Considering Music Technology and Literacy

The core perspectives in this section of the Handbook raise several interesting issues that I am glad to be able to explore through my own lens. In this short chapter I discuss my views on how music literacy might be viewed differently in the context of technology-based music instruction. I also discuss the ways in which teachers’ roles can support that new view of literacy, and how technology can be seen as a support for creativity in music students.

My formal musical training is as a classical guitarist. Reared on the etudes and solo pieces of Villa-Lobos, Carcassi, Sor, and transcriptions of J. S. Bach (in D, of course), the guitar is the musical instrument with which I most closely identify my musicianship. While my dedication to practicing and performing may ebb and flow, my devotion to the infinite tonal, melodic, and harmonic possibilities of the guitar has never decreased, and I imagine it never will.

But the last 15 years or so have expanded my musical identity, and have broadened the ways I engage in making music. Now, when I wish to engage in music making, I am equally as inclined to launch Logic Pro or Sibelius as I am to pick up a guitar. Whether using standard notation, MIDI, or recording others or myself engaging in a variety of types of music making, these tools aid me in being musical. Through each of these “instruments,” I am able to think in sound, practice and revise novel ideas and those influenced by others, and to make audible that which might otherwise not be. Indeed, these represent different kinds of music making but all allow me to make music creatively.

As I consider the ways in which school-aged children engage in music making, it occurs to me that not all people go through the same evolution that I have experienced. Classical
training is not the entry point into music making for everyone. A recent poll showed that technology has enhanced interest in learning to play an instrument in Americans (National Association of Music Merchants, 2012), providing evidence that entry points into music making have expanded beyond traditional avenues. Technological means of making music are perhaps a more universally accessible means for beginning to make music than are traditional music teaching and learning of the 20th century, and educational practices should account for that possibility.

Similar to the realization that Freedman expressed in her Core Perspective chapter, it is quite possible that students who approach music from a technological standpoint might not understand—or even need, or have a desire to understand—musical fundamentals in the same way that traditionally trained students would. As a teacher and teacher educator, my perspective is that whether an entry point into music making is traditional—such as mine was—or based on some alternate way of making music, students can gain valuable musical experience and learn to develop their musical literacy through either means of initiation, or through variously weighted combinations of both.

**A New Music Literacy**

The assumption that there are many entry points into music leads me to unpack the term music literacy a bit, and to wonder about the ways in which the concept is applied in current music education circles. Literacy itself is a term fraught with tremendous variability, so adding temporal and expressive layers to the mix can result in a half-baked comprehension of music literacy. Music literacy is a difficult term because many who examine it do so from the perspective that music learning can be used to develop literacy in other disciplines such as reading or math. For example, the recent article by Runfala, Etopia, Hamlen and Rozendal
(2012) showed that training teachers in pedagogical techniques can influence both musical and non-musical outcomes. While music teachers need not ignore non-musical outcomes of our teaching, our focus should be on musical development, with growth in other disciplines as a happy byproduct. Even among those definitions that focus appropriately on the idea that a separate, though perhaps analogous musical literacy exists, many do not encapsulate the nuanced skills and understandings that musicians and music teachers associate with it. Before we can even begin to agree about what music literacy means in the technology-enhanced music education world, we must agree that music literacy should not necessarily be entangled with development of skills in other areas.

The fundamental skill ascribed by most definitions of music literacy is the ability to read notated music (Gudmundsdottir, 2010). Among the most reasoned definitions of music literacy is Gordon’s (2004), which suggests that music literacy involves coding and decoding musical symbols, and that it necessarily includes the ability to audiate notated music. This belief is reflected in the structure and content of Gordon’s well-known and often-used Iowa Tests of Music Literacy (Boyle & Radocy, 1987; Schleuter, 1974). I suggest here, quite in agreement with Freedman’s notion that reading and writing staff notation need not be the ultimate goals, that the idea of decoding musical symbols need not be restricted to staff notation; rather, we can develop literacy with other kinds of information that represent musical events such as MIDI regions, piano scroll editors, and audio waveforms.

Regardless of the type of musical representation, however, as music teachers we somehow know what we want our students to know and be able to do in order to call them musically literate. Essentially, music literacy implies that our students are able to function in musical settings by performing, responding to, or creating music, and that they can understand
the elements of those kinds of involvement in developmentally appropriate ways. These types of musical behaviors alone imply tremendously varied activities, so musical literacy can be demonstrated in many ways.

In the scenario of technology-based music instruction, when, as I have previously described, students are directly engaged with technology for learning, practicing, and demonstrating mastery of musical skills and concepts (Dorfman, 2013), educational goals are not necessarily the same as they are in traditional music performance. Perhaps, then, we should be using a term other than music literacy to capture the end-state of these educative scenarios. The idea of being able to use technology as a sketch pad, get instant feedback, and revise one’s ideas based on that feedback, is similar across artistic areas (music, visual art, etc.). Given this similarity, perhaps the end-state for all of these domains should be referred to collectively as technology-enhanced creative literacy. Still, given multiple paths toward engagement with music, I am forced to wonder about some fundamental and long-held components of musicianship and how they might be seen differently when music is being made (performed, composed, listened to) with digital technology rather than in other ways. Put succinctly, can we use the term music technologist in the same way that we use vocalist or violinist?

