

## **Blended Delivery in PostSecondary Music Education: The Cognition of Listening**

**Keywords:** listening skills; music; technology; virtual worlds

### **Abstract**

Close listening, perhaps the most important skill in music education, is seldom practiced in the 21<sup>st</sup> century. The ability to hear, understand, communicate, and critique or interpret what you hear is central to education in general, critical to specific disciplines such as Music, Speech Pathology, Audiology and Linguistics, and is transferable to many life situations. For this reason, listening is the primary focus of most first year postsecondary music history courses. It is also one of the most challenging skills to teach in large classroom formats. To address some of the challenges of offering guided listening experiences to large, introductory music classes, we are proposing a blended delivery approach. With a varied approach to technological enhancement, and in consideration of literature on the cognition of listening and of Karmiloff-Smith's (1992) Representational Redescription Model (RR Model) of knowledge acquisition, students will benefit from an enhanced listening model leading to a greater understanding of music's socio-historical context.

## **Project Description**

### **Context and Background**

In our university undergraduate music history curricula, we have identified four core competencies that are emphasized at various stages of the curriculum: listening, score reading, critical thinking, and communication. Traditionally, the sequencing of these competencies follows traditional pedagogical thought relating to the hierarchies of cognitive learning (particularly Bloom's Taxonomy), but lacks consideration for music's affective and procedural domains, arguably integral to the experience of music. Close listening is seldom practiced, and this skill is perhaps the most important feature in teaching music: the skill of listening is transferable to many life situations and modes of communication, and the ability to hear, understand, communicate, and critique or interpret what you hear is central to education in general, and not just to music. For this reason, listening is the primary focus of first year music history courses, for majors and general interest students. It is also one of the most challenging skills to teach to all but a small class of students. In teaching large classrooms of Music 101 to non-majors with 50-200 students, for example, student learning more often reflects a memorization of responses than it does actual understanding that would enable the skill of listening to be applied to other materials and situations.

The primary challenges to teaching music history in post-secondary education are related to time, space, the extent of historical content needing to be covered, and the varied background of participants (i.e., musical training on entry in the program). These challenges exist in all mid- to large-sized classrooms. The necessity to comprehend a great deal of specialized terminology, to develop adequate understanding of graphic notation, to not only understand but also to hear complex structural organization of sounds, and a general unfamiliarity (and lack of comfort) with expressing subjective responses are all barriers to many students. The post-secondary semester system, with its fixed numbers of weeks and hours within them, offers very little time and space for face-to-face contact. In-class discussions rarely leave time for such reflection or feedback from others, and the subjectivity of musical critique leaves many students mute, afraid to speak about what they hear.

To address some of the challenges of large, introductory music classes, we are proposing a blended delivery approach, where students spend one half of their course time in face-to-face activities in the classroom and the other half partaking in on-line activities that specifically target developing listening skills and critical thinking that allow students to connect their listening experiences to cultural and socio-historical contexts.

### **The Cognition of Listening**

To ensure a solid cognitive foundation for our listening activities, we reviewed the literature on music cognition. Honing (2009) contends that humans possess an inborn ability to hear certain patterns in music such as the meter or beat of the music as well as to distinguish one melody from another (relative pitch). Starting from infancy, humans experience the music of the culture they develop within and, over time, relying on these innate abilities, become adept at distinguishing common patterns and aspects of music that are distinct to their cultural setting. However, Honing asserts that this accumulated knowledge is not accessible to the conscious cognitive system. People are generally unaware they possess these skills and are not able to consciously draw on or report such knowledge. This is referred to as implicit knowledge.

Honing also contends that people with no training in music are not substantially less able to detect these basic elements than those who possess considerable musical expertise. The difference is that this knowledge is explicit in experts, that is, they are aware they possess it, and are able to report and discuss such knowledge, allowing them to share their interpretations of the music to

which they are listening. Hence, music education for introductory students should provide scaffolded listening opportunities which help them become aware of their implicit knowledge, thereby transferring it to explicit and sharable knowledge.

### **A Cognitive/Educational Framework for Guided Listening**

From a theoretical perspective, the need to shift implicit knowledge to explicit knowledge most closely aligns with the concepts described in Karmiloff-Smith's Representational Redescription Model (RR Model) of knowledge acquisition (Karmiloff-Smith, 1992). Through a process she refers to as redescription, implicit knowledge is transformed into explicit knowledge through four phases: Implicit Level (I), Explicit Level One (E1), Explicit Level Two (E2), and Explicit Level Three (E3).

