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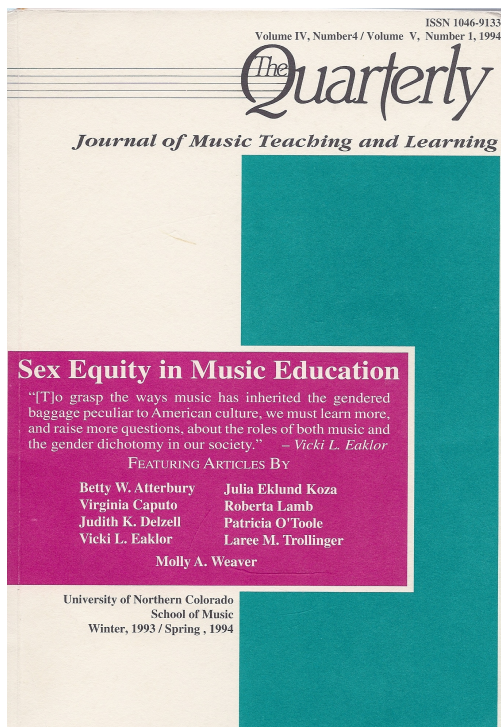
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It is with pleasure that we inaugurate the reprint of the entire seven volumes of The Quarterly Journal of Music Teaching and Learning. The journal began in 1990 as The Quarterly. In 1992, with volume 3, the name changed to The Quarterly Journal of Music Teaching and Learning and continued until 1997. The journal contained articles on issues that were timely when they appeared and are now important for their historical relevance. For many authors, it was their first major publication. Visions of Research in Music Education will publish facsimiles of each issue as it originally appeared. Each article will be a separate pdf file. Jason D. Vodicka has accepted my invitation to serve as guest editor for the reprint project and will compose a new editorial to introduce each volume. Chad Keilman is the production manager. I express deepest thanks to Richard Colwell for granting VRME permission to re-publish The Quarterly in online format. He has graciously prepared an introduction to the reprint series.

Add Technology And Stir: Music, Gender, And Technology In Today's Music Classrooms

By Virginia Caputo

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As many of us are aware, over the past several decades a number of broad intellectual cross-currents have had major influence on social thought. To name only a few, these forces include feminism, postmodernism, and cultural politics. Ideas from these intellectual shifts have become currency in broad debates, and various disciplines thus have been reshaped in different ways and in varying degrees. In the field of literature, for example, feminism has inspired a rethinking of the ways that the “classics” are defined and taught. The Eurocentric, male bias evident in the constitution of this group of “core classics” has been challenged and disrupted. Literature is but one example of many disciplines that have felt the impact of issues current in broader debates.

More specifically, the force of some of these intellectual trends has been felt in the field of music and music education. The education system generally has felt the impact of broader debates as boundaries are

being redrawn, and educators, in turn, have been presented with many new challenges. To take the example once again of feminism, not only has this movement influenced some

educators’ choices of methods for teaching, but the content of selected curricula and the spaces where teaching takes place as well.

Increasingly, a critical look is being taken at several components of the music education process. Some music educators have become increasingly aware of issues including Eurocentricity and male bias when deciding which music and composers to introduce, for example, and culturally diverse repertoires are being devised as a result. In turn,

musical categories and concepts used in the past are being questioned in light of feminist theoretical concerns. Through their work to find ways to make musics accessible to their students, music educators address on a practical level many conceptual and ideological issues that are current in broader theoretical debates.

The Classroom as Crucible

Perhaps nowhere is the impact of these ideologies and conceptualizations more readily felt than in the classroom, a vital locus in which to view processes at work. As practitioners of the classroom, music educa-

What are some of the issues that emerge because of the introduction of technology into the vibrant and complex space of the music classroom?”

