difference in student engagement by grade level, the qualitative data revealed that students in lower grade levels displayed more inadaptable behaviors (e.g., feeling awkward in Zoom classes,

losing focus quickly, and hesitating to seek help, etc.), indicating they may view their experience through the lens of late adolescence. A cluster of self-described characteristics like those listed above, may indicate a lack of maturity. Additionally, though the identified poorly- and moderately-engaged cases were from a lower grade and the highly-engaged case was from a higher grade, the age group appear to play only a minor role in accounting for it. The number of enrolled courses, academic stage, course requirements, and self-efficacy in transformative adaptability can be considered to explain boundaries between the three cases.

Sophomore students participating in this study had not yet officially entered the music teacher education program. In this institution, sophomore students must show satisfactory academic progress, evidence of various characteristics and dispositions expected of future teachers, and a commitment to the field of education before they are officially admitted to the professional skills courses that begin in earnest during the junior year. Students at this age are not only transitioning to form an identity as future teachers, they are also forming their identity as adults. Sophomore students, then, may still perceive their identity as students rather than as pre-service music teachers. Since late adolescence is characterized by developing one's identity (Erikson, 1956) students may need more support as they transition from student to pre-service music educator. An adolescent's focus relies on specific contexts in which they develop and are influenced by peers, school, community, and so forth (Bronfenbrenner, 1992).

More guidance may be needed so students know what is expected of them as future educators. Instructors can help students through class activities that extend their

concentration and engagement, especially when learning takes place in synchronous environments. Students may also benefit from increased engagement with their same-aged peers as well as with upper classmen that may serve as role models as they undergo the transition from adolescent to adult. The findings of this study indicate that students were successful in maintaining previous peer relationships as well as fostering new peer relationships, even during a pandemic.

Facing the pandemic-induced transformation of face-to-face instruction to remote learning, it is reassuring that most students did not sink into isolation but continued to connect to peers socially and academically. From the qualitative data, several interviewees even expressed they have gained a closer interrelationship among peers. To achieve this, the instructor played an essential role in assigning students collaborative projects that encouraged, and even required them to communicate regularly and purposefully.

In the current study, the quantitative survey provided a framework for qualitative interview question protocols, but the qualitative data considerably extended the quantitative data. In the quantitative survey, the participants provided self-reported perceptions of their levels of engagement within the three domains generally, providing few details regarding their individual experiences in various online learning settings. On the contrary, the qualitative data contributed considerable insights that translate into a more nuanced understanding of student engagement during this unprecedented time. In addition to describing their instructors' rules or expectations for course participation, students also detailed their experiences and provided their individual perspectives

regarding interactions between themselves and their peers/professors. They also provided extensive observations regarding their self-organization, self-regulation, and perceived learning achievement. In summary, the breadth and depth of information in the qualitative strand vastly surpassed the quantitative results.

Mixed Methods Sub-Question

What three cases for student engagement in music education courses with online learning components will be compared?

The researcher selected three cases based on specific criteria to distinguish different levels in student engagement with regard to three types of interactions. In this discussion session, an in-depth discussion of the three cases is provided.

Poorly-Engaged Case. From interview data, the poorly-engaged case revealed several defining characteristics related to self-regulated learning. These include help-seeking, self-evaluation, and environmental structuring (Zimmerman & Martinez-Pons, 1986). Perceiving online communication with the instructor as a daunting process, this student relied on previous knowledge and experience to complete assignments, but refused to approach unknown or challenging information. Her description of her own learning indicates that she frequently engaged in self-evaluation during self-regulated learning processes, knowing when and why to stop gaining new knowledge. She rarely initiated attempts to explore more since she invested little effort in seeking help from her instructors using tools provided online. She seems unable to identify benefits that may come from communicating with her professors. In addition, she failed to use any specific

strategies to glean resources or to optimize learning at any point when transitioning to her new learning environment.

Almost all aspects of Internet-based educational delivery seem to exacerbate her resistance to embrace almost every online learning component except for Canvas. She is confident in her ability to function in traditional face-to-face classrooms and her nostalgic mindset for traditional models appears to be a formidable barrier to her ability to adapt to the transition to a new environment (Mahoney, 2009). Specifically, this mindset prevented her from updating or altering her attitudes and perceptions toward the different learning contexts. By spending so much time dwelling on the unattainable desire for a return to her ideal world, she persistently struggled with various online aspects of learning, compromising her attainment of content learning as well as her accomplishment of program-related goals. Being able to adapt to the new learning environment at all, let alone at a faster rate, would have helped her continue to make progress as a future music educator, despite circumstances that were not only beyond her control, but also beyond the control of her instructor, the department, or the university.

A number of problem-solving techniques may have been helpful to her during the transition. Mezirow (1997) found that recognizing one's own assumptions is key to transforming her immovable frame of reference (dwelling on her successful prior experiences) to a more flexible, adaptive, and accommodating state. Instructors may play a role in helping students embrace a more malleable mindset. For example, her instructor could introduce an overview of online learning and provide innovative learning strategies early in the semester. This may help the student gain an understanding of what to expect

and hopefully, leading the student to adopt a mindset that places participation in online course learning activities in a place of equal importance to her idealized image of traditional models of course delivery. Further, virtual communication practices could be established to help mitigate students' concerns related to less interaction with the professor. For instance, a more casual course-related online social occasion could be set up, where the instructor and students are all involved. This informal gathering may alleviate stress for students who share concerns related to being able to maintain contact with the professor. Instructors may also reserve virtual office hours, allowing students to drop in to ask questions or share ideas, thus improving engagement (Imlawi et al., 2015).

It is encouraging to learn that this student sought help from her peers and contributed to collaborative assignments, which again reinforces the importance of group work in online learning environments. This student also emphasized that engagement in small group discussion is another essential factor that influenced her engagement with peers. This recommendation aligns with a previous study (AbuSeileek, 2012), where the researcher discovered that a 5-person student group outperformed other groups in a computer-based environment. This finding, coupled with findings in the present study, may prove particularly helpful for encouraging engagement among music education students in both online and face-to-face learning environments.

Moderately-Engaged Case. The moderately-engaged case detailed how he developed multiple adjustment strategies during the transition to online learning environments. Reviewing the passage revealing how he convinced himself to actively participate in Zoom classes, it is evident that this student converted his understanding of

metacognitive strategies into positive behavioral outcomes. His adaptive strategies (trying his best to always have his camera on) were responses to his own self-perception that he would not have concentrated in class if he had not kept the camera on. According to Zimmerman's self-regulated learning theory, he displayed capability in structuring his behaviors to optimize learning in the new environment. This student also presented his commitment to problem-solve issues related to his own learning by seeking help from his professors.

This student, however, expressed that he experiences overwhelm and found it overly demanding to complete each assignment on time, even though he claimed he was well-organized. His problems with adjusting did not reside in knowing the deadlines but with the process of completing all of his work by the deadlines as assigned. This difficulty with timely completion of assignments may have had difficulty understanding how to complete the work within the assignments. To interpret what an assignment asks is the starting point for successful completion. According to this student's positive assessment of his peer interaction, he had no problem eliciting help from his friends either in an online group chat or an in-person appointment. While student to student assistance should be encouraged, it is also important for professors to consider the way they introduce assigned projects. For example, an instructor could re-examine their process for introducing assignments. Time is often limited during face-to-face class meetings and an instructor may quickly rush through the explanation of an assignment. This is likely exacerbated when the luxury of face-to-face explanations are replaced with online models of course delivery. Taking the time to thoroughly explain an assignment

orally during synchronous class meetings may help students better understand the related details of the assignment. Inviting students to remain in the physical or virtual classroom if they have further questions may help encourage students to ask for clarification. It may also encourage open communication between students and instructors.

