Progress and promise in K-12 education: Is technology making a difference?

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I am very pleased and honored to be part of such a distinguished panel of presenters as that gathered before you today. At the outset, I would like to express my sincere appreciation to the NSMIT conference organizer, Jane Kuehne, for the marvelous job that she has done in taking care of all of the administrative and organizational tasks required for such a meeting. It is particularly important, for this particular annual meeting, that we have representation from both institutions of higher learning and K-12 schools. I am saddened by the fact that representation from the schools is lower than it has been in past years and I would hope that this can be remedied for future NSMIT meetings, allowing us to more effectively discuss and find solutions to some of the challenges facing music educators in this day and age. That said, however, I would like to thank those of you who are present today for being here with us and for generously taking your time – a commodity that is in extremely short supply for teachers – to share your experiences and to join us in the process of determining ways in which to enhance the music learning experience for students at all levels.

Before beginning this presentation, I feel compelled to provide a bit of background so that the reader can factor this into their assessment of the perspective presented. I sit, admittedly, in an "ivory tower" at Northwestern University, where my extremely capable colleagues and I teach students how to teach music in schools. Having said this, I must tell you that I come to my current position from a very unique perspective … one that is quite different from that of my fellow Music Education colleagues. My graduate degrees (both an M.M. and Ph.D. from UCLA) are in Systematic Musicology, my primary areas of research are multimedia, music technology, music learning, and music cognition, and – perhaps most important – I have never taught in a K-12 music classroom. Though I have taught almost every day for the past ten years in a university classroom, you should be aware that the K-12 teaching experience is not one that I have experienced myself. In my current position at Northwestern, I have been tapped for my research expertise and my knowledge and experience related to integrating technology into the music classroom and, as a result, find a very comfortable fit amongst my talented colleagues, all of whom do have first-hand K-12 teaching experience. During my time as a Music Education faculty member, of course, I have had many opportunities to observe student teachers who have been placed in music classrooms in the Chicagoland area.

Here in this auditorium, we have a wonderful mix of levels of teaching and ranges of expertise. University professors, like most of those sitting on the present panel, can provide information about current research and how it may most effectively be applied to practical teaching situations. A number of marvelous case studies have been presented over the past couple of days by highly gifted teachers from the area. An impressive hybrid – represented by teachers like Jim Frankel – has also emerged; one who continues to exist in both teaching worlds simultaneously: teaching in a school classroom, while

concurrently teaching in an institution of higher learning. Such individuals provide a marvelous model for future teachers and provide ample opportunity – in the here and now – to serve as a conduit for communication between the population of university researchers/teachers and K-12 teachers, two groups that are often considered as members of very different populations.

I would like to address the question posed to our panel in a slightly different way from that of Dr. Hagen. Being a professor & researcher, I want – of course – to *answer* the question posed. Also as a result of my role as a professor, I have gained the ability to see *at least* two sides to every issue. To shake things up a bit, I'll present my answer first and then provide its basis in the following paragraphs.

Question: "Is technology making a difference [in educational contexts]?"

Answer: "Maybe not … but should it?"[1]

The way that we use technology is certainly changing the way we teach music in the classroom. But is it truly "making a difference?" By this, I mean to ask specifically whether or not technology is enhancing the learning experience for our students. Are students learning more deeply about music and making greater advances as a result of the capabilities inherent in technology and their appropriate application within the daily learning environment? Though we may not have seen the changes and advancements in education that were predicted a decade ago, there are very few empirical studies that suggest the presence of technology actually lowers the level of student performance. Most studies have either shown a modest increase or no statistically significant difference when comparing student performance on varied tasks within a group integrating technology versus a more traditional classroom approach. One important aspect that is often overlooked is the fact that student attitudes toward the incorporation of technology are almost always positive (Webster, 2002). Improved attitudes toward learning provide a positive step in the right direction. Also, if appropriate learning skills – repetitive tasks that require drill and practice structure – can be relegated to technology, the teacher's valuable time can be freed to focus on higher level learning, critical thinking skills, integration, interdisciplinary connections, discussion, and essential student-teacher interactions … a useful paradigm shift with positive implications resulting from its practical application. Within the learning context, I believe it is imperative that we challenge students who need to be challenged. Why should we settle for a median level of knowledge acquisition when many of our students are capable of so much more?

