The technology is a powerful agent in moving

Art & Culture, Dance

Theimpact of new technologies within music education has been enormous and there is an urgent need for research thatinvestigates the far reaching implications of this technological revolution. If music education isto respond to the opportunities offered by the digital age, we will needthoughtful and reflective teachers. These will be teachers who are able toresearch their own practice, ask questions about the role of music technologiesas part of their own professional development and in the development of their students.

Digital technology is a powerful agent in moving the minds of teachers andstudents alike. Today’s competitive world markets require workers of aknowledge economy to possess ICT literacy, the “ ability to use technology todevelop 21st century content knowledge and skills” (Partnership for21st century Skills, 2006, p. 11).

Schools are seen to play a critical role inproducing a workforce that is highly educated and skilled to support acountry’s economy. This recognition of education as a key contributor to theeconomy has led school curricula in many countries to mandate ICT as a centralcomponent, with teachers being increasingly expected to infuse ICT into theteaching and learning processes. No matter what else may divide us, most musiceducators are agreed on one general point.

A central aim of defining howeffective music educational practice should happen in the digital musicclassroom is an imperative; a view which is emphasized in policy and widelyacknowledged in teacher training. Yet, the critical roles played by creativityand technology in supporting the promotion of pedagogic change is less clear. AbstractIntroductionTheintroduction of

new information and communication technologies (I&CTs), such as the Internet and multimedia devices has had an enormous impact uponmodern culture (Hargreaves, Miell & MacDonald, 2002). This is particularlyapparent within the music industry. Indeed, modern technological advances meanthat now, more than at any other time, music is pervasive and functions notonly as a pleasurable art form but also increasingly provides a soundtrack toour professional, social and private lives (Hargreaves & North, 1997, Frith, 2000; MacDonald & Miell, 2000; Sloboda, O'Neill & Ivaldi, 2001).

Moreover, almost every aspect ofthe music industry today involves the use of I in some shape or form. For example, the use of digital recording hardware and computer based recordingand sequencing software occurs extensively in professional, amateur andeducational contexts (Folkestad, 1996). a technological revolution has taken place which affects all aspects ofmusic performance and listening (Folkestad, 1998). Thisenormous change in the way in which we listen to and produce music hasgenerated a research imperative to understand the impact that thesetechnological advancements have on all aspects of music making (Byrne , in press). The impact of newtechnologies has been particularly influential within educational environmentsand, in the music classroom for example, the range of possible uses ofkeyboards, computers and recording technologies are extensive (Byrne & MacDonald, in press, Mills , 2000). Literature ReviewThere have been many efforts to explore the possibilitiesthat music technology offers in education, in spite of the synchronous natureof music performance (Dammers, 2009). In 2009, Dammers summed up theconundrum of using Information and Communications Technology (ICT) in the fieldof music

education, stating that because music performance is, by its verynature, synchronous, the use of ICT is problematic at best (Dammers, 2009, p. 22).

Beforeexamining how technology is being used in music education, it is necessary tolay out parameters for the term. Rees (2001) defined music technology as “ thesystematic study of tools and techniques for music production, performance, education, and research” (Rees, 2011, p. 154). Discussion In the last few years many tools have become availableto the music educators that can significantly enhance student learning. It isimportant for music educators to be aware of the full competences of such toolsthat can help students to better performance, creativity and understandingmusic. The word technology applies to and describes a wide variety of devicesand applications in music and music education. In the past 100 years, technology had a great impact on music education.

In 1983 the CarnegieFoundation published A Nation at Risk. This publication cited that changes mustbe made in our approach to education. One of the suggestions that thisfoundation offered was to embrace technology.

If we are to make the most of theopportunities that technology affords us, then a broader view of technology isneeded. Such a view would attend not only too well-established methods, software resources and hardware solutions; but also to new and developingtrends. Digital technologies that can be useful in music education are systemsthat:” encourage active learning, knowledge construction, inquiry, andexploration on the part of the student, as opposed to being exposed toinformation delivery systems” (Greaesser, Chipman et al. 2008: 211). Technology has impacted almost

every aspect of lifetoday, and education is no exception. Or is it? In some ways, education seemsmuch the same as it has been for many years.

A 14th century illustration by Laurentius de Voltolina depicts a university lecture inmedieval Italy. The scene is easily recognizable because of its parallels tothe modern day. The teacher lectures from a podium at the front of the roomwhile the students sit in rows and listen.