Highly-Engaged Case. This case illustrates one student's quick reaction in adapting to the mass transition, shown best through her extensive engagement in synchronous classes and her adjustment to more efficient use of Canvas. She was also able to communicate with the instructor via Zoom publicly or individually without feeling awkward. These examples are among several other indicators of her ability to seamlessly engage in self-regulation that helped her obtain valuable resources and benefit from the emergent environment. She sought help from her instructor or classmates when facing uncertainty, readily seeking better solutions to any issues she faced during the transition. In her synchronous classes, she was able to observe her peers' behavior, using her own perspective to convince herself to keep her webcam on. She also encouraged others to do the same. Such peer encouragement provides insights on how leadership is generated within a virtual classroom context. This also represents an interesting opportunity for a line of research related to leadership development and online student engagement. Aside from encouraging on-task behavior, she also encouraged her peers to answer a visiting professor's question when she perceived uncomfortable silence. She recalled, "I texted to my friends/classmates in another group chat saying, hey guys, come on, let's make this less painful." Her outstanding adaptability also stems from a more

mature academic status and her self-reported smaller number of enrolled courses in the final semester.

In sum, to certain students, the Internet-based educational delivery system appears to obstruct them from acquiring the authentic learning experiences they value the most. Their perceptions of this loss of authenticity kept them from further adapting to changes in learning environments, even when those changes were unavoidable. They still reported using materials in Canvas for academic support and reported that they devote themselves to collaborating in small groups. To other students, however, they may perceive challenges in adapting to the courses integrated with a variety of online learning components.

Implications for Music Education with Online Learning Components

According to the data analysis in both strands of the current study, implications for future music education courses with online learning components are provided. Using a mixed methods approach for this study provided a wide range of insights and recommendations for effective use of online educational tools in educational environments. These insights and recommendations are particularly relevant for students, instructors and higher education administrators, and other stakeholders interested in effective delivery of courses with online learning components.

Instructor

The findings of this study prepare the instructor with several advanced recommendations for improving student engagement in online environments. While some instructors may return to strictly face-to-face traditional classroom environments, never

to return to web-based learning environments, others may find themselves developing courses purposely designed for online delivery. Many instructors will also find that they continue to incorporate a variety of online practices in their course delivery, no matter the mode of instruction.

The current research finding prepares the instructor with several advanced recommendations in improving student engagement if they ever need to use synchronous classes again. The instructor's virtue of responsiveness to students' questions was valued both in the face-to-face learning environment and Internet-based learning. Instructor may need to understand that students might communicate to the instructor only when they have an explicit purpose using online communicative tools. However, this meant that the casual conversations that students would typically value more in in-person scenarios become rare. Thus, instructors may offer virtual office hours via synchronous meetings or group chats for students to discuss course-related topics. Such academic social networks could allow students to ask individual questions they would hesitate to ask publicly during regular class meetings. When reviewing student assignments, instructors should remember that providing informative feedback with a personal tone may facilitate a bonding connection between students and instructors.

The findings of the current research study echo previous findings that social connections between students play an important role in web-based learning models. The instructor needs to carefully design well-structured interactions realized through collaborative tasks. While acknowledging the essentiality of collaboration, professors ought to prepare students to grow both individually and as a group as they collaborate on

group projects or in discussions. As Webb (2009) pointed out, the instructor's role is to arrange collaborative tasks and guide students as they develop their communication skills, presentation skills, and critical reasoning skills.

The instructor should offer consistent information through the syllabus, through Canvas, and through the information covered in the class meetings. Such consistency helps minimize student confusion and maximizes meaningful engagement. Instructors should ensure consistency in compiling the course materials, modifying any incorrect information promptly. The appearance of course materials should be displayed concisely. On Canvas, the professor should be clear about what navigation links will be needed, in what order, and for what purpose. Further, instructors should explicitly share how materials are connected. It is ideal for the professor to clearly outline practices and preferences for their individual use of Canvas at the beginning of the course.

Executing a synchronous class is different from a face-to-face class in multiple ways. During a web-conferencing class, the instructor should be careful about their use of time, planning for short breaks if the class meeting is long, scheduling class activities by units, and specifying the timeline of each teaching sequence. It is understandable that students may become fatigued in a Zoom class if it lasts very long. Simulating the same class meeting time of a traditional face-to-face class in synchronous classes is neither realistic nor practical. Students are likely to become tired of facing a computer screen over time, especially when it lacks authentic interpersonal interactions.

Instructors must provide clear class rules and policies for enforcement of these rules, referencing syllabus information regularly, and explicitly stating his/her

expectations for students. In order to relieve any confusion in understanding what an assignment requires, professors could introduce steps for accomplishing the work needed to complete the assignment. When explaining assignment requirements, the instructor is also encouraged to prepare exemplar assignments for reference, leaving time for students to ask relevant questions.

The instructor plays a pivotal role in organizing synchronous classes. There is minimal space for an instructor to adjust plans when executing each teaching procedure when compared to face-to-face equivalents. The instructor should prepare auxiliary information adequately, such PowerPoint slide shows or multi-media resources. They should also provide opportunities for student participation so they can constantly engage, such as polling to gather answers, asking relevant questions to retain knowledge, and so forth. In addition, the professor needs to balance the lecture-style teaching and discussions that encourage meaningful information exchange and critical thinking. For small group discussion sessions, the instructor may visit each breakout room, listening in or joining in the conversation, and finally synthesizing the group perspectives for the whole class. Finally, instructors must be patient when asking questions, waiting patiently for students to respond due to the Internet latency.

Students

Facing an integral educational transformation, students may first need to change their mindset and develop learning strategies. Students are recommended to differentiate the nature and limitation of online learning environments when compared to traditional face-to-face models. Authentic elements such as real-time verbal and non-verbal peer

interaction, movement activities, and real-time call-and-response in musical activities are impossible to realize via synchronous classroom. Further, the mindset of self-accountability is an essential factor that leads to successful self-regulated learning within the online context. Students should also develop strategies for organizing academic study by regularly planning upcoming assignments and sufficient time to complete them. Attaining technology proficiency needed for manipulating a variety of collaborative software applications and navigating LMS platforms prepares students to achieve online courses.

To protect privacy in synchronous classes, students could set up a specific corner in their living spaces for synchronous class use. Students should also plan a background that includes plain or tastefully decorated walls. Alternately, students could choose one of the virtual backgrounds automatically provided in the conferencing software. Students could switch different screen set-up layouts, switching as needed—Speaker view when focusing on the instructor's or a presenter's speaking, or Gallery view when unmuting to speak to the whole class. Furthermore, students should place their digital devices in a location that is not within easy reach, so they are able to maintain their full attention without getting distracted. Students should also prepare their questions in advance of class in order to alleviate awkwardness, typing them in the chat window when the timing is appropriate.

To further develop efficiency in peer question and answer as well as peer problem-solving, students should possess strategies for seeking help and learning to ask clear, explicit questions. In research regarding group chat applications, research has

shown that a student who seeks help from their classmates may arouse a group disposition toward solving the problem promptly. The help seeker's ability to articulate his/her question, or his/her ability to clearly state a misunderstanding, enables effective and appropriate responses (Webb, 2009). Less directive questions, however, might not motivate group members to understand specific details, resulting in reluctance to explain or solve the problem.

To consolidate learning, students should be open-minded and willing to embrace practical strategies for accomplishing assignments and skilled in searching for detailed steps that ensure assignment completion will be done on time. If students still have difficulty completing assignments, they need to be willing to take opportunities that professors provide them to communicate during virtual office hours.

Limitations

To facilitate an in-depth understanding of a case, a mixed methods case study usually collects multiple sources of information, including quantitative and qualitative data. Qualitative data may include observations, interviews, and other types of resources that can be gathered as long as they are bounded within a context (Creswell & Poth, 2018). The current study employed a quantitative survey and qualitative interviews as two primary sources of data to develop individual student engagement cases. It is also reasonable to embed observable data of students' actual class participation in synchronous settings and analytical statistics available within the Canvas platform as supplemental resources to support or further explain the cases. Future research in this

area may benefit from integration of additional data sources to provide greater insights into student engagement.