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tors know that cultural politics, gender relations, and socialization are only a few factors of many that are integrated into and played out in the classroom setting. The primary question addressed in this article is, "What are some of the issues that emerge because of the introduction of technology into the vibrant and complex space of the music classroom?" More specifically, what are the additional issues and challenges presented by the implementation of this technology in light of intellectual trends over the past few decades? How are questions pertaining to gender positioned in this discussion? Is the technology merely another of many tools to be used by teachers and students in pursuit of musical achievements? Is this "tool" neutral, in that it remains outside the bounds of cultural politics, or are there consequences that are intimately linked to gender issues embedded in the application of technologies in the classroom? Put another way, in the context of the lives of our female and male students, are there links between technology and other social forces taking place within and outside the classroom walls? Let me begin unpacking some of these issues by examining the space of the classroom itself.

With the school identified as a major arena for the struggle over broader issues including social, economic, and cultural justice, understanding the classroom simply as the place where teaching occurs is short-sighted. The classroom is inevitably linked with dynamic changes in global and cultural politics. At the local level, the classroom is the crucible where socio-economic, cultural, and other factors are played out. While this idea may not be new, a serious reconsideration of this complex space called the classroom casts it as a politicized social and cultural construct. As Foucault states with regard to the concept of "space" more generally:

Space was treated as the dead, the fixed, the undialectical, the immobile. Time, on the other hand, was richness, fecundity, life, dia-

lectic. If one started to talk in terms of space that meant one was hostile to time. It meant, as the fools say, that one "denied history," that one was a "technocrat." They didn't understand that to trace the forms of implantation, delimitation, and demarcation of objects, the modes of tabulation, the organization of domains meant the throwing into relief of processes — historical ones, needless to say — of power (Foucault, 1980: 70).

Power is an important concept in this view of the classroom. Not only does it attest to the complexity of this space, but it also restores agency to the students that dwell there. The notion that students remain passive in these contexts can no longer be accepted, especially in light of the view of the dynamic space of the classroom, cross-cut by relationships of power along varying axes of difference including gender, age, race, and class. Students at both the elementary and high school levels, for instance, are actively participating in the constitution of this place. More precisely, the classroom is composed of active, thoughtful social actors involved in the production and management of meaning for their own social lives.

Introducing Technology to Music Education

There are several points to consider at this juncture. We have briefly discussed classrooms as dynamic spaces occupied by active social actors. Gender, embedded within interdependent constructs of ethnicity and class, is an important component of this space. What then, is the place of computer technology in this picture? What are the implications of its inclusion in the categorization of "tool"? If technology falls under this category, is it like other tools, such as books and pencils, for example, that are used by educators? Before I proceed, let me give you a very brief overview of some of the kinds of technologies related to music education.

Music technology may generally be defined by three broad categories of technological

developments: communications technology, audio technology and computer technology. Communications technology includes various advances in telephone and television technology, including cable networks and satellite transmission. The speed at which we are able to interact, as well as the quality of these communication lines, has been dramatically enhanced by these inventions.

Audio technology has moved rapidly from early recording techniques that used analog signals to the present digital sound recordings, including compact disc (CD) and digital audio tape (DAT) formats. Digital sound synthesis has developed as well, making digital synthesizers available to the general public relatively inexpensively. This kind of technology, which stores the musical creations of performers/composers in computer memory or on disk, has significantly expanded the ways one is able to create music.

Computer technology developed specifically for music instruction emerged in the late 1960s and early 1970s, when music instruction programs created by large software corporations began to be implemented by teachers. Computers now can be configured for many new capabilities, including graphics options, which enable users to display music notation; digital sound synthesis technologies that provide high quality sound; greatly increased random access memory (RAM); devices that convert sound directly into digital information; and Musical Instrument Digital Interface (MIDI). In addition, advancements in educational software now include interactive environments. For example, videodisc technology adds interactivity to moving images. Interactive environments are also available for MIDI/computers.¹

From this brief overview, one sees the potential of computer technology to affect the ways music is taught in schools. Educators, however, have met these developments with mixed responses. On the one hand, many welcome and encourage the relationship between music technology and education, stressing that technology serves as a wonderful tool to present music to students in new and challenging ways. G. David Peters, writing on the convergence of music technology and education in 1991, supports this view:

Through communications technology, learners will have access to a much richer arts environment than ever before. As educational networks mature, arts materials can be stored at a very rapid rate world-wide. The character of music can be transmitted from concert hall to classroom at the same time that sophisticated educational libraries are established.... The use of the three technologies, communications technology, audio technology and computer technology, can expand educational opportunities for all students in the music education curriculum" (Peters, 1991: 245).

