

Music Technology and the National Standards

by Thomas E. Rudolph

The MENC National Standards provide an excellent set of benchmarks for music instruction. Music teachers should evaluate their own curriculum in relation to the nine National Standards. The use of technology, specifically computers, software, and electronic keyboards, can help teachers meet the National Standards in a wide variety of ways. Technology applications can be grouped into several categories. These include electronic keyboards, sequencing software for recording, notation programs for printing music, computer-assisted educational software, and multimedia applications. This article examines the role of technology with respect to each of the nine National Standards.

The Nine National Standards & Technology The National Standards are organized into nine distinct areas developed by a team of music educators in conjunction with MENC. Following are some ideas for using technology with each standard.

1. Singing, alone and with others, a varied repertoire of music.

With a computer connected to a MIDI keyboard, sequencing software can provide the choral director and/or classroom music specialist with a sophisticated tool to create, record, and playback accompaniments. The sequencer has complete control over the accompaniment including the ability to alter the tempo and key and to mute various parts. Once an accompaniment or ostinato is recorded into the sequencer it can be saved to disk for future use. There are many quality sequencing programs such as MasterTracks published by Passport for the Macintosh and PC. Another helpful application is using computer-assisted instruction software that is designed to help vocalists improve their ability to sing in tune. The program Claire published by Opcode Systems for the Macintosh and Audio Mirror published by Electronic Courseware Systems for the PC are designed to help students practice singing and pitch matching. The student sings into a microphone and the computer then analyzes the performance and provides feedback to the vocalist.

2. Performing on instruments, alone and with others, a varied repertoire of music.

Electronic keyboards can be used in the music curriculum in bands, orchestras, and choruses as accompaniment instruments and to replace instruments not present in the ensemble. Portable electronic keyboards with excellent sound quality continue to drop in price, making them an important addition to performing groups. An electronic keyboard lab can provide a performance medium for general music classes. Many schools across the country are taking advantage of the inexpensive cost of today's electronic keyboards to the benefit of all students, not just those in performing organizations. Students in general music can learn to perform using electronic keyboards. Curriculum materials for teaching general music with an electronic keyboard lab are available from Yamaha, Roland and SoundTree.

3. Improvising melodies, harmonies and accompaniments.

Teaching students to improvise is a challenge. A computer and a sequencer program can be a great asset by providing students with a practice accompanist. Some publishers offer sequencer files for a variety of musical styles. Currently, Silver Burdett and other publishers offer their songs in MIDI format. The sequencer can be used as an accompanist for students as they explore the world of improvisation. There is a special type of sequencer that can be thought of as an intelligent sequencer. Intelligent software can be used by students as a practice tool. With the program Band-in-a-Box (published by PG Music for the Mac & PC) students can experiment with harmonies and accompaniments. The student types in the chord symbols, selects a style such as rock, jazz, etc., and the computer realizes an accompaniment. Tempo and key can also be adjusted. Students can then improvise on the keyboard or an acoustic instrument using Band-in-a-Box as the accompanist.

4. Composing and arranging music within specified guidelines.

It is also often challenging to find traditional ways for students to compose and arrange music. Notation or scoring software turns the computer into a music processor. There are many programs available for students from the elementary to the university level. Using notation software such as Finale (Coda) or Encore (Passport), students can compose music and listen to it played back on a MIDI keyboard. Students can then print out their compositions.

5. Reading and notating music.

Many teachers find using a notation or scoring program to be an excellent tool for creating printed musical examples for use in the rehearsal hall and classroom. Additionally, original music, warm-ups, and technical exercises can be composed and printed. Custom printed materials can help students to read music. There also is computer-assisted instruction software available that is designed to help students drill note reading and recognize rhythm and tonal patterns. Patterns in Pitch and Patterns in Rhythm (published by Electronic Courseware Systems for Mac and PC) are examples of software that can be used to reinforce reading skills.

6. Listening to, analyzing and describing music

In the area of computer-assisted instruction, there are dozens of programs to choose from that can be used to reinforce students' ability to analyze and describe music. There are computer programs designed to help students learn music theory and ear training programs to drill chord types, intervals, and much more. Electronic Courseware Systems is the largest publisher of computer assisted-instruction programs for music and offers a variety of programs for all grade levels.

7. Evaluating music and music performances.

There are a series of programs published by PG Music that can be resources for evaluating music performances. The Pianist and other programs such as the Jazz Pianist and the New Orleans Pianist, offer a wealth of material to use in the classroom and for performing groups. The programs require a computer and a MIDI keyboard (Mac and PC versions are available). Select one of the pieces by title, style, or composer and play back the music for students to evaluate and analyze. Each program sells for a list price of \$39.95, providing an extremely good value as several hundred pieces are included. Another helpful application is to have students record performances using a MIDI keyboard and a notation program. The notation software then translates the performance into printed music that is displayed on the computer screen. The notation can be viewed and printed out for evaluation by students and teachers.

8. Understanding relationships between music, the other arts, and disciplines outside the arts.

Since computers and electronic keyboards can be programmed by students, they can provide a medium to make connections with the other arts and disciplines outside the arts. For example, in a keyboard lab, students can learn to create and modify sounds. However, to make changes to a sound, the physical properties must be understood, thus linking music with science and mathematics. Computers can be programmed by students to create a variety of related arts applications such as presentations that combine sound, graphics, text, and video. Using authoring languages such as Hypercard (Mac) and Toolkit (PC) students can create many discipline related projects.

9. Understanding music in relation to history and culture.

When a CD-ROM drive is connected to a computer the multimedia world is opened up to students. Currently there are multimedia programs commercially available to help students understand the relationship between music, history, and culture. There are multimedia programs in classical, jazz, and contemporary music. Typically, a multimedia program requires a Macintosh or PC and a CD-ROM drive. Everything from Beethoven to the Beatles is available on CD-ROM. The advantage of using a CD-ROM is that it includes an audio performance of the music as well as text and graphics. Sometimes video is also included. Commercial titles include Beethoven's Ninth Symphony, Dvorak's New World Symphony, and many more. Currently there are approximately 30 music-related multimedia titles available.

Summary

Computers and electronic keyboards provide teachers and students with a powerful and versatile learning medium. This article features a sampling of the many applications that technology offers to the music educator to address each of the nine national standards.

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