The current research utilized a general measurement to investigate student engagement, however, the measurement was not specifically geared toward college students in the music education major. This instrument also lacks a definitive description of the learning setting so that students may answer the questionnaire ambiguously. For example, one item states, “I ask questions in discussions when I don’t understand.” However, students were not clear whether the term “discussion” referred to the chat window in synchronous classes or to discussions embedded in asynchronous materials.

Recommendations for Future Research

Since the participants in this study reflected that their previous online educational experience has favorably affected awareness of self-regulated learning and technological proficiency, future research could investigate the relationship between self-efficacy in online learning and prior preparations.

More qualitative data sources could be utilized to advance case descriptions regarding student engagement with online learning components. For example, the researcher could observe students’ webcam use and interactive behaviors in synchronous class meetings, verifying or violating the interview responses. The investigator could also extract Canvas analytical statistics for evaluating individual student-content interaction data, such as student’s grades, page views, submissions, frequency of visiting, and so forth.

Future research is recommended to develop a more discipline-specific instrument to investigate student engagement in music education courses that extensively incorporate online learning components. Future research may also explore LMS design structure alignment with specific characteristics of various courses. Finally, future research may examine the effect of department-wide consistency in course structure on student engagement, student achievement, and student perceptions of ease of use in order to provide best practice recommendations for professors and other course designers.

Summary

The COVID-19 pandemic induced a systematic educational transformation of traditional learning systems to online learning models. Although this transformation is temporary and was inherently experimental, much can be learned about the future of online learning environments by examining student achievements and perceived challenges under these conditions. In this study, participants were able to continue making progress within their chosen program of study in music education, however, instructors had to compromise and, in doing so, reduce authentic group music making experiences and music-teaching practices to accommodate courses that could be more appropriately implemented online. Such a transformation alters course structure and, in some cases lecture-based content replaced experiential activities typically found in the courses examined, thereby reducing student engagement in making and teaching music.

During this pandemic period, a large number of educational activities were transformed to be delivered via various online learning components, including music-making experiences, which were simply not as authentic or meaningful as they were in

face-to-face settings. Face-to-face classrooms are still an irreplaceable format for implementing music-making activities and for music teaching activities, such as modeling how to teach general, vocal, and instrumental music methods and practicing music teaching among peers.

Throughout this study, diverse and advanced recommendations were offered for instructors who will utilize online learning components in future education practices. Through experiencing multiple educational formats in the past year, it became clear that it is impossible to authentically implement experiential musical activities via synchronous classes, at least when considering current, readily accessible and broadly available technologies. While emerging technologies promise an encouraging future for real-time music making, access to such technologies is not yet widely available. With the reopening of higher education institutions, in-person classes will soon resume, but the lessons learned throughout this experimental year will remain.

Integration of online learning components, however, will remain as optional, flexible tools for instructors to use as they facilitate learning experiences. In synchronous settings, instructors should carefully plan class sessions with an appropriate balance of lecture and discussion, carefully structuring class time use in order to best meet the needs of students. Instructional videos may continue to be recorded to supplement course content, but this should be reserved for repeatable information that requires little interaction. Discussion boards may continue to be used for a variety of whole-class sharing activities.

Three cases generated from this study provided college educators with a more complete understanding of individual engagement status during the transition. The current study found that students commonly have few difficulties with self-organization (e.g., time management, study and life balance, etc.) or engagement with professors and classmates. However, interview participants reported varied experiences with student-instructor interaction and their ability to personally adapt to ensure the accomplishment of academic goals. Much exposure to Internet-based learning formats with limited in-person contact prevents a few students from devoting themselves entirely as they did before the pandemic. Others efficiently embraced online educational models and applied adaptive strategies to undermine potential drawbacks such a transition may bring.

REFERENCES

AbuSeileek, A. F. (2012). The effect of computer-assisted cooperative learning methods and group size on the EFL learners' achievement in communication skills. Computers & Education, 58(1), 231-239.

Adams Becker, S., Cummins, M., Davis, A., Freeman, A., Hall Giesinger, C., & Ananthanarayanan, V. (2017). *NMC Horizon Report: 2017 Higher Education Edition.* Austin, Texas; The New Media Consortium.

Albert, D. J. (2015). Online versus traditional master of music in music education degree programs: Students' reasons for choosing. *Journal of Music Teacher Education*, *25*(1), 52-64.

Allen, I. E., & Seaman, J. (2008). *Staying the course: Online education in the United States*. The Online Learning Consortium. http://www.sloanc.org/ publications/ survey/pdf/staying_the_course.pdf

Anderson T. (2004) Teaching in an online learning context. In T. Anderson & F. Elloumi (Eds.) *Theory and practice of online learning* (pp. 273-294). Athabasca, AB: Athabasca University.

Aslanian, C. B., & Clinefelter, D. L. (2013). *Online college students 2013: Comprehensive data on demands and preferences.* Louisville, KY: The Learning House, Inc.

Baker, B. (2012). Fully online learning in a pre-service teacher music education unit in Australia: Student perspectives. *Australian Journal of Music Education*, (1), 45-51.

Baker, W., & Pittaway, S. (2012). *The application of a student engagement framework to the teaching of music education in an e-learning context in one Australian university.* [Conference session]. University of Tasmania, Australia. In 4th Paris International Conference on Education, Economy and Society, 27-38.

Barry, N. (2003). Integrating web based learning and instruction into a graduate music education research course: An exploratory study. *Journal of technology in Music Learning*, *2*(1), 2-8.

Bawa, P. (2016). Retention in online courses: Exploring issues and solutions--A literature review. *SAGE Open*, *6*(1), 215824401562177. http://doi.org//10.1177/2158244015621777

Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., & Bethel, E. C. (2009). A meta-analysis of three types of interaction treatments in distance education. *Review of Educational Research, 79*(3), 1243-1289.

Biasutti, M. (2015). Assessing a collaborative online environment for music composition. *Journal of Educational Technology and Society, 18*(3), 49-63.

Blake, J. N. (2018). Distance learning music education: An overview of history, literature, and current trends. *Journal of Online Higher Education, 2*(3), 1-23.

Bloom, B. S., and D. R. Krathwohl (1956). Taxonomy of Educational Objectives: The Classification of Educational Goals. New York: Longmans, Green.

Bolliger, D. U., & Halupa, C. (2018). Online student perceptions of engagement, transactional distance, and outcomes. *Distance Education, 39*(3), 299-316.

Bork, R. J. H., & Rucks-Ahidiana, Z. (2013). Role ambiguity in online courses: An analysis of student and instructor expectations.

Bowman, J. (2014). *Online learning in music: Foundations, frameworks, and practices*. New York: Oxford University Press.

Bryson, C. & Hand, L. (2007). The role of engagement in inspiring teaching and learning. *Innovations in Education and Teaching International*, *44*, 349-362.

Campbell, C. M., & Cabrera, A. F. (2011). How sound is NSSE?: Investigating the psychometric properties of NSSE at a public, research-extensive institution. *The Review of Higher Education, 35*(1), 77-103.

Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education, 47*(1), 1-32. http://doi.org/10.1007/s11162-005-8150-9

Carrillo, C., & Flores, M. A. (2020). COVID-19 and teacher education: a literature review of online teaching and learning practices. *European Journal of Teacher Education, 43*(4), 466-487. https://doi-org.libproxy.unl.edu/10.1080/02619768.2020.1821184

Castle, S. R., & McGuire, C. (2010). An analysis of student self-assessment of online, blended, and face-to-face learning environments: Implications for sustainable education delivery. *International Education Studies, 3*(3), 36-40. https://doi-org.libproxy.unl.edu/10.5539/ies.v3n3p36

Castro, F. G., Kellison, J. G., Boyd, S. J., & Kopak, A. (2010). A Methodology for

Conducting Integrative Mixed Methods Research and Data Analyses. *Journal of Mixed Methods Research, 4*(4), 342-360. https://doi-org.libproxy.unl.edu/10.1177/1558689810382916

Cercone K. (2008). Characteristics of adult learners with implications for online learning design. *Association for the Advancement of Computing in Education, 16*(2), 137-159.

