Creating a Constructivist Online Music Course for Community College Students: Theory and Practice

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Creating an online music course afforded developers at Ocean County College an opportunity to build learner-centered, media-rich lessons and assessments. Guided by constructivist learning theory and using free resources, Music Fundamentals was designed to introduce students to music notation while demonstrating real-world application of concepts. After outlining past practices and learning philosophies, this article will detail the use of YouTube videos and the notation software Finale NotePad in course design. Performance videos illustrate musical elements and prompt discussion about their function in a piece. NotePad was used to create pictorial examples and will be used by students in constructivist song-writing assignments. This course was designed with community college students in mind, placing music fundamentals in a familiar context while demanding college-level demonstration of understanding.

Ocean County College (OCC) is a public community college in Toms River, NJ, the seat of the second largest county in the state. While most students earn liberal arts or general studies degrees, in 2016 the college had more students enrolled in a performing arts degree program than any other discipline-specific program, save for nursing and business administration. Furthermore, the college will be the new home of the Ocean County Vocational Technical School Performing Arts Academy (PAA), slated to move on campus by the end of 2019, as reported in the Asbury Park Press by Erik Larsen (2017). By being dually enrolled, PAA students will obtain both a specialized high school diploma and an associate's degree from Ocean upon graduating high school.

OCC offers a variety of courses and degree programs through its School of e-Learning, ranking high in lists from OnlineColleges.com (2017) and Affordable Colleges Online (2017) of New Jersey's best online schools for 2017. However, only one music course, Music Appreciation, was included in Ocean's online offerings. Given OCC's affinity for the arts and their excellence in distance education, it made sense to expand this. MUSC-101, Music Fundamentals, is a required course for any student wishing to take Music Theory I who does not perform well enough on the placement exam. At least one face-to-face section runs each semester, and since more high school students will soon be taking OCC classes, additional options will likely be needed. The online course was designed to include various types of media and give students a comprehensive introduction to music.

Literature Review

The purpose of this literature review, which is divided into three parts, is to provide a framework for the design and development of OCC's online Music Fundamentals course. First, resources that outline the online music course creation process will be evaluated. Second, several articles about learning philosophies will be summarized. Finally, a book on the significance and uses of YouTube will be reviewed to provide justification for including these videos.

Online Music Course Creation

John Steffa (2000) discusses the creation of the online course Introduction to Music Theory and Aural Skills at Murray State University. The school began offering the course face-to-face in 1991 but realized the need for additional options when more students with weak music theory knowledge continued to enroll as music majors. To accommodate this, the online course needed to be interactive yet function effectively with little teacher involvement. Lectures were created with embedded audio samples, as well as text and images that changed when moused over to provide clarification and animation or reveal answers. The course also included downloadable manuscript paper for practice writing music symbols, and tests in PDF format, which were printed, completed and faxed back.

Blase Scarnati and Paula Garcia's article (2008) focuses on the intersection of technology and learning philosophies in an online undergraduate jazz history course at Northern Arizona University. This course originated as a distance learning lecture, which offered little opportunity

for interaction. In rewriting the course, the authors aspired to create a learner-centered curriculum by working backward chronologically and building upon familiar music. Additionally, they hoped to take advantage of the online format by including multimodal media elements such as sheet music, audio, video, and listening outlines. The instructors' cassette, CD, VHS, and DVD collections were digitized using iTunes and iMovie to create MP3 and MPEG files, resulting in 200 audio and 100 video files. They were then converted to Flash format to prevent downloading, an attribute required by the Technology, Education and Copyright Harmonization (TEACH) Act. The course also included interactive games, links to library database articles, pop-up definitions, and space for collaboration.

Dan Keast begins his article (2009) by pointing out that while constructivism is common to applied music lessons, music history and theory courses often rely on a lecture model. He states that online course technology provides an opportunity to break away from that traditional format and move toward an interactive course that enables students to construct their own knowledge. To create such a course, the teacher or designer places tools within reach of the students, facilitating their learning by guiding them to discover resources. He says, "the decision to teach using a constructivist paradigm gives students the choice to follow trails of interest, make connections, reformulate ideas and reach unique conclusions" (p. 2). Keast's courses approach assessment in a similarly learner-centered manner, incorporating individual assignments into group activities, which are then used in discussions. The student remains engaged throughout this process. Keast provides other learning theories into which his online courses fit, such as Vygotsky's Zone of Proximal Development, for which optimal realization occurs when students need minimal instructor interaction; social constructivism, which states that students formulate knowledge by working together; and activity theory, which postulates that a motivated student learns while engaged in a task. All theories through which this course can be viewed unite in the proposition that effective learning occurs when a student is using tools of their choosing and is engaged with other learners to accomplish a goal.

