Virtual Music Classrooms via Incubation Theory: Case Studies and Research

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Abstract. Incubation theory is introduced as a way of describing the artistic output found in various types of synchronous and asynchronous music lessons in the context of K-12 education. The theory is explored through specific examples found in online discussions and assignments. Incubation theory explores how students feel safe and secure without the threat of bullying and ridicule in this special virtual space and share intimate feelings and emotions as well as demonstrate unusual creativity. Live music and art recitals, virtual ensembles, as well as Elluminate Live sessions are discussed in light of this new theory.

Keywords. Incubation theory, non-bullying environment, live synchronous sessions, virtual music recitals, virtual ensembles

1 Introduction

Music instruction consists of a triangulation of music studies in history, theory and practice [1]. The multiple perspectives of history and theory bring about desired musical outcomes in performance and other creative results. These desired outcomes are the actual mechanics of music making.

A virtual classroom can replicate a normal brick and mortar classroom while giving a sense of anonymity which is important for the creative process. In other e-learning environments, anonymity was shown as important to the creative process as discussed by Michał Jasieński [2].

Fuel Education, a part of K12 Inc., the publicly traded virtual education provider, offers 17 to 24 hours' worth of live music sessions a week to k-12 students during the nine month school year.

This paper introduces incubation theory as a basis to explain the unique classroom environment created in these virtual music classes by detailing varying examples of synchronous and asynchronous instruction mixed with students' creative responses. Other distance education and learning theories are used to support and explain the theory of incubation in its application.

2   Incubation Theory

The distinctive environment created in a virtual class is different from any other type of instruction. As is the case with distance education, teachers are by nature removed from their students. This is a different form or method of instruction than the traditional face to face instruction [3]. Students are given guidance by teachers, computer-automated answers and curriculum. This virtual setting allows students to work at their own pace with little to no interference. Incubation theory describes the special environment which occurs in an online setting where email, online coaching, and chat helps to give students confidence (see Fig.1).
These elements serve as incubator tools which help a student develop their own artistic skills and abilities (see Fig. 2).
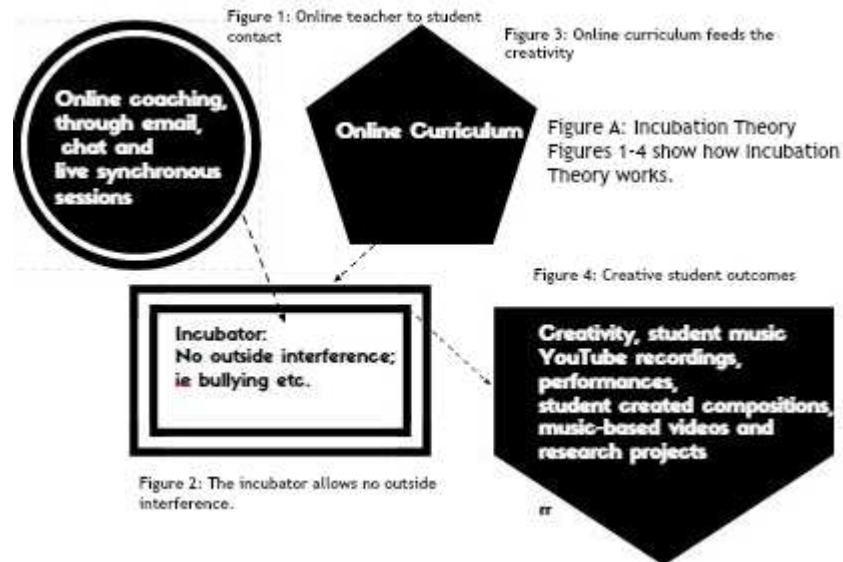Online curriculum helps to give theory and history as added incubating tools to give substance and the proper pedagogical background for the incubation (see Fig. 3).
The end result produces a creative response in the form of art, music, composition, research, or written explanations (see Fig. 4) [4].

Malcolm Knowles' theory of Andragogy clarifies differences between adult learners and children. Andragogy explores how a relaxed and collaborative learning environment provides a unique opportunity for learning [5].
For the purposes of this paper, Andragogy plays a role in explaining the new theory of incubation by way of comparing independent adult learning with online k-12 instruction. Incubation theory and Andragogy, or adult education, both utilize a comfortable, undisturbed environment, that in turn allows the student (whether young or old) to interact with course material in a way that nurtures the knowledge gleaned from the course in a personal way.