Chickering, A. W. & Garmson, Z. F. (1987). Seven principles for good practice in undergraduate education. American Association for Higher Education Bulletin, 39(7), 3-6.

Cochran, J. D., Campbell, S. M., Baker, H. M., & Leeds, E. M. (2014). The role of student characteristics in predicting retention in online courses. *Research in Higher Education*, *55*(1), 27–48.

Coffman, D. D. (2002). Adult education. *The new handbook of research on music teaching and learning: A project of the Music Educators National Conference.* 199-209. Oxford University Press.

Creswell, J. W., & Plano Clark. V. L. (2018). *Designing and conducting mixed methods research.* SAGE Publications.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches.*

Curry, L. A., & Nunez-Smith, M. (2015). *Mixed methods in health sciences research: A practical primer.* SAGE Publications.

Dailey-Hebert, A. (2018). Maximizing interactivity in online learning: Moving beyond discussion boards. Journal of Educators Online, 15(3), 1-26.

Daubney, A., & Fautley, M. (2020). Editorial research: Music education in a time of pandemic. *British Journal of Music Education*, *37*(2), 107-114. https://doi-org.libproxy.unl.edu/10.1017/S0265051720000133

Delfino, M., & Persico, D. (2007). Online or face-to-face? Experimenting with different techniques in teacher training. *Journal of Computer Assisted Learning*, *23*(5), 351-365.

Dixson, M. D. (2010). Creating effective student engagement in online courses: What do students find engaging? *Journal of the Scholarship of Teaching and Learning*, 1-13.

Dixson, M. D. (2015). Measuring student engagement in the online course: The Online Student Engagement scale (OSE). *Online Learning*, *19*(4). http://doi.org/10.24059/olj.v19i4.561

Donohue-Smith, M. (2006). Improving the Questions Students Ask. Education Digest, 72(3), 41–43.

Dow, M. (2008). Implications of social presence for online learning: A case study of MLS students. *Journal of Education for Library and Information Science*, *49*(4), 238-239. http://www.jstor.org.ezproxy.lib.purdue.edu/stable/40323753?seq=8

Draper, P. (2008). Music two-point zero: Music, technology and digital independence. *Journal of Music, Technology and Education*, *1* (2-3), 137-152.

Dye, K. G. (2007). *Applied music in an online environment using desktop videoconferencing.* (Publication No. 325532) [Master's thesis, Columbia University]. ProQuest Dissertations and Theses database.

Eakes, K. G. (2009). A comparison of a sociocultural and chronological approach to music appreciation in face-to-face and online instructional formats. (Publication No.3365532) [Doctoral dissertation, Auburn University]. ProQuest Dissertations and Theses database.

Ella R. Kahu (2013) Framing student engagement in higher education, *Studies in Higher Education*, 38(5), 758-773. http://doi.org/10.1080/03075079.2011.598505

Erikson, E. H. (1956). The problem of ego identity. *Journal of the American Psychoanalytic Association*, *4*(1), 56-121.

Erikson, E. H. (1993). *Childhood and society*. WW Norton & Company.

Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research, 59*, 117-142.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: potential of the concept, state of the evidence. *Review of Educational Research, 74*, 59-109. http://dx.doi.org/10.3102/00346543074001059

Flynn, D. (2014). Baccalaureate attainment of college students at 4-year institutions as a function of student engagement behaviors: Social and academic student engagement behaviors matter. *Research in Higher Education, 55*, 467–493.

Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, context,

and adjustment: Addressing definitional, measurement, and methodological issues. *Learning and Instruction, 100*(43), 1-4.

Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2), 87-105. https://doi-org.libproxy.unl.edu/10.1016/S1096-7516(00)00016-6

Gherheș, V., Șimon, S., & Para, I. (2021). Analysing Students' Reasons for Keeping Their Webcams on or off during Online Classes. Sustainability, 13(6), 3203.

Gordon, J., Ludlum, J., & Hoey, J. J. (2008). Validating NSSE against student outcomes: Are they related? *Research in Higher Education, 49*(1), 19-39.

Gray, L. F. (2017). Online learning in music: foundations, frameworks, and practices. *Music Education Research, 19*(2), 226-228. https://doi-org.libproxy.unl.edu/10.1080/14613808.2016.1146775

Greher, G. R. (2007). If you build it ...: A distance-learning approach for music teacher licensure test preparation. *Journal of Music Teacher Education, 16*(2), 61-74. https://doi-org.libproxy.unl.edu/10.1177/10570837070160020107

Groulx, T. J., & Hernly, P. (2010). Online master's degrees in music Education: The growing pains of a tool to reach a larger community. *Update: Applications of Research in Music Education, 28*(2), 60-70. https://doi-org.libproxy.unl.edu/10.1177/8755123310361765

Gordon, J., Ludlum, J., & Hoey, J. J. (2008). Validating NSSE against student outcomes: Are they related?. *Research in Higher Education, 49*(1), 19-39.

Green, L. (2014). *Hear, listen, play! How to free your students' aural, improvisation, and performance skills*. New York: Oxford University Press.

Handelsman, M.M., Briggs, W.L., Sullivan, N. and Towler, A. (2005). A measure of college student course engagement. *The Journal of Educational Research, 93*(3), 184-191.

Hall, S., & Villareal, D. (2016). Hybrid learning: Perspectives of higher education faculty. *International Journal of Information Communication Technologies and Human Development, 8*(1), 1-25. http://doi.org/10.4018/IJICTHD.2016010101

He, Y. (2020, April). Research on online teaching of music performance based on diversification and intelligence–take the online music teaching during the COVID-19 as an example. In *2020 International Conference on E-Commerce and Internet Technology*, 193-196.

Hedlund, J., & Sternberg, R. J. (2000). Too many intelligences? Integrating social, emotional, and practical intelligence. In R. Bar-On & J. D. A. Parker (Eds.), The handbook of emotional intelligence: Theory, development, assessment, and application at home, school, and in the workplace (p. 136–167). Jossey-Bass.

Henthorne, E. E. H. (2019). *Retaining online students: Engagement indicators that contribute to the retention of undergraduate students in online programs at traditional 4-year institutions* (Publication No. 22584933) [Doctoral dissertation, Union University]. ProQuest Dissertation and Theses Global.

Hebert, D. G. (2007). Five challenges and solutions in online music teacher education. *Research and Issues in Music Education, 5*(1), 1-10.

Heyman, E. (2010). Overcoming student retention issues in higher education online programs: A delphi study. (Publication No. 748309429) [Doctoral dissertation, University of Phoenix]. ProQuest Dissertation and These Global.

Hodges, D. A. (2016). *A concise survey of music philosophy*. Taylor & Francis.

Hodges, C. B., Stackpole-Hodges, C. L., & Cox, K. M. (2008). Self-Efficacy, Self-Regulation, and Cognitive Style as Predictors of Achievement with Podcast Instruction. *Journal of Educational Computing Research, 38*(2), 139–153. https://doi.org/10.2190/EC.38.2.b

Imlawi, J., Gregg, D., & Karimi, J. (2015). Student engagement in course-based social networks: The impact of instructor credibility and use of communication. *Computers & Education*, *88*, 84-96.