The article "Notes from the Field: Three Perspectives on Teaching Music Online" (Forsyth, Tulk, & Turnbull 2013) includes separate accounts related to online pedagogy at Canadian universities, two of which will be described. In the first, Meghan Forsyth discusses her approach to including class interaction in a musically rich online version of North American Popular Music at the Memorial University of Newfoundland.

Working with a team of designers, programmers, and copyright officers, she created a course "that would hone students' listening, analytical, and writing skills" (p. 23). In keeping with Section 29.5 of the Canadian Copyright Act, she was able to digitize audio for the course on the condition that the files be destroyed within 30 days of the end of the term. Because the class size was anticipated to be more than 100 students, built-in discussion forums would not be sufficient. Forsyth developed a twice monthly Twitter assignment in which students discuss the role of music in North American society using only 140 characters. Gillian Turnbull of Ryerson University comments on further challenges in her portion of the article. Her initial reluctance to teaching Introduction to World and Early European Music online stemmed from apprehension that her classroom strategy of explaining musical elements while listening to music could not be translated to a digital environment, and from a belief that YouTube imagery was distracting. However, she acknowledges that watching a performer in action or seeing a rhythm played could help clarify concepts, and hoped to add timed text explanations to videos, mimicking her in-person technique.

Learning Theories

Gregg Bennett and Frederick P. Green (2001) provide a clear explanation of constructivist learning theory in online coursework. They first summarize by stating that "constructivism is not a teaching theory but rather a theory on knowledge and learning" (p. 3). The focus is on how students acquire knowledge, not on how a teacher should provide it. In an online course, the teacher facilitates the acquisition of knowledge by guiding students through readings and assignments that allow them to explore a topic and assimilate new information into their existing understanding. This critical thinking does not only happen individually; it often takes place in collaboration with classmates and the instructor in discussion forums, a common element in online instruction software. An added benefit of these devices is students who are not comfortable speaking in a classroom are often more apt to share ideas online. The authors suggest that an online learning environment is especially suited to engaging students through required critical thinking and exchange of ideas. While this means the student has a greater responsibility for their learning, it also demands the course be appropriately designed and the instructor embrace the teaching tools unique to online education.

Though Schcolnik, Kol, and Abarbanel's article (2006) was written about a classroom setting, their explanations of constructivist theories

apply to online education as well. Their breakdown of constructivism into two categories, cognitive constructivism and social constructivism, is especially informative. They stress that the two are not mutually exclusive, but rather Piaget, who developed the former, and Vygotsky, the latter, focused their research on particular aspects of the knowledge-building process. Cognitive constructivism concentrates on the role of the mind in learning, asserting that new information is understood as it relates to existing knowledge, and fits into or modifies the structures or cognitive schemas of the brain. Social constructivists emphasize the importance of interaction with others and the environment, arguing that the interpersonal dialogue responsible for learning is key. However, the authors feel the two aspects of constructivism are inextricably joined: "We cannot possibly understand how individuals think without an appreciation of the cultural context in which their thoughts developed" (p. 13). Given these theories, they offer suggestions for improvements to teaching methodology: ask questions that provoke critical thinking and reflection on the learning process, expose learners to resources and experiences that allow them to build knowledge, and include activities that require discussion. While not referring to online education per se, they mention that including the Internet in instruction can promote flexibility, a necessity for knowledge building. Students forge their own paths through resources, experiencing information in multiple modes and from various perspectives, which they then discuss with the class.

Richard Paul and Linda Elder wrote a series of short articles that examine Socratic questioning, a teaching method used to promote critical thinking. The first (Paul & Elder, 2007) provides a definition and includes guidelines for implementation. This questioning method is systematic and deep, focusing on "foundational concepts, principles, theories, issues, or problems" (p. 36). It can be used for analyzing and exploring concepts, opening up problems, uncovering assumptions, and following ideas to their logical conclusions. Not only does this teaching tool allow the instructor to examine a student's level of understanding, it also affords them the opportunity to model effective question-asking. The authors' second article (Elder & Paul, 2007) elaborates on the concept by providing guidelines for assessing reasoning in keeping with what they call "universal intellectual standards" (p. 32). They propose questioning the clarity, precision, accuracy, relevance, depth, breadth, logicalness and fairness of the thinker. The final column (Paul & Elder, 2008) outlines three categories of Socratic questioning. The first, spontaneous, arises when a participant questions what another says or asks for clarification. The instructor can facilitate these sessions so students work through the

answers. The second type, exploratory, is used to find out how much a student knows or what a student feels regarding a subject. Lastly, focused Socratic questioning evaluates material in greater depth. Students share insights and reflect on facts, integrating a variety of perspectives and ideas to construct knowledge.

