

Inclusion of Technology Resources in Early Childhood Music Education

By Fred Kersten

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Music educators are currently exploring technology as a tool for working with young children. Computers and the Internet provide an abundance of multimedia resources as interesting avenues for young children to experience music. Newly conceived technology-oriented musical instruments and toys allow learning activities in music, opportunities to experience high-quality music repertoire, interaction with musical sounds, and performance opportunities. Internet sites are varied, and many are dedicated to early childhood music instruction.

Multisensory stimuli provided by technology allow aural learning to be supported by both visual and psychomotor domains. Music activities can include social interaction, as learning providers, such as parents, teachers, peers, and older students, use personal contact to orient and guide lesson activities in addition to providing support needed to set up and keep the technology functioning.

This article is directed towards music educators responsible for providing music education to children aged 0–8. They may be teaching the specific ages involved, serving as resource persons for learning providers working directly with children, or providing assistance to parents who wish to add music to or make music accessible within the home environment. Internet, software, and various hardware resources available will be considered. Three lessons are provided to illustrate how technology might be incorporated in developing a music activity.

How to Include Technology

Successful technology inclusion in music for young children depends on the physical, mental, and social readiness of each individual child. Each of these three areas is examined below with practical suggestions for consideration.

Physical

If using a media screen (videotape, computer, TV), provide chairs or cushions of appropriate height for each individual to allow eye-level contact with the screen. Should a computer be utilized, try to include a wireless mouse on a surface that is at a comfortable height for relaxed hand movement. Provide enough table space so the person providing computer guidance is able to sit next to the young child, reach the mouse, and demonstrate and view cursor techniques. Are controls on the DVD and CD players convenient for manipulation by young children without the assistance of a learning provider? This is an important aspect to consider if including these devices in a music corner for operation by younger children. Select a toy keyboard instrument with appropriate size keys to fit the hand of the child who will use it. If contemplating software, are audio narrations provided in lieu of captions? If so, the software will be more user-friendly, providing better perception and concentration opportunities for younger children.

Mental

Can and should a child use the computer at chronological age three? Current thought is that there are more important developmental aspects in the early years than the computer. Specifically, emphasis should be placed on interaction with family members and physical exploration of the immediate surrounding world. The Northwest Educational Technology Consortium (NETC) provides the following clarification:

A great deal of the learning in using a computer at an early age comes from the interaction between the child and the adult, not from the interaction with the computer. By the age of three, a child can begin to use

a computer and discovery-based software meaningfully, with the help of an adult or older child. Remember to plan for the important tasks of the early years before allowing children to be distracted by too much electronic stimulation. (The Northwest Educational Technology Consortium: www.netc.org/earlyconnection/preschool/technology.html)

Even though many of the items listed in this article provide a chronological age-readiness assessment for the product, each young child will have a variable mental level of readiness, which can be higher or lower than the child's chronological age.

NETC mentions the following criteria regarding computer readiness for early childhood:

- Do images and events on the screen represent experiences that have meaning for the child?
- Is the child able to make connections between what is on the screen and what is in the real world?
- Does the child really understand who controls the computer, or is he or she randomly hitting keys?

(The Northwest Educational Technology Consortium: www.netc.org/earlyconnection/preschool/technology.html)

If these criteria can be met, a music activity involving computer technology could be considered. The learning provider must assess child readiness both initially and on an ongoing basis and provide suitable technology for the appropriate stage. This process requires learning providers involved with young children to constantly review the young child's capabilities and scrutinize technology resources to be sure they match the child's ability.

Social

When planning a music lesson, the learning provider must develop questions that will involve the learners in social interaction. Working with two or more children, or perhaps siblings, may be more helpful for some children than working with only one child. A combination of both types of interactive situations is recommended. Questions and dialogue can be oriented toward what the technology media is doing, that is, "What do you think is hap-

pening on the screen?" or "Describe what sounds are occurring and how they make you feel." Try to understand the personality, abilities, and needs of each child, and then draw upon this background to involve each learner in discussion or use of the technology. Encouraging and reinforcing expression and self-esteem must be a central focus of the learning provider. Central questions that might be considered: How can each child be personally motivated to be involved with the technology medium? How can each child satisfy self-esteem needs as technology experiences are provided?