On the other hand, many educators have continued with the traditional practices of the classroom, quietly accepting the technology by making some adjustments in routines to allow students to participate in computer music labs, for example. And some music educators reject the use of the new technology.

Is Technology Simply a Set of New Tools?

What is interesting about this wide range of responses, and from the way Peters describes the technology as well, is that the fundamental question of the neutrality or non-neutrality of the technology is hardly ever raised. Peters's comments suggest that it is just another set of "tools" to be rationally manipulated by students to unlock their musical potential. Conversely, if one disagrees with this position, what then, are the arguments that support a non-neutrality viewpoint?

When thinking about the hardware and software components of the technology, people often regard the hardware as neutral in comparison with the software component — the programs for the computer that arise from human authorship. The point that software is created by complex human beings with their own agendas and biases is an important one, yet it is sometimes lost when the emphasis is placed on technical considerations alone. Thus, apart from the factual information communicated through the software program, there is other information that is acquired and reinforced when programs are used. As C.A. Bowers (1988: 100) states, "Cultural assumptions embedded in computer technology have been, for the most part, ignored. Some of these assumptions include notions about the efficacy of proce-

Girls are socialized to pursue, for the most part, relational, analogic ways of knowing, but they must unlearn these ways in order to be successful with technology. Thus, girls are set up for failure on some level as they confront technology and are measured by a male norm.

dural thinking, the reification of the printed word, the sense of community as being realized through the sharing of information, and the progressive nature of educational computing." The kind of knowledge that emphasizes objective facts and a particular kind of logic devalues other forms of knowledge that underlie experience. As a result, questions of context are dismissed as less significant than questions surrounding the technical aspects of the technology.

To return to Peters's point, he claims that *all* students in the music education curriculum will benefit from the new technology, but this widely held assumption is a homogenizing statement that distorts the picture. As most educators will agree, all students are not all the same. More importantly, there are differences between female and male students, as well as differences within these groups. Peters's statement does not allow for any of this diversity. By declaring that all students benefit (i.e., are positively affected) from technology, differences amongst our students are effectively levelled. This kind of approach to today's classroom may be a dangerous one because it continues to perpetuate a system of power relations that keeps certain voices silent. It is a particularly salient issue for the female students in our music classrooms. Accordingly, assessing the classroom as a dynamic space made up of active social actors acknowledges a situation far more complex than Peters's comments allow. Moreover, it demands that we begin to understand the multiple layers of experience, power, and meaning in the interactive classroom context when we attempt to assess technology.

Another assumption held with regard to technology is the notion that the accumulation of data and more efficient mastery of skills contributes to social progress. This line of thinking supports and values a rational, linear movement typical of malestream — or

androcentric — ways of knowing. A knowledge-power connection also underlines this argument: The intention is that the computer technology allows the student musician to "gain control" of sound by acquiring the ability to manipulate and reproduce it. In my view, however, this kind of statement places considerable emphasis on the notion of control instead of on creativity. Furthermore, it diminishes and makes invisible the differences among the students that we teach. Clearly, music technology contains implications for questions related to gender.

The Biases of Technology

Computer technology works primarily through digital knowledge, whereby linear forms of thought and the production of knowledge are modeled upon a mechanistic way of thinking. As Bowers (1988: 63) states, "Digital thinking involves conscious intent in manipulating bits of information.... Digital knowledge, in effect, involves separating the parts from the whole ... and then reconstituting the parts through a linear form of thinking." He adds that "digital thinking, in a sense, is attractive partly because it reinforces the cultural assumption that we are autonomous individuals who can rationally construct the world we want" (ibid).