In Implicit Level (I), individuals possess knowledge they have accumulated over time that is not available to their conscious awareness but allows them to respond correctly to external stimuli in their environment. In introductory music courses, this would be evidenced when students are able to answer questions about basic musical elements such as meter (e.g., is this music metric or non-metric?). The second level, *Explicit Level One (E1)*, furthers the process of redescription when the student begins to be able to make comparisons between two pieces of music. Through a sequence of listening to multiple pairs of pieces and being tutored on the terms used to describe the differences they are hearing, students begin to acquire the terminology that will help them discuss the musical nuances they are able to detect. Students are then scaffolded into *Explicit Level Two (E2)* through synchronous on-line instructor guided discussion. In Explicit Level Three (E3), the students are conscious of and able to consider multiple forms of the material. They can hear differences in the music, describe these differences with commonly understood terms, or diagrams and read musical notation. Finally, students are also able to contextualize this material in a specific cultural space and time. Elements of the music can be tied to the socio-political influences of a specific point in history. At E3, verbal interactions with others is critical toward developing a *complex* understanding of how these multiple forms of information fit together.

### **The Proposed TLEF Project**

The three objectives of this project are: 1) based on the RR Model, to create a full complement of listening activities, supplemental materials and resources for students for each set of three technology-based activities, 2) to determine the student usage patterns for each of the technologies, 3) to determine student perceptions of their learning and their satisfaction with the technologies and blended format of the course.

Each of the four RR Model phases suggest activities that students must experience to move through each phase. To create our supplemental on-line listening activities, we sought the technologies that could best deliver each set of activities.

We will begin our guided listening activities at *Implicit Level (I)* using the software *Articulate Storyline* which allows for the creation of interactive presentations with quiz features and audio capacity. Within each slide, students can click, hover over, or drag any object to trigger an action. With Articulate, we created multiple auditory presentations of music pairs that allowed students to listen to, respond, and receive new information, listen again, respond, etc. until they are able to detect specific musical elements such as meter and rhythm. The activity is done independently, and with individual results so students can develop their listening skills without being inhibited by being observed. Across the two Articulate modules, students will be presented with increasingly more difficult questions. For incorrect answers, students will receive feedback and suggestions for listening (e.g., That is incorrect. Listen again, is there a beat you can tap your finger to?). The

Articulate activities target the transition from Implicit Level (I) to Explicit Level one (E1) (Figure 1).

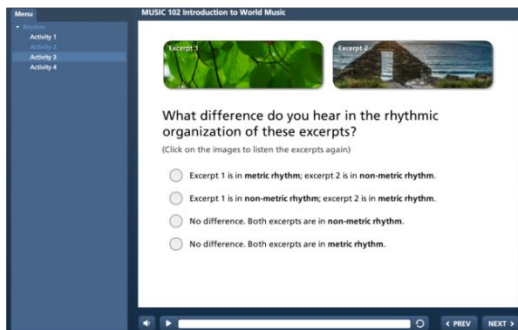


Figure 1. Articulate Storyline

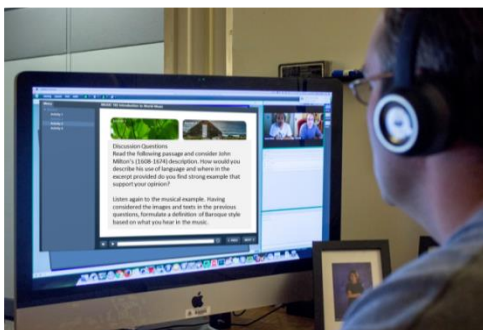


Figure 2. Adobe Connect Synchronous Session

To transition from E1 to E2, opportunities to begin to label and share listening experiences is necessary. To promote this transition, we will provide instructor guided discussion in smaller groups delivered via the conferencing system Adobe Connect (Figure 2) These sessions will scaffold students into using correct musical terms during discussion and will guide them into the process of finding connections between the musical elements and the influence of the socio-historical context in which the music was composed by posing interpretive questions for discussion. For the final transition to E3, experiencing multiple forms of information is needed to help students further contextualize their listening experience within the cultural and socio-political influences of the time in which the music was composed. To accomplish this last goal, we have developed a virtual world using OpenSim ( Figure 3) with images, videos, audio clips and settings that replicate the space and time we are referencing. Students are represented as avatars in the virtual world and will move through the space viewing materials while completing listening and peer-based discussion activities.