Try to ask questions that elicit a response from each child in a group. "What happened when Johnny pointed the cursor at the clarinet?" "Was the sound loud or soft?" "Can we make the music faster or slower?" "How do we know it is faster?" "Can you show how fast with a hand motion?"

Learning providers are very important in initiating the communicative atmosphere needed for experiencing music through technology. Without their efforts, technology will falter in supporting music learning with young children.

Kids Click—Interact and Learn

The supportive learning atmosphere needed for music instruction is addressed by MENC:

Children learn best in pleasant physical and social environments. Music learning contexts will be most effective when they include (1) play, (2) games, (3) conversations, (4) pictorial imagination, (5) stories, (6) shared reflections on life events and family activities, and (7) personal and group involvement in social tasks. Dominant use of drill-type activities and exercises and worksheet tasks will not provide the kind of active, manipulative, and creative musical environment essential to the development of young minds. (MENC Position Statement on Early Childhood Education: www.menc.org/information/prek12/echild.html)

Technology can support the above-mentioned effective context considerations for ages 1 to 7. It allows multiple reinforcement modes, providing aural, visual, and kinesthetic opportunities for a pleasant learning atmosphere, high-quality music

backgrounds, and realistic sound manipulation. As an example, see the Playing with Tempo and Dynamics site (www.creatingmusic.com/playing/play2.html), and note how children can immediately change and experience slow/fast or loud/soft using an excerpt from Beethoven's Piano Sonata, Op. 31 #3.

The Playing with Scales site (www.creatingmusic.com/playing/play3.html) permits exploration of major and minor scales as well as timbres such as clarinet, oboe, and xylophone. Child interaction is immediate as the number keys 1–8 on the keyboard can be used to play scales and create melodies with learning-provider assistance.

This provides young children with visual stimulation in vivid color combined with music they produce and immediately control by typing on the keyboard. Computer-familiarity skills can be practiced and dexterity increased in the process. There is an important social factor involved, as learning providers interact while explaining procedures, teaching how to use the mouse, or assisting with pointing the cursor. As young children participate in technology-oriented activities including play, games, and conversation, they develop courtesy dealing with others, as they must learn to wait their turn and respond to questions from their peers and the learning provider.

Parental Involvement

Parental involvement is a vital aspect for implementing technology inclusion in the musical endeavors of young children. Music specialists can clarify technology-inclusion techniques if they are specifically involved with students directly or collaborate with parents who have young children. Certainly, technology emphasis for each situation will be different because of varied home environments and equipment provided; however, parents who concern themselves with technology involvement can easily facilitate initial exposure to music in some constructive manner.

Either through parent organizations or separate-sponsored sessions, illustrations of how music technology can be provided by parents can be made clear. This is especially true of activities that include

using the Internet. Parents can offer guidance by showing children how to click and reinforce Web site musical interaction as it occurs. Music takes on a significant meaning when reinforced by the most important primary-learning providers in the young child's life.

Technology Music Corner

The dedicated music corner, whether at home or in the classroom, is a good place for children to participate in music activities. A well-lit, cheery, and spacious area with attractive music pictures should be provided. Keyboards, cassette recorders, drum pads, computer, videos, CDs, and DVDs can be included. Also include basic rhythm instruments such as maracas, rhythm sticks, and small cymbals. It is also good to have a large set of instrument pictures.

A video camera can be utilized periodically to capture lessons in the music corner, and if viewed on a television or video screen, they can provide an opportunity for the young learner to view the lesson again from a third-person perspective. This provides a great opportunity for review, social interaction, and reinforcement of learning.

Audiocassette recorders allow songs to be recorded as young children sing. The tape can then be played for reinforcement and motivation. Dedicated prerecorded lessons can be developed by learning providers that are oriented to the specific needs of an individual child. A taped dialogue or narration can feature a specific child by name, his or her needs, abilities, and interests, and focus can be provided on songs that have been learned and music concepts to be reviewed.

Activities with other children can help develop group social interaction in the music corner. Parents can provide opportunities for group contact by inviting friends of their young children to visit and experience activities in the music corner. Try to develop lessons specific to the background and knowledge of the children involved.