Bowers outlines several processes at work to reinforce this rational view of technology. Processes including amplification and reduction are integral features of technology. Amplification means that knowledge that is explicit can be reduced to discrete bits of data and then stored on a large scale or manipulated in various ways. Amplification has been acknowledged more than the reductive characteristics of technology. Reduction means that whatever knowledge cannot be made explicit and organized into discrete components cannot be represented (cf. Bowers 1988: 32-36). This includes forms of experiential knowledge. Moreover, what is amplified or reduced is determined and mea-

sured predominantly according to an androcentric standard.

Returning to the question of the non-neutrality of this technology, there are several important points to review. First, computers devalue knowledge that cannot be communicated in a digital format, homogenizing differences and marginalizing particular voices.

Secondly, while the components of the technology itself may be neutral, the way that people must interact with it is not, for technology elicits a certain kind of response and demands a predominantly direct rather than relational interface. It differs significantly from traditional educational “tools” not only because it is used in different ways and for different purposes, but because computers in music classrooms are introduced in a completely different manner as well. For instance, computer music technology is not usually introduced early in the education process, nor are students carefully guided through many steps while learning how to use technology effectively. Educators indicate that in music classrooms, technology often is merely added to existing music programs in upper grades. This “tool” is not introduced in the same way nor to the same degree as others. In presenting technology without assessing the space of the classroom as historically shaped by cultural forces and related issues that move beyond the technology itself, non-technical considerations are dangerously marginalized.

Implications

For those interested in the implications for gender of this technology, these non-neutrality arguments are very important to consider. Consider the example of technology’s emphasis of digital knowledge and the consequent devaluation of experiential knowledge. At a general level, this means that certain ways of thinking and knowing and certain cultural values are encouraged, while others are silenced. Girls are socialized to pursue, for the most part, relational, analogic ways of knowing, but they must unlearn these ways in order to be successful with technology. Thus, girls are set up for failure on some level as they confront technology and are measured by a male norm.

A second point is to consider questions

surrounding the relationship between this technology and the body. In music, the body, i.e., the experiential, has received little serious scholarly attention. Far more attention has been given to the Cartesian view of the individual as mind divided from body, and this is reinforced through the use of the computer: The individual remains detached and is empowered only through the acquisition of objective knowledge (cf. Bowers, 1988: 71; Bordo, 1987). In this formulation, there is no place for the body. Yet musical meanings come not only from our minds but from our bodies. What happens to these bodily aspects for those interacting with the technology?

More importantly, if the technology does not allow for more than objective knowledge, what happens to the musical expressions of girls in particular, for whom questions of the body are most significant. It is clear that these multiple viewpoints are not allowed any space within the demands of conformity set up by the technology. In implementing technology without considering these critical gender implications, educators are, in effect, complicitous in the continued oppression of certain voices and perhaps, musical abilities. Attention to these kinds of questions is long overdue.

What is the role of music educators concerning the use of technology in the classroom? It is important to recognize that, for female students in particular, there are conceptual and value-laden agendas in the software and presentation of music technology that reflect mainstream ways of knowing. These must be examined if our intention as educators is to engage *all* students in equitable uses of technology to challenge and unlock their musical potential.

Definitive answers to some of the questions I have posed are now unknown. My concern, however, has been to make some of these issues and questions explicit. Until the non-technical issues surrounding music technology are addressed by music educators in the context of the dynamic classroom, the educational use of computers may be driven by factors such as market forces that obscure other issues more pertinent to the educational success of our female as well as male

music students. In the end, the question of what kind of musician educators are trying to encourage may be lost to the rhetoric of computer experts and technological applications.


Music technology should not bar anyone from furthering their musical potential. To this end, it is important to examine the social consequences of the technology. It is then up to music educators and students to learn how to appropriate the technology in their own ways to seek new and different kinds of knowledge.

In pursuing these goals, the challenge of education is to understand the intricacies and complexities of our classrooms. Music educators must continue to question and untangle the ideologies and objective conditions that continue to render certain ways of knowing, work and power invisible (cf. Luttrell in Wrigley 1992: 188).

Note

1. This brief overview is based upon a discussion presented by G. David Peters in "Convergence: Music Technology and Education," in *Basic Concepts in Music Education II*, Richard J. Colwell, ed., (Colorado, 1991).

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