Figure 3. OpenSim Listening and Discussion Activities

We have already created the content and developed a small set of the technological activities for the Articulate and OpenSim activities which we piloted in Fall 2014. The OpenSim virtual world is complete except for the addition of new objects and materials to execute the full set of listening and discussion activities. We have already acquired ethics approval for the entire project.

**Innovation:** A frequent error in applying educational technologies is to choose a technology that is new or appealing without first determining a clear set of educational objectives. Not only have we articulated our learning objectives beforehand, but we have derived a framework that other content areas may use from solid research in the cognition of listening specifically. Hence, the unique collection of technologies that we have chosen for music education naturally scaffolds the learner through the necessary cognitive phases for students to learn a complex, multi-faceted skill that has been a challenge in the traditional classroom context. The use of these technologies allows instructors to engage students in developing all four core competencies in an integrated fashion rather than sequentially.

**Collaboration:** This project is a collaboration between Faculty of Education and Faculty of Arts researchers with potential for future collaborations with any disciplines requiring training in close listening (e.g., Speech Pathology, Audiology and Linguistics).

**Evaluation:** The research on this delivery method is correlational, investigating the relationships between traits and prior experience of students with their levels of satisfaction and perceptions of their learning. Before the listening activities commence, several pre-measures will be collected: 1) General demographics (e.g., program, year in program, gender, age), 2) a music experience survey (credit and non-credit music experience), 3) a Self-regulation Questionnaire (SRQ) (Brown, Miller, & Lawendowski, 1999), 4) a Computer Experience Questionnaire. (Boechler, Leenaars, & Levner, 2008). As our outcome measures, at the end of the course, students will complete a questionnaire designed to determine student satisfaction with different aspects of the supplemented course and a student perception survey (e.g., their own listening ability/learning and their perception of the value of on-line listening activities). We will also collect log data (time, revisits and avatar coordinates for OpenSim) from each of the three technologies as the students complete the listening activities. Discussions will be recorded and analyzed for duration, content and quality of the interactions.

**Sustainability / Impact on Students:** The three technologies we have chosen are easily accessible and are either free or have a modest cost. Adobe Connect is the software behind the University of Alberta's eClass Live. The Centre for Teaching and Learning provides tutorial sessions about Adobe Connect for faculty and sessional instructors. Articulate requires a modest fee and is not training intensive. OpenSim is an Open Source version of the popular virtual world, Second Life. We have created a custom installer for the required 3D viewer, Singularity, which ensures every student can download and access the virtual world easily, at no cost. Recent blended delivery research results at the University of Alberta (Boechler & Dragon, 2014) show students value the flexibility that blended courses offer. Our blended delivery will allow students to experience on-line discussions and activities in smaller groups. Because of the time the students will spend with on-line activities and content throughout the week, the large class will be split into two smaller groups to alternately attend face-to-face classroom activities which will give students more meaningful interaction with the instructor.

**Dissemination** – Dissemination of our results will have two emphases: 1) dissemination of our research results to scholarly audiences through publications (Computers in Education, International Journal of Educational Multimedia and Hypermedia) and conference presentations (the International Conference on Computer Supported Education (CSEDU 2016)) and 2) at the University of Alberta, we will present and demonstrate the development process and use of these three technologies to fellow instructors (Festival for Teaching and the Research Forum Series in the Faculty of Education (invitations will be e-mailed to potential collaborators or relevant disciplines on campus)).

## References

Boechler, P., Leenaars, L., & Levner, I. (2008). "Recreational vs. Educational Computer Experience: Predicting Explicit and Implicit Learning Outcomes During a Website Search". In K. McFerrin et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference*, Chesapeake, VA: AACE. (pp. 2499-2501).

Boechler, P. & Dragon, K. (2014). Faculty of Education Evaluating Blended Learning Delivery in Post-Secondary Courses: Internal Report, University of Alberta.

Brown, J.M., Miller, W.R., & Lawendowski, L.A. (1999). The Self-Regulation Questionnaire". In L. VandeCreek & T. L. Jackson (Eds.), *Innovations in clinical practice: A source book*. Sarasota, FL: Professional Resource Press. Vol. 17, (pp. 281-289).

Honing, H. (2009). *Musical Cognition: The Science of Listening*. Transaction Publishers, Rutgers, NJ.

Karmiloff-Smith, A. (1992). *Beyond modularity: A developmental perspective on cognitive science*. MIT Press, Cambridge, MA.

McKerlich, R., Anderson, T. Riis, M., & Eastman, B. (2011). Student Perceptions of Teaching Presence, Social Presence and Cognitive Presence in a Virtual World". *Journal of On-line Teaching and Learning*, 7, (3).