Musical Toys

Musical toys are a good vehicle for participation and learning. Many are very user-friendly, and per-

sons with little technology experience can set them up to provide strong opportunities for sound exploration and performance.

Keyboard Instrument Toys

The number of features available on electronic keyboards varies and usually depends on price. Some will play background accompaniment for singing. Several have microphone-reproduction capabilities, permitting young children to hear themselves sing through the keyboard speakers as a harmonic and/or rhythmic background is produced. Many keyboards have a memory component and will record limited-length monophonic tunes, providing an opportunity for compositions to be recorded and evaluated after they have been created. Others allow rhythms to be recorded on the built-in drum machine (a series of buttons with percussion instrument icons that may be played to produce various instrument sounds such as snare, bass, tom-tom drums, cymbals, and high hat). Pressing the lower piano keys on some keyboards creates one-finger chordal accompaniments with rhythm background. As long as songs use basic tonic, subdominant, and dominant harmonies, it is possible to provide reasonably attractive accompaniments with one finger. Young children with learning-provider assistance can engage in this activity.

In addition, keyboards can be used for instrument-recognition activities, depending on the sound quality of the specific keyboard.

Practical suggestions for using these instruments include the following:

- Movement to music
- Timbre identification
- Recognition and experimentation with music elements
- Singing and playing to music backgrounds
- Personal awareness of musical achievement by recording songs that have been composed or improvised

When purchasing a keyboard, look for the following features:

- Capability for song accompaniment tempo change.

- High-quality timbral representation of brass, woodwind, string, percussion, and keyboard instruments.
- Record and playback of compositions and rhythms played directly into instrument
- Included musical games.
- Incorporated drum machine—ability to record rhythms, and corresponding percussion instruments.
- Appropriate piano key size to fit hand of player.
- High-quality construction and durability.
- Polyphonic ability of instrument—Can it play more than two notes harmonically at a time?
- Preprogrammed tunes that are of musical value and in keys within child's singable range.

It may be better to spend a little more money initially to obtain a more durable item that has a higher quality of sound and more features, as the possibilities for utilization with additional activities become greater.

Percussion and Guitar Instrument Toys

Many instrument toys are available that provide opportunities for young children to experience and create with rhythm and harmony. Drum pads are reasonably-priced toys that allow considerable experimentation with rhythm and percussion timbres. Electronic guitars, banjos, and electronic drumsticks, developed specifically for early ages, provide rhythmic backgrounds, chordal harmony, and opportunities to sing, create, and record. Care should be exercised in examining the musical output characteristics of these instruments for quality and appropriate support of musical concepts to be taught.

Software

Music software specifically designed for young children is becoming increasingly more plentiful. Many of the recently developed titles provide opportunities not only for experiencing music elements but also for including parent interaction and guidance.

SingingCoachKidz (www.carryatune.com) pro-

vides an opportunity to improve pitch and rhythm in singing. Good lessons are included concerning learning basic breathing techniques through provided songs and interactive singing involvement. This software is designed for ages 6 and up or for younger children with parental guidance.

Pianomouse Goes to Preschool (pianomouse.com) supports many beginning musical concepts for ages 3–5. Included are the musical alphabet, note patterns, and instrument identification. Composers are also considered and the presentations are fully narrated. Information concerning this software is available at www.ecsmedia.com/indivprods/pianomouse/pianomousepreschool.shtml.

My first CD-ROM toddler (www.superkids.com/aweb/pages/reviews/mulitsub/toddler/1/dkto d/merge.shtml) includes activities for music and other subject areas. Designed for some of the youngest users (1 1/2–3) of any similar product on the market, this software features parent-assisted learning. Fundamental beat exploration is accomplished as young children make a doggie puppet dance to the beat of nursery songs such as “Twinkle Twinkle,” “This Old Man,” and “Mulberry Bush.”

Recommendations for Music Educators

- Develop a session for parents devoted to using technology for home instruction. Parent-group sponsorship of your presentation is a possibility.

- Assess possibilities for developing or including a music page on the school-district Web site. Include a section on home instruction for younger children. Simple songs or pieces can be included in audio/MIDI format for children to click on and/or download (with parental consent). Resources or links to pages with information for parents and learning providers can and should be included.