 Isolation is another way of explaining the process that incubation theory describes. In a study done on British artists, it was shown that the artists needed isolation to create their artwork yet needed some kind of network to keep them integrated and emotionally balanced as individuals [6]. In the case of these Fuel Education students we will be examining, all of these factors were involved in their development as pupils: isolation, contact through email, chat, online synchronous instruction, and curriculum which in turn incubated the students to produce artistic and inspired creations.

Figure 1: Online teacher to student contact

Figure 3: Online curriculum feeds the creativity

Figure A: Incubation Theory Figures 1-4 show how Incubation Theory works.

Online coaching, through email, chat and live synchronous sessions

Online Curriculum

Figure 4: Creative student outcomes

Incubator: No outside interference; ie bullying etc.

Creativity, student music YouTube recordings, performances, student created compositions, music-based videos and research projects

Figure 2: The incubator allows no outside interference.

Constructivism, where students interact with the world around them, also supports this new theory of incubation in that students are actively involved with their own learning within the confines of a sheltered, incubated environment. An example of a constructivist approach to music in a virtual class sense is allowing students to come up with their own composition or arrangement of a rhythm or notes on an interactive whiteboard. Teachers connect students to their own learning experiences [7].

Incubation Theory Portrays a Bully-Free Virtual Environment
Incubation theory is very relevant as parents seek a shielded, protected location in which their children can not only successfully learn but can thrive. October is the month for anti-bullying in the United States. Bullying is one of the factors that parents cite for choosing online education for their children [8]. In fact 160,000 children miss school due to bullying according to the Learning Liftoff Staff [9]. Here are some frightening statistics taken from the National Voices for Equality Education and Enlightenment (NVEEE). One in seven American k-12 students is either a bully or a victim of bullying. Suicide continues to be among the foremost causes of death for kids under 14. Eight-six percent of students surveyed admitted, "Other kids picking on them, making fun of them or bullying them" caused teenagers to turn to fatal acts of violence in public schools [10, para. 1]. Carl, a student in Massachusetts, ended his life at 11 years old due to the constant bullying he endured in elementary school. "Since 2002, at least 15 schoolchildren ages 11 to 14 have committed suicide in Massachusetts. [10, para. 2]. "In 2005 (the last year nationwide stats were available), 270 children in the 10-14 age group killed themselves. (AAS)"[10, para, 2]. The online class allows for a bully free setting; cyber-bullying is a different type of harassment which can be equally damaging that is not allowed in Fuel Education virtual learning environments. Incubation theory, which describes an isolated but nurturing instruc-

tional virtual space (Fig. A) allows for a safe place where children can feel the freedom to express themselves artistically.

3   Examples of Incubation Theory in Online Classroom Settings

Incubation Theory Displayed in Various Assignments
One famous example of how an incubated environment worked is the example of the teacher, Annie Sullivan and her pupil, Helen Keller. Annie had to insist on teaching Helen alone, in order to free her from her deaf and dumb world. Helen's guilt-ridden and indulging parents made it impossible for any progress to be made in teaching Helen to communicate. When first introduced to Helen, Annie noticed Helen grabbing food off of each family member's plate during family meals, behaving more like an animal than an intelligent human being. She discovered the only way to break her of these temper -tantrums and animalistic behavior patterns was to separate her from outside interference. After doing so, she was able to effectively teach Helen to communicate. Helen Keller was the first deaf blind individual to obtain a Bachelor of Arts degree and became an American author, political activist, and lecturer [11]. Incubation from outside interference was the key to breaking through and illuminating Helen Keller's silent world. Such is the case in the online environment as I will showcase in the following examples:

One assignment mandated that students research information about their favorite artists and then design a presentation. Several chose Jimmy Wayne [12], a famous country artist, who despite untold horrors dealt to him from his mother, stepdad, and the foster care system, rose to the top of the country music charts. These students received much courage from Wayne's example, as their lives had many parallels. The virtual classroom provided the tools needed, plus enough instruction via email and curriculum to allow students to create a research project filled with personal connections to music and artists. These students were very interested in this assignment as it related not only to musical concepts but to artists who spoke the same language and shared similar experiences. Students felt the freedom to share without fear of ridicule due to the unique situation provided by the virtual classroom.

Another example included a discussion group topic that involved describing favorite songs using musical terminology. Students were asked to identify why a particular song or composition spoke to them personally and if they would or would not recommend this song to others. Students cited examples of songs which reminded them of parents who had abandoned them, friends who were shot in drive-by shootings, as well as experiences as teenage unwed mothers. One student related a murder case involving her best friend when talking about a favorite song which helped comfort her as she attempted to internalize this horrible crime and loss of her friend. Music made the difference for these students. A 'favorite song' triggered a response which allowed them to put words to their emotions. Incubation, mixed with the power of tapping into

these suppressed emotions, produced insightful responses from these students in written form.