Indiana University Center for Postsecondary Research. (2020). What does NSSE do? https://nsse.indiana.edu/nsse/index.html

International Consultants for Education & Fairs. (2020, Aug 5). *Survey: Most US colleges will adopt a hybrid learning model for fall 2020.* https://monitor.icef.com/2020/08/survey-most-us-colleges-will-adopt-a-hybrid-learning-model-for-fall-2020/

Isman, A., Gazi, Z., & Aksal, F. (2010). Students' perceptions of online learning. *Educational Technology, 50*(3), 53-54. http://www.jstor.org.libproxy.unl.edu/stable/44429807

Ivankova, N. V. (2014). Implementing quality criteria in designing and conducting a

sequential QUAN → QUAL mixed methods study of student engagement with learning applied research methods online. *Journal of Mixed Methods Research, 8*(1), 25-51. http://doi.org/10.1177/1558689813487945

Johnson, B. R. (2012). Dialectical Pluralism and Mixed Research. *The American Behavioral Scientist (Beverly Hills), 56*(6), 751-754. https://doi-org.libproxy.unl.edu/10.1177/0002764212442494

Johnson, C. (2017a). Teaching music online: Changing pedagogical approach when moving to the online environment. *London Review of Education, 15*(3), 439-456.

Johnson, C. (2017b). *Undergraduate online music course offerings rising exponentially: A research study.* Paper presented at 10th International Conference for Research in Music Education, Bath Spa University.

Johnson, C. (2021). A historical study (2007-2015) on the adoption of online music courses in the united states. *International Journal on Innovations in Online Education*, *5*(1).

Johnson, C, & Merrick, B. (2020). Enabling music students' well-being through regular Zoom cohort chats during the COVID-19 crises. *Teaching, technology, and teacher education during the COVID-19 pandemic: Stories from the field*, 261-264.

Kahu, E. R. (2013). Framing student engagement in higher education. *Studies in Higher Education (Dorchester-on-Thames), 38*(5), 758-773. https://doi-org.libproxy.unl.edu/10.1080/03075079.2011.598505

Kate, M. (2009). Learning to teach online: Creating a culture of support for faculty.

Journal of Education for Library and Information Science, 50(4), 275-292. http://search.proquest.com.ezproxy.lib.purdue.edu/docview/203230521?accountid=13360

Keast, D. A. (2009). A constructivist application for online learning in music. *Research and Issues in Music Education, 7*(1) https://search-proquest-com.libproxy.unl.edu/docview/1357491147

Keengwe, J., & Kidd, T. T. (2010). Towards best practices in online learning and teaching in higher education. *MERLOT Journal of Online Learning and Teaching, 6*(2), 533-541.

Kentnor, H. E. (2015). Distance education and the evolution of online learning in the United States. *Curriculum and Teaching Dialogue, 17*(1), 21-34.

Keskin, M., & Ozer, K. D. (2020). Evaluation of studenst' feedbacks on web-based distance education in the COVID-19 process. *Izmir Katip Celebi University Faculty of Health Sciences Journal, 5*(2), 59-67.

Kim, Y., Wang, Y., & Oh, J. (2016). Digital media use and social engagement: How social media and smartphone use influence social activities of college students. *Cyberpsychology, Behavior, and Social Networking, 19*(4), 264-269.

Koenig, A. E., & Hill, R. B. (1967). *The farther vision: Educational television today*. Madison, WI: The University of Wisconsin Press.

Kos Jr, R. P., & Goodrich, A. (2012). Music teachers' professional growth: Experiences of graduates from an online graduate degree program. *Visions of Research in Music Education, 22*.

Koutsoupidou, T. (2014). Online distance learning and music training: benefits, drawbacks and challenges. *Open Learning, 29*(3), 243–255. https://doi-org.libproxy.unl.edu/10.1080/02680513.2015.1011112

Kuh, G. D. (2001). *National survey of student engagement: The college student report: NSSE technical and norms report*. Indiana University Center for Postsecondary Research and Planning.

Kuh, G. D. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research*, *141*, 5-20.

Kuyath, S. J. (2008). *The social presence of instant messaging: Effects on student satisfaction, perceived learning, and performance in distance education (Publication No. 3320887)* [Doctoral dissertation, The University of North Carolina at Charlotte]. ProQuest Dissertation and Theses Global.

Lam, S. F., Wong, B. P., Yang, H., & Liu, Y. (2012). Understanding student engagement with a contextual model. In *Handbook of Research on Student Engagement*. 403-419. Springer, Boston, MA. https://doi.org/10.1007/978-1-4614-2018-7_19

Lau, J., Yang, B., Dasgupta, R. (2020), Will the coronavirus make online education go viral? Times Higher Education. https://www.timeshighereducation.com/features/will-coronavirus-make-online-education-go-viral

Law, KM.Y., Geng, S., & Li. T., (2019), Student enrollment, motivation and learning

performance in a blended learning environment: The mediating effects of social, teaching, and cognitive presence. *Computers & Education. 136*. http://doi.org/10.1016/j.compedu.2019.02.021

Lear, J. L., Ansorge, C., & Steckelberg, A. (2010). Interactivity/community process model for the online education environment. *Journal of Online Learning and Teaching*, *6*(1), 71-77.

Liu, X., Magjuka, R. J., Bonk, C. J., & Lee, S. (2007). Does sense of community matter? An examination of participants' perceptions of building learning communities in online courses. *The Quarterly Review of Distance Education*, *8*(1), 9-24.

Long, P. (2004). Learning management systems (lms). In A. DistefanoK. E. Rudestam, & R. J. Silverman (Eds.), *Encyclopedia of distributed learning* (pp. 291-293). SAGE Publications, Inc., https://www.doi.org/10.4135/9781412950596.n99

Lowenthal, P., Borup, J., West, R., & Archambault, L. (2020). Thinking beyond Zoom: Using asynchronous video to maintain connection and engagement during the COVID-19 pandemic. *Journal of Technology and Teacher Education*, *28*(2), 383-391.

Luck, L., Jackson, D., & Usher, K. (2006). Case study: a bridge across the paradigms. *Nursing Inquiry*, *13*(2), 103-109.

Mahoney, S. (2009). Mindset change influences on student buy-in to online classes. *Quarterly Review of Distance Education*, *10*(1), 75.

Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online*

Learning, *22*(1), 205-222.

Mazzolini, M., & Maddison, S. (2003). Sage, guide or ghost? The effect of instructor intervention on student participation in online discussion forums. *Computers & Education*, *40*(3), 237-253.

McConville, B., & Murphy, B. (2017). What is online? A national survey of course offerings in music and a case study in music theory. *College Music Symposium*, *57*. https://www-jstor-org.libproxy.unl.edu/stable/26574466

McCormick, A. C., Gonyea, R. M., & Kinzie, J. (2013). Refreshing engagement: NSSE at 13. *Change: The magazine of higher learning*, *45*(3), 6-15.

Mezirow, J. (1997). Transformative learning: Theory to practice. *New directions for adult and continuing education*, *1997*(74), 5-12.

Moallem, M. (2003). An interactive online course: A collaborative design model. Educational Technology Research & Development, 51(4), 85-103.http://www.jstor.org.ezproxy.lib.purdue.edu/stable/30221186?seq=1

Moore, G. E., Warner, W. J., & Jones, D. W. W. (2016). Student-to-student interaction in distance education classes: What do graduate students want? *Journal of Agricultural Education*, *57*(2), 1–13.

Moore, M. G. (1989). Three types of interaction. *American Journal of Distance Education*, *3*(2), 1-7.

Moore, M. J. (1993). Three types of interaction. In K. Harry, M. John, & D. Keegan (Eds.), *Distance education theory* (pp. 19–24). New York: Routledge.

Mucundanyi, G. (2019). College student engagement in online learning. *(Publication No.* 22588786*)* [Doctoral dissertation, New Mexico State University]. ProQuest Dissertation and Theses Global. http://libproxy.unl.edu/login?url=https://www-proquest-com.libproxy.unl.edu/docview/2285295034?accountid=8116

Meyer, K. A. (2003). Face-to-face versus threaded discussions: The role of time and higher-order thinking. *Journal of Asynchronous Learning Networks*, *7*(3), 55-65.