- Create some musical activities for a music corner that could be developed in the home or at a preschool. Print these as a flyer and send home to K–2 classes.

- Include music software, computer-page activities, or musical toys in your activities.

Coda

Currently, educators are providing opportunities to have young children become familiar with technology at an early age. What greater way for exploration than hands-on music activities incorporating technology as a learning tool? These experiences will be vital as the child goes to school and has to become familiar with technology resources, as is now mandatory in most schools.

Opportunities for improving musical involvement are as varied and valuable as the creativity and ingenuity of music educators. Exciting possibilities exist for young children to develop expertise while working with technology that features manipulation of musical elements. The Internet, CDs, musical toys, videos, and interactive computer games including music activities can be utilized by learning providers to provide such opportunities. We must provide proactive leadership concerning this medium and illustrate how to utilize it imaginatively and appropriately to improve the music education of our young children—the musicians and educators of the future.

Downloads Needed for Perusal of Sites

Many sites mentioned require Macromedia Flash Player, available at www.adobe.com.

Macromedia Shockwave Player is also required and can be downloaded at www.adobe.com.

Lesson Plan 1: Playing with Tempo and Dynamics

Objectives: Young children will experience and experiment with slow/fast, and loud/soft utilizing a Web site (Playing with Tempo and Dynamics—excerpt from Beethoven's Piano Sonata op. 31, no. 3)

Ages: 4–5

MENC's Prekindergarten Standards Addressed:

- 1c. Children experiment with a variety of instruments and other sound sources.
- 1d. Children play simple melodies and accompaniments on instruments.
- 2d. Children invent and use original graphic or symbolic systems to represent vocal and instrumental sounds and musical ideas.
- 4b. Children sing, play instruments, move, or verbalize to demonstrate awareness of the elements of music and changes in their usage.

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Materials:

Computer with Internet connection, rhythm instruments from the music corner, and cardboard and magic markers to make flashcards

Procedures:

1. Access the Playing with Tempo and Dynamics Web site (www.creatingmusic.com/playing/play2.html). Depending on your computer, you may have to wait a moment for files to download. This site requires Macromedia Shockwave Player (the address for acquiring this free software is in the Downloads Needed for Perusal of Sites sidebar).
2. Show young children how to move the mouse so that the cursor moves up and down and left and right. Have children try to do this.
3. Show how to click the Play button and how to adjust slider icons to change dynamics from soft to loud and the tempo from slow to fast. Have young children attempt this.
4. Young children can practice changing the dynamics and tempo by clicking on the icons. "As you move the mouse to make the music faster or louder, I will clap faster or louder." "Now you try as I move the mouse." "What instrument is playing?" "If the computer can play music in different ways, can we sing softer and louder or slower and faster also?" "Let's try with a song we know." "Can we show with our fingers how to play faster and slower as we move the mouse to make the music change?" "How can we show a way with our hands to tell someone to play louder and softer?"

Assessment: Young children will be able to use the computer to change dynamics and tempo on the suggestion of provider or their own initiative by using mouse to point cursor on screen.

Continuation Activities:

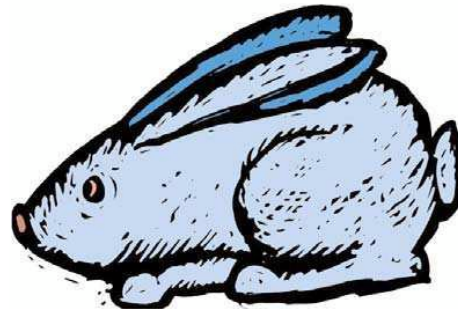
- Develop a game where one child makes computer changes and another child or learning provider has to identify the alteration.
- Try similar ideas away from the computer. "Can we take other songs that we know that do not use the computer and sing and clap faster and then slower?" "Let's try!" Sing and clap the song. "Let's make the song softer and louder!" "Can we sing and play softer and faster and then louder and faster?" "Let's use

the rhythm instruments in our music corner to try to play slow and fast and soft and loud.”