Although the theory of connectivism tends to deal with adult students, it also applies to these students' examples. Connectivism incorporates the new chaotic state of online networks and the fact that knowledge and new information is instantly being acquired and interchanged with others [13]. These examples show how students connected with music and through various assignments, also acquired new knowledge and passed on this information to others. Incubation theory explains this secure state where students feel free to share their innermost thoughts and connect to outside resources, each other, the online curriculum and further their knowledge in a personal way. The fact that the students feel the freedom to open up about personal feelings, a difficult undertaking for adolescents in their teenage years, again displays how the online environment sets a stage for transparency and candid conversation. Music inherently speaks its own language. Trainor and Schmidt [14] explain "Music is often referred to as the language of emotions" (310). Music speaks in very personal ways. Many of us could recount the times a song identified completely with feelings experienced during a certain period in life: love lost, found, etc. Likewise, music and the online environment served as catalysts, helping students give a voice to their deepest personal reflections, sentiments, and daily lives in the online setting.

The Ancient Greek philosopher Plato also felt that music was useful to help Greek citizens release negative emotions. Students, mentioned in this paper, also came to self-awareness through music. They connected through group discussion topics and as Plato suggests were able to release negative emotions through relating to a favorite song. Incubation theory explains this occurrence of open dialogue and interchange of ideas.

Autumn, K-12 Artist
Another example of how incubation through online schooling can bring out artistry and rare achievement is that of a k-12 student, Autumn, who has been called the "pint-sized Picasso" by the media [15, para.1]. At the age of 4 she won her first prize at a Boulder City Art Festival in Nevada. Her online education allowed free time to create art every day. She was able to travel frequently to exhibit her artwork and has sold some of her art pieces for as much as $26,000. In addition, she was interviewed by NBC's Today Show, The Discovery Channel, Inside Edition, The Wendy Williams Show, and PBS. Her example is the perfect prototype for the incubation theory; incubation spawns creativity. For Autumn, this incubated expression meant creating portraits, abstracts, expressionist and modern surrealist art.

Elluminate Live! ®
Incubation theory is further displayed in Elluminate Live®, a rare synchronous platform, where students feel a certain autonomy and can experiment within an LMS. Alberich-Artal and Sangrà [16] in their research on "Virtual Virtuosos: A Case Study in Learning Music in Virtual Learning Environments in Spain" also confirm this

unique online experience. The virtual classroom helps to further foster these independent learning experiences by providing a place for students to meet, ask questions, and further their knowledge through experimentations done online using an interactive whiteboard, drawing tools, polling tools, chat, and shared desktop applications. Collaborative virtual games such as "Jeopardize", (a game much like Jeopardy), "The Shape Game", and the "Spin the Wheel Game" were developed to help create online interactive exercises to help students assimilate knowledge taught in the online course and during the live interactive lectures. Elluminate Live!®, Blackboard Collaborate software is the software used by Fuel Education to provide these live lectures and interactive sessions.

Elluminate's collaboration environment enables the delivery of live, online learning, training, coaching, mentoring, and meeting. Effectiveness is increased by engaging participants with the ability to talk over the Internet (with full, 2-way audio) or using integrated telephony, exchange text messages, display live video, share whiteboards, multimedia files, and applications—all in one intuitive, graphical interface [17, p.1].

Last spring a survey was conducted amongst Fuel Education students who attended live synchronous sessions, where students were asked to respond to a series of questions about their experiences in the music Elluminate Live!® sessions. When asked if they intended to attend in the future, they responded with "Definitely" [18]. In our middle school synchronous sessions, students were so excited after learning about a few basic musical theory concepts and then playing "the Shape Game", (a way to test their knowledge of the principles taught in the session), that one student shared a few musical compositions she had been composing on the side with the class. Students were so excited to hear another student's self-composed creation that another session was created to allow more performance opportunities for the other students. The incubated space provided a way for students to synthesize the information taught them, and immediately created a way for students to practice what they learned.

The validity of these synchronous sessions was confirmed in a study done by Gedera [19] in New Zealand. Students were interested in the synchronous virtual classroom aspect in spite of scheduling difficulties as they were able to interact in real-time with one another. Many students who study at Fuel Education are very engaged in 'live' music performance. One student reported being coached by professional symphony musicians in chamber music sessions. The online learning allowed for this student to receive a fine arts credit, exploring creativity in the virtual classroom and then showcasing this on the piano. Another student was able to take private lessons at a university and participate in multiple All-State National Association for Music Education (Nafme) honor ensembles. Their online music courses afforded flexibility and encouraged high achievement through private instruction on multiple instruments.