Some of the students have books openin front of them and appear to be following along. A few looks bored. Some aretalking to their neighbors. One appears to be sleeping. Classrooms today do notlook much different, though you might find modern students looking at theirlaptops, tablets, or smart phones instead of books (though probably open toFacebook). A cynic would say that technology has done nothing to changeeducation. However, in many ways, technology has profoundly changededucation. For one, technology has greatly expanded access to education.

Inmedieval times, books were rare and only an elite few had access to educationalopportunities. Individuals had to travel to centers of learning to get aneducation. Today, massive amounts of information (books, audio, images, videos)are available at one’s fingertips through the Internet, and opportunities forformal learning are available online worldwide through the Khan Academy, MOOCs, podcasts, traditional online degree programs, and more.

Access to learningopportunities today is unprecedented in scope thanks to technology. Opportunities for communication and collaboration havealso

been expanded by technology. Traditionally, classrooms have beenrelatively isolated, and collaboration has been limited to other students inthe same classroom or building. Today, technology enables forms ofcommunication and collaboration undreamt of in the past.

Students in aclassroom in the rural U. S., for example, can learn about the Arctic byfollowing the expedition of a team of scientists in the region, readscientists' blog posting, view photos, e-mail questions to the scientists, andeven talk live with the scientists via a videoconference. Students can sharewhat they are learning with students in other classrooms in other states whoare tracking the same expedition. Students can collaborate on group projectsusing technology-based tools such as wikis and Google docs.

The walls of theclassrooms are no longer a barrier as technology enables new ways of learning, communicating, and working collaboratively. Technology has also begunto change the roles of teachers and learners. In the traditional classroom, such as what we see depicted in de Voltolina's illustration, the teacher is theprimary source of information, and the learners passively receive it. Thismodel of the teacher as the " sage on the stage" has been in education for along time, and it is still very much in evidence today. However, because of theaccess to information and educational opportunity that technology has enabled, in many classrooms today we see the teacher's role shifting to the " guide onthe side" as students take more responsibility for their own learning usingtechnology to gather relevant information. Schools and universities across thecountry are beginning to redesign learning spaces to enable this new model ofeducation, foster more

interaction and small group work, and use technology asan enabler. Technology is a powerfultool that can support and transform education in many ways, from making iteasier for teachers to create instructional materials to enabling new ways forpeople to learn and work together. With the worldwide reach of the Internet andthe ubiquity of smart devices that can connect to it, a new age of anytimeanywhere education is dawning.

It will be up to instructional designers and educationaltechnologies to make the most of the opportunities provided by technology tochange education so that effective and efficient education is available toeveryone everywhere. Many researches have beenmade on the effects of technology on music learning. The Yamaha Corporation conducteda research related to the use of technology in music education, and several keyfindings have emerged from this study.

These include: o Students who receive hands-on instruction had greater comprehension ofmusical concepts compared with students taught with traditional approaches andmethods. o Long and short-term music achievement, is significantly increased whencompared to existing approaches of classroom music. o Student attitudes toward classroom music are not only positively enhanced, but also the level of interests and motivation are sustained across theacademic years. o Music instruction provided through the use of technology assisted programcontributes to a sense of professional development and personal growth on thepart of the music educators. o Also, from this study showed that technology improved

concentration onstudents, maximized time on-task, developed and enhance cooperative learning, and raised higher level thinking skills. Conclusion Clearlythere are many possibilities for the use of ICTs/music technology in the worldof music education. From streaming audio/video to the more traditional CDs andDVDs; from online research to software programs that deliver immediate feedbackon aural skills training; from the use of notational software like Finale orSibelius to the use of GarageBand or Dance eJay, there aremany possibilities to integrate ICT into the music classroom – whether thatclassroom is face to face or online. However, there is a gaping hole in thebody of research that needs to be addressed.

A new paradigm needs to becreated, whereupon the extensive audio and video records are shared via theinternet – perhaps YouTube or set up on special website with private sharingsights (with parental and student consent). In cases where actual sheet musichas been created, that needs to be shared as well. Music is aural by nature, and until there is a way to share the aural results – until these changes aremade, we cannot have a full sharing of ideas. Perhaps the community of practicevia social media will be the best way to informally share the results of thesedifferent experiments, with teachers enthusiastically showing off the work oftheir students and convincing other teachers in the process.