YouTube

Jean Burgess and Joshua Green's book on YouTube (2009) offers an extensive evaluation of the website, focusing primarily on its participatory nature. Although the site is a platform for and aggregator of video content, the content producers are YouTube's users, not the site itself. The consumers are the creators. This blurring of lines between commercial and community is what makes YouTube an important part of popular culture: "[It is] a platform designed to enable cultural participation by ordinary citizens" (p. 75). Even though some of YouTube's participants are larger organizations, the lack of distinction between professional and amateur grants the average citizen the same status as a commercial or educational institution. This emphasizes the importance of the average person to the essence of the website, which is "a coordinating mechanism between individual and collective creativity and meaning production" (p. 37). A user profits not only by reaching millions of others, but also through viewing content created all over the globe. This last point outlines YouTube's role as "a potential site of cosmopolitan cultural citizenship" (p. 81). Individuals are exposed to a variety of cultures and perspectives that they may otherwise never experience.

John Hartley, in his section of this book (2009), elaborates on the idea of consumer as content creator with an emphasis on the importance of digital literacy. He wonders how YouTube and other audience-created Internet resources like wikis or blogs will fit into a formal education and asks whether it is the responsibility of schools to teach digital literacy rather than blocking these sites. In comparing with the past, he points out that public schools were created to spread print literacy and imagines a world in which everyone can communicate and express themselves effectively online. He refers to YouTube as "enabling social technology," implying that it can be a learning tool that "relies on both experts and everyone" (p. 133). The Internet allows individuals to both find and contribute information to the available wealth of knowledge, if they are digitally literate. In fact, the author feels that "harnessing the creative energies of the whole population, not just the inputs of isolated expert elites" (p.

132) will create a better, more representative batch of entertainment and educational media.

Online Course Design and Creation

Online development of a Music Fundamentals course was undertaken to expand OCC's performing arts offerings. Because the course was already offered on campus, learning outcomes had been established and a textbook that encompassed these objectives was in use. Though it was not a requirement to use the same book, it seemed sensible to do so. "A Creative Approach to Music Fundamentals" by William Duckworth, was available as an e-book, which could easily be linked to the course in Canvas. The book was 15 chapters long, which fit the requisite 15 modules for Ocean's online courses. While some of the later chapters progress beyond the stated learning outcomes, the added information corresponds with the developer's desire to demonstrate how basic musical elements are used to create songs. Although the course was not built solely on material in the textbook, it was logical to structure the modules around its presentation.

Information Presentation

The first step taken in creating the online course was writing lectures. Rather than recording and uploading videos, it was decided that providing the information as text would enable students to absorb the material at their own pace. Additionally, it made more sense to embed multimedia elements into written lecture notes, which would let students view or listen to the images, audio, and video as many times as necessary. Students can take a more personalized approach to interacting with audiovisual material at their own computer than they could in the classroom. It was thought these adult learners may appreciate real-world application of simple musical concepts through audio and video clips in addition to text-based explanations. Viewed through a cognitive constructivist lens, demonstrating new information as it relates to something more familiar (listening to music) should improve the knowledge-building process.

Canvas, the Learning Management System used by Ocean County College, offers simple mechanisms for creating content pages. Image, audio, and visual files are embedded by uploading or linking to a URL. During the creation of the first lectures, suitable Creative Commons licensed images were located online, but it soon became evident that most of the images would need to be created. As with all audio files, images not found on the Internet were created using basic software on a MacBook.

To capture musical symbols like notes, rests, dynamics, articulation markings, and key signatures, the notation software Finale NotePad was used. When needed, descriptive notation on the newly made images as well as those found online was added using Microsoft Paint.

Being a music course, it seemed essential for images to have supporting audio. For smaller elements like pitches and intervals, and larger concepts like scales and chord progressions, audio was created using NotePad and Apple's GarageBand. The musical idea was notated in Finale, saved as a MIDI file, then opened and edited in GarageBand before saving it as an MP3 and uploading it. Editing in GarageBand was minimal, consisting mainly of changing the tempo or adding a metronome track, an important element in demonstrating note lengths in time.