Synchronous Recitals
For several years, synchronous art exhibitions and music recitals have been a ritual at Fuel Education. These 'live' creative events further showcase how incubation theory works in practice. Students were asked to participate and sent songs, music, and artwork they planned to perform or display for pre-approval. Once approved, students

were sent instructions and a schedule for the recital/exhibition. Students often sent pre-recorded videos of a personal musical performance that could be viewed in Elluminate's web tour; videos were also uploaded in the *multimedia feature*. These live art exhibitions and music recitals were very popular as students were inspired by watching peers perform and seeing their artwork displayed. Due to the popularity of the recitals, more frequent performances were planned for the future.

Student Led e-Magazine

Students who can experiment and create their own instructional situations take responsibility for their learning and become problem solvers [20]. In this line of thinking that describes constructivist pedagogy, I experimented with producing a music e-Magazine designed by students for students. Submissions were entered through a Google form, selected, and then included in the e-Magazine. The e-Magazine is another attempt to allow students opportunities to shape their own knowledge by contributing essays on their favorite music groups or other aspects of music history/theory. The online magazine also provides a unique way to demonstrate student-composed compositions and student- recorded musical performances. Here again, the incubated environment of the online class provides a safe zone where students feel the freedom to express themselves musically in word and performance. In a more traditional classroom, students can experience a practical application of their music knowledge, but the virtual schoolroom makes for a classroom without walls and boundaries and countless creative possibilities.

Virtual Music Ensembles
Eric Whitacre's Virtual Choirs

The online classroom provides for all new musical experiences within the four walls of a student's home and again displays the nurturing environment and creativity described by the incubation theory. The music professional learning community (PLC) at Fuel Education researched possibilities for putting together a virtual ensemble [21]. Eric Whitacre's virtual choir songs were used as examples of something that could be recreated. His virtual choir "is a global phenomenon, creating a user-generated choir that brings together singers from around the world and their love of music in a new way through the use of technology" [22, para.1]. The first step in the process was to select an original composition and create tutorials for the various instruments or voices required for the piece. Musical excerpts would be available online for students to download. Students would then record their part using the tutorials as examples and upload their videos into the virtual space provided by Fuel Education. The music PLC would then select student recordings and mix them to create one audio or video performance.

The YouTube Symphony

Another example of a virtual ensemble was the YouTube Symphony which, similar to Eric Whitacre's virtual choir website, gave tutorials for each instrument as well. These tutorials provided detailed information on how to practice audition requirements. Each potential candidate recorded the audition excerpts and submitted the

videos on the YouTube Symphony website. Those subscribed to the YouTube Symphony website were asked to vote on which participants should be selected for the ensemble. The selected participants all met in a designated location to rehearse and perform a live concert. The last YouTube Symphony, conducted by Michael Tilson Thomas, performed in Sydney Australia at the famed Sydney Opera house (https://www.youtube.com/user/symphony). Both of these examples have served as inspiration for the music PLC. Further research will need to be conducted before the Fuel Education virtual ensemble becomes a reality.

4 Conclusion

Indeed, the creative musical process emerges in many varied ways and contexts beyond sitting at the piano, attending a concert, or singing in the church choir. The 21st century student is inquisitive, curious, and often imaginative about the amazing world of music via modern technologies. From iTunes to watching Heart perform a tribute to Led Zeppelin, the creative juices are there to be nurtured for all music students. We, as educators, only have to incubate that artistic process in our students.

I have argued in this paper how Incubation Theory infused through the online learning sphere can block unwanted outside interferences and generate an atmosphere conducive to student inventiveness and learning. Normally, peer pressure, bullying issues, and brick and mortar classroom mandates can serve as barriers to imaginative, inventive, student-based learning environments. Virtual classes can provide a safe space for students to interact and showcase their talents. Online dialogue with teachers can provide a type of anonymity that allows for honest conversation, fosters student-centered goals and desired instructional plans. Students can direct their own learning and use the online curriculum and teachers as guides to find the necessary information they seek. In addition, students are also able to use the type of learning they use in everyday communication. Undeniably, instructors must explore these boundaries of the imagination and find new catalysts for engaging students in the creative process. In the final analysis, this road forward should be music to the ears of all educators. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity in an equation.
The SI unit for magnetic field strength H is A/m. However, if you wish to use units of T, either refer to magnetic flux density B or magnetic field strength symbolized as $\mu_0 H$. Use the center dot to separate compound units, e.g., "A·m^2."

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