Nollenberger, K. (2015). Comparing alternative teaching modes in a masters program: Student preferences and perceptions. *Journal of Public Affairs Education, 21*(1), 101-114. http://www.jstor.org.libproxy.unl.edu/stable/24369707

Nortvig, A. M., Petersen, A. K., & Balle, S. H. (2018). A literature review of the factors influencing e-learning and blended learning in relation to learning outcome, student satisfaction and engagement. *Electronic Journal of e-Learning, 16*(1), 46-55.

Norušis, M. J. (2005). *SPSS 13.0 advanced statistical procedures*.

Ozer, B., & Ustun, E. (2020). Evaluation of students' views on the COVID-19 distance education process in music departments of fine arts faculties. *Asian Journal of Education and Training, 6*(3), 556-568. https://doi-org.libproxy.unl.edu/10.20448/journal.522.2020.63.556.568

Paechter, M., & Maier, B. (2010). Online or face-to-face? Students' experiences and preferences in e-learning. *Internet & Higher Education*, *13*(4), 292–297. https://doi-org.libproxy.unl.edu/10.1016/j.iheduc.2010.09.004

Picciano, A. G. (2006). Online Learning: Implications for Higher Education Pedagogy and Policy. *Journal of Thought, 41*(1), 75-94. https://www-jstor-org.libproxy.unl.edu/stable/42589857

Picciano, A. G. (2017). Theories and frameworks for online education: Seeking an integrated model. *Online Learning, 21*(3), 166-190.

Price, K., & Baker, S. N. (2012). Measuring students' engagement on college campuses: Is the NSSE an appropriate measure of adult students' engagement? *The Journal of Continuing Higher Education*, *60*(1), 20-32.

Ramírez, D. M., & Gillig, S. (2018). Computer Technology and Twitter for Online Learning and Student Engagement. *Journal of Multidisciplinary Research*, *10*(1-2), 137-153.

Ray, J. (2009). Faculty perspective: Training and course development for the online classroom. *Journal of Online Learning and Teaching, 5*. http://jolt.merlot.org/vol5no2/ray_0609.htm

Ringler, I., Schubert, C., Deem, J., Flores, J., Friestad-Tate, J., & Lockwood, R. (2015). Improving the asynchronous online learning environment using discussion boards.

Robinson, C. C. & Hullinger, H. (2008). New benchmarks in higher education: Student engagement in online learning, *Journal of Education for Business, 84*(2), 101-109, http://doi.org/10.3200/JOEB.84.2.101-109

Rovai, A., Wighting, M. J., & Liu, J. (2005). School climate. *Quarterly Review of Distance Education, 6*(4), 361-374.

Rovai, A. P. (2007). Facilitating online discussions effectively. *Internet & Higher Education*, *10*(1), 77-88. http://doi.org/10.1016/j.iheduc.2006.10.001

Ruiz, R., & Sun, J. (2021, February 17). Distance education in college: What do we know from IPEDS? *National Center for Education Statistics.* https://nces.ed.gov/blogs/nces/post/distance-education-in-college-what-do-we-know-from-ipeds

Salavuo, M. (2006). Open and informal online communities as forums of collaborative musical activities and learning. *British Journal of Music Education*, *23*(3), 253-271.

Saldaña, J. (2016). The coding manual for qualitative researchers. SAGE Publication.

Seal, C. R., Naumann, S. E., Scott, A. N., & Royce-Davis, J. (2011). Social emotional development: A new model of student learning in higher education. *Research in Higher Education Journal*, *10*, 1.

Seaman, J. E., Allen, I. E., & Seaman, J. (2018). Grade Increase: Tracking Distance Education in the United States. *Babson Survey Research Group*.

Shea, P., & Bidjerano, T. (2012). Learning presence as a moderator in the community of inquiry model. *Computers & Education*, *59*(2), 316-326. https://doi-org.libproxy.unl.edu/https://doi-org.libproxy.unl.edu/10.1016/j.compedu.2012.01.011

Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education*, *9*(3), 175-190.

Shelton, K., & Saltsman, G. (Eds.). (2005). *An administrator's guide to online education.* Information Age Publishing.

Shelton, K., & Saltsman, G. (2005). *An administrator's guide to online education.* Greenwich, CT: Information Age Publishing.

Shen, D., Cho, M. H., Tsai, C. L., & Marra, R. (2013). Unpacking online learning experiences: Online learning self-efficacy and learning satisfaction. *The Internet and Higher Education*, *19*, 10-17.

Sher, A. (2009). Assessing the relationship of student-instructor and student-student interaction to student learning and satisfaction in web-based online learning environment. *Journal of Interactive Online Learning*, *8*(2), 102-120.

Schindler, L. A., Burkholder, G. J., Morad, O. A., Marsh, C. (2017). Computer-based technology and student engagement: a critical review of the literature. *International Journal of Educational Technology in Higher Education*, *14*(1), 1-28. https://doi.org/10.1186/s41239-017-0063-0

Smith, H., & Khan, B. (2005). Evaluation of an online learning program: What we are hearing from adult students. *Educational Technology*, *45*(6), 56-57. http://www.jstor.org.libproxy.unl.edu/stable/44429255

Song, L., & McNary, S. W. (2011). Understanding Students' Online Interaction: Analysis of Discussion Board Postings. *Journal of Interactive Online Learning*, *10*(1).

Strachota, E. (2006, October). The use of survey research to measure student satisfaction in online courses. In *Midwest research-to-practice conference in adult, continuing, and community education*.

Strauss, A. L. (1987). Qualitative analysis for social scientists. Cambridge university press.

Study.com / Distance Learning Courses and Certificates in Music. (2019, Dec 4 of publication). https://study.com/articles/Distance_Learning_Courses_and_Certificates_in_Music.html

Song, S. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. The Internet and Higher Education, 7(1), 59–70. https://doi.org/10.1016/j.iheduc.2003.11.003

Suhr, D. (2006). Exploratory or confirmatory factor analysis. *SAS Users Group International Conference* (pp. 1-17). Cary: SAS Institute, Inc.

Swan, K. (2004). Learning online: A review of current research on issues of interface, teaching presence and learner characteristics. *Elements of Quality Online Education into the Mainstream, 5,* 63-79.

Swan, K. (2005). A constructivist model for thinking about learning online. *Elements of Quality Online Education: Engaging Communities, 6,* 13-31.

Tallent-Runnels, M. K., Thomas, J. A., Lan, W. Y., Cooper, S., Ahern, T. C., Shaw, S. M., & Liu, X. (2006). Teaching courses online: A review of the research. *Review of Educational Research, 76*(1), 93-135.

Taylor, S. E., & Gollwitzer, P. M. (1995). Effects of mindset on positive illusions. *Journal of Personality and Social Psychology, 69*(2), 213-226.

Teklu Abate Bekele. (2010). Motivation and satisfaction in Internet-Supported Learning

Environments: A Review. *Journal of Educational Technology & Society, 13*(2), 116-127. http://www.jstor.org.libproxy.unl.edu/stable/jeductechsoci.13.2.116

Tichavsky, L. P., Hunt, A. N., Driscoll, A., & Jicha, K. (2015). "It's just nice having a real teacher": Student perceptions of online versus face-to-face instruction. International *Journal for the Scholarship of Teaching and Learning*, *9*(2), 1-8.

Trentin, G., & Bocconi, S. (2014). The effectiveness of hybrid solutions in higher education: A call for hybrid-teaching instructional design. *Educational Technology, 54*(5), 12-21. https://www.jstor.org/stable/44430301

Turchet, L., Fischione, C., Essl, G., Keller, D., & Barthet, M. (2018). Internet of musical things: Vision and challenges. *IEEE Access, 6*, 61994-62017. http://doi.org/10.1109/ACCESS.2018.2872625

Voelkl, K. E. (1997). Identification with school. *American Journal of Education, 105*, 204–319.