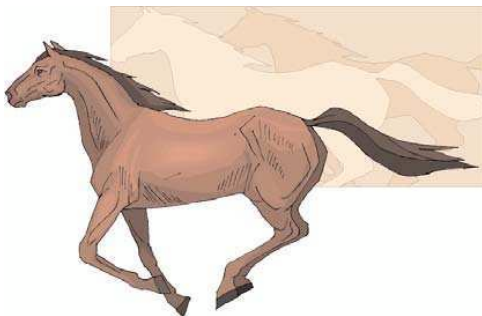
- Play *p* and *f* using other instruments such as drum pads or the electronic keyboard instrument. Volume can be raised or lowered or tempo increased/decreased gradually by child.
- Apply to television or radio listening. Listen to music played and determine musical elements included: soft/loud, slow/fast.
- Make *p* and *f* flash cards using appropriate symbols such as a bunny for soft and a barking dog for loud (see samples below). As you listen to CDs or cassette tapes of known songs, show when music is soft/loud. Slow/fast cards can be developed and used in a similar manner.



Loud



Soft



Fast



Slow

Lesson Plan 2: Playing and Composing with Timbres and Scales

Objectives:

- Young children will experience and experiment with major and minor scales played and various instrumental timbres utilizing a Web site (Playing with Scales).
- Children will play simple melodies using the number keys on a standard computer keyboard and virtual instrument sounds accessed by the computer.
- Children will experiment with rhythmic accompaniments produced by computer and then add their own rhythm instruments to play along with these sounds.

Ages: 6–7

PreK Standards Addressed:

- 1c. Children experiment with a variety of instruments and other sound sources.
- 2c. Children create short pieces of music, using voices, instruments, and other sound sources.
- 3a. Children identify the sources of a wide variety of sounds.
- 4b. Children sing, play instruments, move, or verbalize to demonstrate awareness of the elements of music and changes in their usage.
- 4c. Children demonstrate an awareness of music as a part of daily life.

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Materials: Computer with Internet connection; cardboard; magic markers; rhythm instruments from the music corner; large pictures of clarinet, oboe, and xylophone; cassette recorder for recording songs; cardboard with staff lines; and magic markers

Procedures:

1. Access the Playing with Scales Web site (www.creatingmusic.com/playing/play3.html). Depending on your computer, you may have to wait a moment for files to download. This site requires Macromedia Shockwave Player (see Downloads Needed for Perusal of Sites sidebar).
2. Click the Play button and listen to the scale. “Can we sing with the scale as it is played? Let’s try!” “Let’s change to another instrument.” “Can we identify the instrument?” (Have pictures available for each of three instruments: clarinet, oboe, and xylophone—extending this lesson past the virtual world of computers to real world physical instruments.) “Try the other scale (minor). It has a different sound. How would you describe it?”
3. “Let’s play some notes on the keyboard.” “The scale we see on the computer screen has eight notes.” “Let’s use the numbers 1 to 8 on the computer keyboard to play some melodies.” “Click Play and begin.” Try to play songs such as Mary had a Little Lamb (3212333222355 3212333322321). Use the number keys on the computer keyboard after clicking Play. Let the learning provider play and both children and provider sing.
4. Young children can compose short songs using the number keys. The learning provider can write these down so that they can be played again. Try to sing the songs created. Use a cassette recorder placed next to the computer speaker to record the songs composed.

Assessment: Young children will be able to use the computer to play scales and create melodies by using the number keys on the keyboard to produce the notes. Young children can listen and recognize the timbral sounds of the clarinet, oboe, and xylophone and will be able to identify these instruments from the pictures available in the music corner.

Continuation Activities:

- Play a song (“Twinkle, Twinkle”—11556654433221) and other patterns. “Let’s sing with the computer.” Play a tune you both know and have the children sing with you after you play the tune and then as you play. Switch roles and have young children try to create a short song that you sing on a neutral syllable. Add lyrics that you both create.
- “What do the notes we are playing look like on cardboard—can we draw the notes on cardboard?” Copy the known song on cardboard with staff lines so that these can be examined. “Perhaps we can draw some notes on our cardboard and then try to play them on the computer.” (Utilize numbers, notes, or note names—your choice—applicable to your teaching.)
- Play rhythm instruments along with the computer. Teacher can click (-) or (=) keys on keyboard after clicking Play to provide a rhythmic background, which continues as children or teacher play notes using 1–8. (Information for accessing rhythm background is included on Web page.) “Let’s just clap with the rhythm instrument sounds provided by the computer.” “Can we recognize their sounds?” (Bongos, snare drum, cymbal, piano note bass.) “Let’s play along with the computer with our rhythm instruments.” Use rhythm instruments included in the rhythm corner. “Can we play loud or soft with the computer?” Try to do this. “Can we do a movement activity with our hands to show what the computer is playing with the rhythmic background?” “How about with our body, feet, hands, fingers, and head?”