To fully engage students with these musical concepts, videos were also included in the typed lectures. As stated before, it was hoped that adult students would value and enjoy a broader, more applicable view of the basic elements of music. Although one may be wary of using YouTube videos in college courses, either because the content is not scholarly enough or because videos may be taken down without notice, a suitable solution was reached to assuage both concerns. Videos were selected only if they were hosted on the official channels of performing arts organizations and featured professional performers. An effort was made to include jazz, popular, and rock music in addition to classical, with the hopes that students would appreciate the variety and pay more attention to a familiar style. Some YouTube videos used in lectures include Hugh Wolff conducting the Frankfurt Radio Symphony in Jean Sibelius's Symphony No. 5, to show how rests can be used effectively; and Earth, Wind & Fire playing "September," to illustrate simple meter. Most of the YouTube videos of classical music performances were short excerpts, which should provide students with a focused introduction to art music and a clear example of a musical concept.

Appropriate Assessments

In keeping with the approach of presenting information in various forms, it was decided that assessments should also include images, audio files, and video clips. In OCC's Canvas courses, evaluations consist of a quiz, assignment and required discussion in each of the 15 modules. The decision was made to limit the quizzes to images and text to ensure students were comfortable with symbols and definitions essential to reading music before progressing to aural concepts. This will help students construct knowledge in steps, adding to cognitive structures only when the most

basic information has been assimilated. While most of Ocean's online courses have 10-question quizzes, these assessments include 25 questions, indicating the importance of basic symbol recognition in the process of learning to read music.

Multiple choice and true/false quizzes are relatively easy to administer to an online class, perhaps even easier than in a classroom. Determining how to include comprehensive age-appropriate assessments of music understanding proved to be more difficult. While incorporating handouts to assess symbol recognition and reproduction is common in face-to-face courses, using them online would require significant effort to download, complete, and upload. Furthermore, these sheets would not require college students to develop a thorough understanding of notation, as they often use childish images or concepts. Essays are common in college coursework, but it was thought outside the scope of an introductory music class to require much writing.

The 15 assignments are divided into several different types. There are two essays, which aim to give music fundamentals historical or cultural context. One of the later assignments requires students to analyze a simple 19th century chorale tune. Rather than requiring students to download or print the music, it was embedded into the assignment page with numbered blanks below 25 of the chords, for which answers can be typed in a text box. The rest of the assignments fall into one of two categories: aural comprehension or music composition. Although those tasks may seem too advanced for a fundamentals course, adaptations and guidelines were incorporated to make the assignments more suitable.

Four assignments require students to recognize musical ideas by ear. After focusing on symbol recognition in the quizzes, students will add aural understanding to that recently cemented knowledge. The first of these exercises, rhythmic notation, consists of five short rhythmic sequences which students must listen to and record by hand. Because there are no pitches involved, and therefore no need for a staff, students can write the lines on any piece of paper. The course description states that students must have a digital camera or smartphone capable of taking pictures in order to submit this assignment. The other assignments ask students to listen to intervals or scales and identify pitches by letter name. Answers for these three are submitted through a text box on the assignment page.

Initial concern that community college students may not be able to identify musical ideas by ear was alleviated by regulations regarding the Americans with Disabilities Act. Musical sequences for the listening assignments were created the same way as the audio files for the lectures,

so to be ADA compliant, visual representations had to be made. Two websites that allow virtual performing were selected for that purpose: Virtual Drumming (http://www.virtualdrumming.com/) and Virtual Piano (https://virtualpiano.net/) allow a rhythm or melody to be seen as well as heard. The screencast software Camtasia was used to record the rhythms, scales, and intervals played, and to add text explanations and callouts to emphasize important regions. Videos were saved as MP4 files, then uploaded and embedded as the audio files had been.

The remaining eight assignments were built in close adherence to cognitive constructivist ideals. Instead of asking students to repeat definitions as proof they had learned new concepts, these tasks require them to apply their newly acquired knowledge and build upon existing comprehension. One of these assignments is a stand-alone exercise, instructing students to construct chords. Though it does not literally lead into one of the next assignments, similar effort is required later. The other composition assignments lead into each other, starting with rhythmic and melodic composition, then expanding and adding a chord progression, and finally developing or repeating sections to write a song. To ensure students write rhythms and melodies that lend themselves to harmonization and songwriting, clear guidelines are included in each assignment. A recommendation is also included to use Virtual Piano to ensure melodic lines are singable. There are requirements to use nearly all note lengths and not to repeat a pitch multiple times so most options are used and fixed in the student's memory. It was felt that this progression of exercises was more appropriate for college students than simple handouts, would promote knowledge building of greater depth, and would place fundamental concepts in a broader perspective, all while resulting in a tangible finished product.