Walls, K. C. (2008). Distance learning in graduate music teacher education. *Journal of Music Teacher Education, 18*(1), 55-66. http://doi.org/10.1177/1057083708323137

Walls, S. M. (2009). *Determinants Influencing College Major Choice and their Relationship to Self-Determined Motivation, Achievement, and Satisfaction.*

Wang, Z., Tchernev, J. M., & Solloway, T. (2012). A dynamic longitudinal examination of social media use, needs, and gratifications among college students. *Computers in human behavior, 28*(5), 1829-1839.

Webb, N. M. (2009). The teacher's role in promoting collaborative dialogue in the classroom. *British Journal of Educational Psychology*, *79*(1), 1-28.

University of Nebraska-Lincoln. (2000, March). A 2020 Vision: The Future of Research and Graduate Education at UNL. http://www.unl.edu/svcaa/documents/2020report.pdf

University of Texas Electronic Theses and Dissertations. http://hdl.handle.net/2152/11637

Weis, L., & Fine, M. (2000). *Speed bumps: A student-friendly guide to qualitative research.* Teachers College Press.

Xia, J. C., Fielder, J., & Siragusa, L. (2013). Achieving better peer interaction in online discussion forums: A reflective practitioner case study. *Issues in Educational Research*, *23*(1), 97-113.

Yin, R. K. (2015). *Qualitative research from start to finish*. Guilford publications.

Young, S., & Bruce, M. A. (2011). Classroom community and student engagement in online courses. *Journal of Online Learning and Teaching*, *7*(2), 219-230.

Zimmerman, B. J. (1986). Becoming a self-regulated learner: Which are the key subprocesses? *Contemporary Educational Psychology*, *11*, 307-313.

Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of educational psychology*, *80*(3), 284.

APPENDIX A: INSTITUTION RESEARCH BOARD APPROVAL LETTER

University of Nebraska Lincoln

Official Approval Letter for IRB project #20855 - New Project Form

March 3, 2021

Xinwei Liu
Glenn Korff School of Music
WMB 113 UNL NE 68588

Rhonda Fuelberth
Glenn Korff School of Music
WMB 347 UNL NE 685880100

IRB Number: 20210320855EX
Project ID: 20855
Project Title: Student Engagement of Higher Music Education with Online Learning Components: A Mixed Methods Case Study

Dear Xinwei:

This letter is to officially notify you of the certification of exemption of your project for the Protection of Human Subjects. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects at 45 CFR 46 2018 Requirements and has been classified as exempt. Exempt categories are listed within HRPP Policy #4.001: Exempt Research available at:
http://research.unl.edu/researchcompliance/policies-procedures/.

o Date of Final Exemption: 3/3/2021
o Certification of Exemption Valid-Until: 3/3/2026
o Review conducted using exempt category 2b at 45 CFR 46.104
o Funding (Grant congruency, OSP Project/Form ID and Funding Sponsor Award Number, if applicable): N/A

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any protocol violation or protocol deviation
* An incarceration of a research participant in a protocol that was not approved to include prisoners
* Any knowledge of adverse audits or enforcement actions required by Sponsors
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

Becky R. Freeman

Becky R. Freeman, CIP
for the IRB

APPENDIX B: PARTICIPANT INFORMED CONSENT FORM

Template Revised: 05/03/2020

University of Nebraska Lincoln

IRB Project ID#: 20855

Study Title: Student Engagement of Higher Music Education with Online Learning Components: A Mixed Methods Case Study

Principal Investigator: Xinwei Liu, University of Nebraska Lincoln

Researcher Contact Information: [redacted]

My name is Xinwei Liu. I am conducting a study to examine the student engagement of higher music education with online learning components. If you are 19 years of age or older and are pursuing (or plan to pursue) a Bachelor of Music Education degree at the University of Nebraska-Lincoln Glenn Korff School of Music, you may participate in this research.

What is the reason for doing this research study?
It is widely known that the Covid-19 has forced huge numbers of universities to implement online learning models since the spring semester in 2020. Music education students, not exceptionally, have enrolled in an increasing number of online courses or courses containing online learning components, such as Zoom meeting classes, instructors' asynchronous videos, etc. Research has shown that one of the most important reasons that students achieve academic success is engagement, which also holds true for online learning experiences. The purpose of this study is to investigate the undergraduate student engagement of online music education courses under a pandemic situation.

What will be done during this research study?
Should you agree to participate, in the first part, you will be asked to complete an online survey during a regularly scheduled class time using your personal computer or device. Participating in this portion will require approximately 20 minutes of your time. In the second part, should you agree to participate, a subset of participants who have already completed the survey will be selected to take part in one-on-one interviews with the researcher. The interviews will take place via Zoom and they will be audio recorded. This will require approximately 30 minutes at your convenience.

What are the possible risks of being in this research study?
There are no known risks associated with participation in this study.

What are the possible benefits to you?
Participants will gain an increased understanding of their individual student engagement with online learning experiences. Further, the findings of this research may benefit the higher education music profession by helping them understand more about student engagement in online learning.

How will information about you be protected?
The responses to the survey will be kept confidential. The researcher will ensure that the collected data and the spreadsheet for data analysis are properly secured on an encrypted UNL Box account.

Please leave room for the IRB approval stamp. The final document must be submitted as a PDF in order for the stamp to be added. (Be sure to delete this placeholder.)

The data records will only be available to the researcher. Audio files of interview recordings will only be accessed by the researcher and not be transferred to anyone else. Transcripts containing any identifiable information will be stored in an encrypted folder. This data will be used in developing qualitative themes and narrative for dissertation research and may be reported in the dissertation and subsequent conferences and journal articles. This study involves the collection of private information (names, email address, etc.). Even if identifiers (names, email address, etc.) are removed, information collected as part of research will not be used or distributed for future research studies. All identifiable information will be removed from participant narratives and pseudonyms will be used in place of participant names when this research is presented and published. Identifiable information will not be available to university officials or employees.

What are your rights as a research subject?
You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study-related questions, please contact the investigator or university supervisor:
Xinwei Liu, Ph.D. Candidate
[redacted]

Rhonda Fuelberth, Ph.D.
[redacted]

For questions concerning your rights or complaints about the research contact the Institutional Review Board (IRB):
Phone: (402) 472-6965
Email: irb@unl.edu

What will happen if you decide not to be in this research study or decide to stop participating once you start?
You can decide not to participate in this research study, or you can stop being in this research study ("withdraw") at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect your relationship with the investigator or with the University of Nebraska-Lincoln. You will not lose any benefits to which you are entitled.

Documentation of Informed Consent
You are voluntarily making a decision whether or not to participate in this research study. By answering the survey questions, you have given your consent to participate in this research. You should print or save a copy of this page for your records.

APPENDIX C: COLLEGE STUDENT ENGAGEMENT IN ONLINE LEARNING SURVEY

Default Question Block

It is widely known that the Covid-19 has forced huge numbers of universities to implement online learning models since the spring semester in 2020. Music education students, not exceptionally, have enrolled in an increasing number of online courses or courses containing online learning components, such as Zoom meeting classes, instructors' asynchronous videos, etc. Research has shown that one of the most important reasons that students achieve academic success is engagement, which also holds true for online learning experiences. The purpose of this study is to investigate the undergraduate student engagement of online music education courses under a pandemic situation.

An Informed Consent Form, approved by Institutional Review Board at the University of Nebraska-Lincoln, is displayed below. Please download and save/print a copy for your records. Please look at the information on the consent form before proceeding. Please be aware of the potential possibility of being chosen to participate in the follow-up interview. If you are selected, your email address will be used to contact you about the next stage of the study. Please read the response options carefully.

Exempt IRB Approval #20855
By answering the included survey questions, you indicate your consent to participate in this research.

Please check this box if you consent to participate in a follow-up interview. If selected, I will contact you via email to set up a Zoom meeting.

I prefer to answer survey questions only.

Please type your name. (First Last)

Please enter your preferred email address here.

Please re-enter your email address.

Thank you for being willing to participate in the a follow-up interview. If selected, I will contact you via email.