Simple web searches for “music technologist” turn up few uses of the term other than pages in which people describe themselves using it. What this should indicate is that, while music technologist may not be a widely used expression, individuals do indeed identify themselves in this way. To me, a music technologist is one who considers technological devices (such as computers, controllers, or handheld devices) to be the primary means by which they make music. Just as I consider myself a guitarist, I can understand how one would self-identify as a technologist. While the type of literacy that a technologist develops may be different from
that which a violinist develops, it is musical literacy nonetheless. Technologists and violinists, for example, may be differently musically literate, but both may be sophisticated musicians with the ability to code and decode musical representations. We should feel comfortable applying this nomenclature to musicians, and we should do so without prejudice. On a personal level, I know I am being just as musical when I compose in a technology application as I am when I play guitar.

**Changing Roles of Teachers**

It is certainly far beyond the scope of a brief chapter such as this to consider all of the pedagogical implications that are associated with technology-based music instruction. Therefore, I will limit my pedagogical suggestions to the realm of the foundational “sound-before-sight” idea that Freedman mentions in her chapter. While I believe fully in this principle, especially in the context of instrumental and vocal music education, I often find it hard to follow in the technological context. Software is visual by its very nature, and a massive field of literature about multimedia learning has led to the conclusion that students who learn using multiple channels of perception might learn better than those who use fewer channels simultaneously (see, for example, Mayer, 2009, 2005). Because of the design of most media software, I would caution teachers against being too rigidly bound to the sound-before-sight principle when teaching in a technology-based context. Certainly students can develop their aural skills in traditional ways even when they engage with music through technology, but denying the careful design of software and its ability to support learning through multiple channels of perception may not set up students for their greatest chances of success.

Elsewhere in this section, Lum suggests that teachers have a responsibility to refuse replicating structures of institutionalized power. This is a notion with which I completely agree, and I believe that teachers who facilitate a shift from teacher-centered to learner-centered
pedagogy are increasingly necessary. Both the motivation to engage with music, and the
obligation to do so, must come from students, with the teacher serving as a guide.

As I have described elsewhere (Dorfman, 2013), I believe that the teacher’s role in a
technology-based music environment is to help students past obstacles they encounter on their
path to solving musical problems. Technological tools enable us to guide students toward new
solutions to old problems. With the right tools—those that allow students to act in musically
sophisticated ways—teachers can serve as model creative thinkers to help students overcome
their creative conundrums. This represents a shift from the authoritarian, didactic model of the
teacher as the sole possessor of knowledge that she instills in students. Teachers of technology-
based music share in the pursuit of creative outcomes and help students engage in the hard work
of novel creation and revision. Rather than the top-down approach of old, this places teachers
and students on a more even plane and allows stakeholders to share in the power associated with
making decisions and guiding educative experiences.

Further, a potential for technology of which we have only begun to scratch the surface
lies in its ability to make the outcomes and benefits of music education more easily and instantly
recognizable. In ensemble-based music education the typical outcomes are formal events—
concerts at which loved ones gather to hear the product of a long period of preparation. While
concerts will (hopefully) never go away, music education with technology, particularly that
which works toward students composing their own music, allows individual or small groups of
students to demonstrate their learning in less ceremonial ways. These products can be shared
online or in less time-and-space-dependent media. Services such as SoundCloud, Nimbit, and
even the compact disc (though perhaps not for much longer!) are means to distribute work that
students do, and to make the products of educational efforts apparent for various stakeholders.
As Elliot and Silverman (2015) have recently suggested, teachers should be comfortable using these services and other applications as distribution platforms and as learning tools—their students and programs will likely benefit from teachers’ comfort in doing so.

**Conclusion**

As a university professor, I frequently conduct workshops and special sessions for teachers; these sessions are usually focused on a particular type of technology or software. So that I can understand my students a bit better, I always ask the attendees at the beginning of these sessions to introduce themselves and tell me and their fellow attendees about the potential uses they have for the technologies we are studying. At a recent weeklong workshop on a particular DAW package, the teaching levels and concentrations ranged from elementary general and instrumental music to high school vocal music, and even included an Information Technology specialist who wanted to learn the software for his personal and freelance uses. While their needs were varied, it was enlightening and challenging for me to think about a single piece of software—albeit an extremely deep and varied one—in terms of its uses for diverse entry points. This was a valuable exercise, and one that I must engage in constantly.

It is important for teachers, and those invested in music technology, to take stock of their own entry points into music, as Lum has done in his chapter and as I have done in the introduction to this chapter. Most of us will quickly realize that the ways we have approached music throughout our lives are multi-faceted. While developing expertise in a particular kind of music is still desirable, so is the ability to function in varied types of musical contexts, of which technology is merely one. By attending to the ways we interact with music, and the foundational experiences that have shaped the ways we are involved with music, perhaps we can begin to understand our own creative tendencies and how technology might support them.
Certainly people can be creative without computers and digital technology, but technology may help us to understand the kinds of support mechanisms that help people to be creative. The potential of technology is to provide immediate feedback, to allow choice of creative style (linear/nonlinear, broad/detailed), to encourage collaboration and communication, to support multiple versions and revisions of work, and to provide practically infinite storage of ideas. Each of these alone would serve as powerful support for people engaged in creative activities; taken as a whole, they represent major shifts in our approaches to creative work. And while we can see evidence of each of the potentials of technology in relatively common educational practice, the extent to which they might be integrated in the future is virtually limitless.

References