To complete and submit these assignments, students were originally instructed to use Finale NotePad, free music notation software available from a respected company. However, after discovering it was no longer compatible with Mac, the open source software MuseScore was chosen. Available for both Mac and PC, it allows all members of the class to complete composition activities without ever picking up a pencil. The few features essential for finishing assignments should not be difficult for students to master, and the company offers video tutorials on their website. This technical support should mitigate the lack of in-person contact inherent to online coursework. Although students will not get the opportunity to notate music by hand, they will learn software that is arguably just as applicable to today's aspiring musicians.

Discussing Fundamental Elements of Music

A required discussion is part of each module in OCC's e-Learning courses. It is the first activity, before the quiz and assignment, giving students a chance to examine ideas and compare perspectives before being evaluated on their understanding. While the discussions are graded, marks are dependent more upon substantial participation and intelligent question-asking than correctness. Following talks between members of the course development team, it was determined that the Socratic questioning method should be used to structure the discussions. Given that this course focuses on the most basic elements of music comprehension, it was challenging to incorporate perceptive question-asking. But in keeping with the approach of presenting broad, real-world applications of these concepts, most of the discussion questions were built around YouTube videos like those included in the lectures. Initial questions of an exploratory nature will facilitate thoughtfully formed opinions and further investigation of a topic, leading to focused question-asking. Students are challenged to analyze the effectiveness of musical concepts in compositions, collaborating to explore implications of composers' or performers' choices while critiquing each other's reasoning and assumptions. An instructor will guide discussions to logical conclusions and answer any spontaneously arising queries. As students must reply to at least two other posts, they will assist each other in cultivating knowledge, the key factor of social constructivism.

Following the same standards as were used for the lectures, videos were only selected if they were from an official channel, featured a professional performer, and demonstrated a musical concept. All but four of the discussions feature an excerpt or excerpts from a classical, jazz, or blues composition with corresponding questions that require students to listen closely and evaluate the performance or piece. For example, a performance by "The President's Own" United States Marine Band of John Philip Sousa's "The Thunderer" is accompanied by questions about contrast in dynamics, articulation, and pitch, and whether the composer's choice to alter multiple elements at the same time was enjoyable and effective. Another discussion features two videos, one of Franz Liszt's "Hungarian Rhapsody No. 2" in C-sharp minor and the second of Frédéric Chopin's "Nocturne" in C-sharp minor, challenging the students to use at least two musical elements or characteristics to explain why they preferred the showy former or the introspective latter. Some discussions include more detailed questions, such as those with the video of B.B. King's "Every Day I Have the Blues" which require students to listen for the 12-bar blues progression. The other discussion forums compel stu-

dents to think critically about topics relevant to the course. One requires students to present a YouTube video of their preferred dance music and justify their choice using musical terms from the course. The final discussion invites members of the class to comment on their songwriting experience and examine the role that contrast and repetition play in a piece's popularity. Although the depth of the course's discussion questions may seem excessive for a music fundamentals course, students are primarily graded on their effort, not accuracy. Getting students to think critically should be an aim of every college course, even if the content is introductory, and online discussions are a great forum for that type of exercise. Moreover, it was hoped that employing YouTube videos as catalysts for discussion would portray even classical music as a relatable topic, since college students likely view videos regularly and can post to the site as easily as any professional can.

Conclusions

Tackling the design and development of an online music course with limited manpower and financial resources was a difficult task. But the limited budget forced the course's creator to find interesting uses for free resources, resulting in a Music Fundamentals course which expounds upon the basics of music to demonstrate to adult students their application in songwriting and music composition. In today's information-sharing environment, performances by the world's best orchestras and other performing groups are openly available to anyone with access to the Internet and an interest in learning, making YouTube videos an excellent option for online education. Not only will students be granted the opportunity to hear music-making of the highest caliber, they will also create music, guided by parameters that lead them to success. Constructing their own knowledge through application of newly learned material and examining their musical encounters in discussion with classmates, students will gain a deep comprehension of the topic.

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