Basic Questions

Please select your educational status:

Second year student (enrolled in MUED 244)

Third year student (enrolled in MUED 345/346 or previous non-enrolled courses)

Fourth year student (enrolled in MUED 470/403 or previous non-enrolled courses)

First year in-service teacher (completed student teaching in Spring 2021)

Please select the gender with which you identify:

Male

Female

Prefer not to answer

What program will you plan to graduate from?

Music Education

Instrumental or Vocal Performance

Composition of other

Not decided

Have you ever taken any online courses before the Covid-19 spread out nationally? If so please indicate how many courses you have taken online.

Yes

No

COLLEGE STUDENT ENGAGMENT IN ONLINE LEARNING SURVEY

Instructions for Section 2: Research has shown that one of the important reasons that students maintain high retention of study programs is engagement. Student engagement is also a critical element in the online education environment. The following statements are commonly used to describe three types of interactions involved in online learning, 1) student-student interaction, 2) student-instructor interaction, and 3) student-content interaction. Since the 2020 spring semester, numerous courses have been incorporating online learning components, such as synchronous Zoom meeting classes, asynchronous readings and discussions, use of instructor videos, etc. Please read each statement carefully and consider overall the music education courses that you have enrolled in so far. Please mark the extent to which you personally agree or disagree with the statements using the 5-point scale provided with 5 indicating "strongly agree," and 1 indicating "strongly disagree." Obviously, a 2-through 4 rating would indicate that you are somewhere between the two extremes in rating your agreement/disagreement with this statement. Please proceed to rate each of the items:

I participate actively in online discussions.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

The course rules are clear.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

My instructor is present and active in class discussion.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I ask questions in discussions when I don't understand.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

My instructor is responsive to me when I have questions.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I complete all of the assigned class work.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I visit the course website regularly.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

My instructor is consistent about enforcing course rules.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I know that I can contact my instructor when I need to.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I trust my instructor to handle inappropriateness in-class interactions.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

I truly desire to learn the course material.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

I give a great deal of effort to the class.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

I am well organized in my learning.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

My instructor provides a well-organized course.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

I will earn a good grade in the course.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

I stay caught up on readings.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

I interact with classmates on course material.

Strongly agree
Agree
Neutral
Disagree
Strongly disagree

I connect personally with classmates.

Strongly agree
Agree

Neutral

Disagree

Strongly disagree

I enjoy interacting in my class.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I help my fellow classmates.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I share personal concerns with others.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

I am committed to working with my classmates so that we can help each other learn.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

APPENDIX D: INTERVIEW PROTOCOL

INTERVIEW QUESTIONS

Part 1. Demographic questions	
Tell me about yourself.	D. 1. What courses have you enrolled in this semester?
	D. 2. How many courses are incorporating online learning components (asynchronous or synchronous lessons)? And what are they?
	D. 3. Tell me about any online courses you have taken before Covid-19? How do you think those courses helped you engage with online aspects of your courses in this semester?
	D. 4. Why did you choose to take the courses you have enrolled in when you became aware that they would contain online learning components?
Part 2. Student engagement questions	
Please describe your student-instructor interaction.	1.1. What specific rules/procedures do your instructors use to manage teaching?
	1.2 How do your instructors enforce these rules/procedures consistently?
	1.3.1 Describe how your instructors respond to your questions? (Could be assignment requirements, technology issues, or something you are struggling to learn) Through what media? How do you think the question being solved? 1.3.2 Could you tell me about a time when an instructor helped you solve a problem you were having with online aspects of a class? (Similarly would you tell me about a time when you reached out for help and you were frustrated that the problem wasn't getting solved, or wasn't getting solved in a timely manner?)
	1.4. Would you describe the organization of the courses designed by your instructors? (well-organized? easy to find materials?)
	1.5.1. Would you elaborate on your instructors' written feedback on works you have submitted? 1.5.2. Would you give me an example of a time when your instructor gave you feedback in some other form. (zoom call, or etc.)

	1.6.1. Would you comment on your instructors' presence in class discussions (Zoom break-out rooms, enter each room to join discussion? Whole group, small groups) 1.6.2. And would you describe on your instructors' presence in online discussion boards?
Please describe your student-content interaction.	2.1.1. Please describe how you use Canvas? Is it for reading materials, reading syllabus? (frequency) 2.1.2. In what way are you using Canvas differently since the Pandemic began?
	2.2.1. How enthusiastic do you think you are about learning content that is provided online? (such as content accessed in instruction videos, reading materials in Canvas) Why? 2.2.2 Would you contrast your motivation toward learning when using online materials vs face-to-face experiences?
	2.3. Describe your feelings about participating in class-related Zoom meetings. How have your feelings toward participating in Zoom changed since the Pandemic started?
	2.4. In which ways do you think Canvas facilitates your learning? In which ways does it interfere?
	2.5. Would you tell me about your consistency in completing assignments? (including all types of online works such as discussion board participation, project submission, reading reflections, etc.? (How much effort do you put into completing every assignment pre or post pandemic?)
	2.6. How do you think your efforts have paid off in terms of your own learning? Tell me about your experiences with grades Do you think the effort you have put into your courses has resulted in grades you have expected?
	2.7. What specific strategies do you use to organize yourself in online aspects of your courses "To-do" feature in Canvas? Calendar?

Please describe your student-student interaction.	3.1. Please talk about what interactive work you have done with your classmates in class-related Zoom meetings. Tell me about the work you have done with your classmates in any online environment (e.g., online discussion boards, collaborative assignments)?
	3.2. How active do you think you are when participating in online settings (reading others' responses in discussions, collaborative work)? (e.g.,
	3.3. What do you like best (most enjoy) about interacting with classmates?
	3.4. Describe situations in which you have reached out to communicate with your classmates outside of the class? Can you give an example? (Is it related to the course material or personal topics?)
	3.5. Would you give some details regarding how responsive you are when your classmates have questions for you?
	3.6. Describe situations in which your classmates have reached out to communicate with you? Would you give some details regarding how responsive your classmates are when you have questions to ask?

APPENDIX E: MATRIX OF QUALITATIVE ANALYSIS: THEMES, DOMAINS, SUBDOMAINS, PARENT CODES, AND CODES

Theme	Domain	Sub-Domain	Parent Codes	Codes
Student Engagement	Interaction between Student and Content	Self-Organization		
		Efforts and Consistency in Learning	Efforts in Assignments Completion	
			Grades and Rewards	
		Asynchronous Learning Settings	Instructor Videos	
			Discussion Boards	
		Synchronous Learning Settings	Inadaptability	Location Preference
				Lack of Efficient Communication
				Unstructured Class
				Distraction
				Privacy Concerns
				Fatigue through Time
				Awkwardness
				Lack of Authenticity
			Adaptability	
			Instructor's Role in Zoom Classes	
		Canvas Usage	Frequency and Flexibility	
			Purpose of Use	
			Advantages	Safety Concern
				All in One
				Staying on Track
				Resource Bank for Later Reference
				Compatible Independent and Learning and Help-Seeking
			Disadvantages	
	Interaction between	Situations that Prompt Student-		

	Students and Professors	Instructor Interaction		
		Questioning and Problem-Solving Procedures		
		Barriers to Student-Instructor Interaction		
		Quality of Interactions	Preferred Instructor's Answers	Constructive and Specific
				Personalized and Connective
				Encouraging
				Referenceable
				In-Advance
	Interactions between Students and Students	Interaction between Student and Students	Situations that Prompt Student-Student Interaction	
			Roles in Group Works	Leader
				Contributor
				Follower
			Commonality Sharing	
		Interaction Procedures	Zoom Classes	
			Other Applications	
		Barriers to Student-Student Interaction		
		Responsiveness of Student-Student Interaction		
Infrastructure	Instructor's Management Tools	Instructor's Rules in Synchronous Online Classes	Reinforcement of Rules in Synchronous Online Classes	
		Instructor's Expectations		
		Course Materials Organization on Canvas	Instructor's Consistency in Canvas Set-up	
	Students' Mindset			