There are several issues upon which we can focus that represent weaknesses in the manner in which technology is currently integrated into the curriculum. Before continuing onward with this line of thought, however, I would like to state explicitly that it is still very "early in the game." In relation to the amount of effort invested in learning theory and general educational research, we really have been at this a relatively short period of time. I would argue that our field has only seriously been considering how to integrate technology into the classroom – in pedagogically meaningful ways – for less than a quarter of a century. Such an extreme – and potentially valuable – paradigm shift requires a significant amount of foresight and planning. In reference to technology

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[1] Also as a result of my professional background, I often answer a question *with* a question!

integration, we are still in the formative stages of this process. That said, to date, I believe that the primary failure of technology integration is the fact that, though the capabilities of computer technology have increased exponentially during the past two decades, the primary focus *in educational contexts* remains almost exclusively on "drill and practice" types of applications, utilizing a linear progression through content. Typically, in such applications, information is presented sequentially and a lover-levl module must be completed before moving on to more advanced topics. This is, of course, not the way that facts and experiences come to a student in the real world and it is not the way that technology is used in the most economically successful and complex of its applications: video games. In fact, James Paul Gee points out in his aptly-titled text, *What video games have to teach us about learning and literacy*, that

> … an academic discipline … is not primarily content, in the sense of facts and principles. It is rather primarily a lived and historically changing set of distinctive social practices. It is in these social practices that "content" is generated, debated, and transformed via certain distinctive ways of thinking, talking, valuing, acting, and, often, writing and reading. (2003, p. 21)[2]

How does one "test" a student on content, as described above, in the context of the ubiquitous standardized test? When content is correctly accepted as "historically changing" – have Galileo and Einstein not taught us that this is, in fact, the case? – the process of learning becomes a process of critical evaluation and integration, rather than a mind-numbing memorization of "facts."

Another detail worthy of mention is that students arriving in our music classrooms are part of a generation that has never known life without computer technology. As educators, one of our many challenges is to determine effective ways in which this familiar interface can be used to motivate students to want to learn more in ways that are practical, beneficial, and – yes – entertaining. These same students are willing to spend hours of their leisure time figuring out the rule systems – systems that are rarely spelled out explicitly –a that govern interactions in the context of a video game world, like *Deus Ex*, *Civilization III*, or *The Sims*. How can we use our pedagogical skills to make use of this natural desire to explore unknown realms in ways that will benefit our students … in ways that move them closer to accomplishing meaningful educational objectives?

I would like to see a shift in our pedagogical approach so that we teach our students to *learn to learn* and to think critically, rather than simply memorizing facts … a transition that has already begun in many locations. I believe that technology can be an effective tool toward this end, *but it is not yet*. Becoming such will require a rethinking of the manner in which technology is integrated into the learning environment. I would propose that video games provide a model for making the learning experience engaging and enjoyable for the learner. In the video game context, the player typically learns through exploration, experimentation, trial and error, and discovery. Lessons learned in this manner – interactively – are much more likely to be remembered long-term than facts learned through rote memorization (Bean, 1996; Modell & Michael, 1993; Zull, 2002). Though the learning that takes place in a typical video game (e.g., gaining access to

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[2] See also Johnson (2005).

materials behind a locked door, defeating an opponent, or determining the appropriate route through a maze of cavernous tunnels) is often not directly related to learning objectives in the educational context, many of these same skills (and associated programming techniques) can be used to open the door to knowledge in almost any field of study. Can we begin to design exploratory environments related to our discipline of music, allowing students to explore, experiment, and discover musical sound and its related rule systems?

In addition to the paradigm shift related to technology integration proposed above, I would like to conclude by offering four specific dicta related to education in general – call them "Lipscomb's Charge," if you like – that, if enacted, would serve to move our classrooms in the right direction, allowing technology, and teaching in general, greater potential for truly "making a difference:"

1. **Resume teaching for learning, stop teaching for testing.** The goal of our instruction should be *learning* – or, rather, *learning to learn* – not making a high score on a standardized test, a measuring instrument with a history of problems of its own.

2. **Invest money in education.** It is simply impossible to meet the needs of our children's education without investing substantial amounts of capital … in improved facilities, equipment, technology, and teacher/administrator salaries. Every cent invested toward this end will benefit society many times over.

3. **Eliminate the disparity between the "haves" and "have nots."** The situation that exists in our society, with the widening gap between a small percentage of very wealthy and a majority who have less and less, is mirrored in the school systems attended by these same individuals. We must work to ensure – and this is certainly not a new proposal – an equal education for all Americans, regardless of socio-economic status or any other measure, for that matter.

4. **Force our politicians to stop spouting unfunded mandates.** The current No Child Left Behind policy is the worst offender of this charge in recent memory, if not in history. Setting idealistic goals and promising – threatening? – strict enforcement, but failing to invest the necessary (and promised) funds only exacerbates the disparity already present in the educational system. As has proven to be the case, this is simply a recipe for disaster, as evidenced by the number of school districts, townships, and even some states that have gone broke while our federal dollars are spent overseas.

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