Lesson Plan 3: Singing, Composing, and Creating with a Keyboard Instrument Toy

Objectives:

- Young children will sing songs accompanied by a toy keyboard utilizing one-finger harmonic/rhythmic accompaniments provided by the learning provider or child.
- Young children will record rhythm backgrounds for performance and movement using the drum kit included with the portable keyboard. Young children will utilize rhythmic instruments from music corner (drums, tambourine, maracas, cymbals) to play with the prerecorded rhythm backgrounds produced by the portable keyboard.
- Young children will compose and record songs utilizing the keyboard memory feature.

Ages : 6–7

PreK Standards Addressed:

- 1a. Children use their voices expressively as they speak, chant, and sing.
 - 1b. Children sing a variety of simple songs in various keys, meters, and genres, alone and with a group, becoming increasingly accurate in rhythm and pitch.
 - 1c. Children experiment with a variety of instruments and other sound sources.
 - 1d. Children play simple melodies and accompaniments on instruments.
 - 2c. Children create short pieces of music, using voices, instruments, and other sound sources.
 - 3a. Children identify the sources of a wide variety of sounds.
 - 4b. Children sing, play instruments, move, or verbalize to demonstrate awareness of the elements of music and changes in their usage.
 - 4c. Children demonstrate an awareness of music as a part of daily life.
- (From *The School Music Program: A New Vision*. Copyright © 1994 by MENC: The National Association for Music Education. Used by permission.)

Materials:

Keyboard toy that allows recording of melodies played on keys and recording of created drum parts played by using the keyboard drum kit (buttons that play various percussion instruments such as snare and bass drums, high hat, cymbals), rhythm instruments from the music corner, pictures of percussion instruments, paper or cardboard, and magic markers

Procedures:

1. Explore the possibilities of the keyboard instrument toy with young children. Experiment with the drum machine, different timbral sounds, prerecorded rhythms, and opportunities to produce chordal accompaniment patterns with one finger.
2. Note the various prerecorded songs that can be played and play these. Have children clap along with the steady beat (macrobeat) of songs. If song is known, sing along with words or on a neutral syllable. Use the buttons that provide the drum kit sounds (snare, bass, etc.) and have children provide macrobeat accompaniments by playing these as the included songs are played. “Which sounds do you like the best?” “Let’s try different ones and see!” Identify each instrument and use a picture of the percussion instrument from the music corner to provide visual representation.
3. Using record memory on the keyboard, create/compose a song by playing on the keyboard. Listen to it

several times and then the child or learning provider can create words for it. Try to sing the song. If keyboard has a microphone that allows sound to be amplified through keyboard speakers, have children sing song into microphone as song is played back by keyboard memory.

4. With the auto-accompaniment feature, improvise a one-finger accompaniment using I, IV, and V chords. Learning provider sings a song already learned with young children while providing a one-finger accompaniment. Both provider and young children sing song. Young children try to provide the accompaniment with assistance.
5. Play tunes and change dynamics from loud to soft using volume slider. Change tempo from fast to slow using tempo slider.
6. Using the drum-machine record feature, compose a rhythm that features several of the instruments provided. Replay this rhythm many times and use rhythm instruments from music corner to imitate it. Try to write this rhythm down, recognize it on paper, and replay it.

Assessment: Songs sung and played by young children and learning provider will be in tempo and accurate to patterns and accompaniments provided by keyboard. Young children will be able to produce short melodies that will be sung by the learning provider or the children. Reproducible rhythms will be created through use of drum machine that can be written down, recognized on paper, and played again. Young children will be able to change dynamics, tempo, and instrument timbres at will and provide a simple explanation as to what changes occurred.

Continuation Activities:

- Comment on the percussion instruments you are using from the music corner. “What are the sounds when you produce them, and how do you produce them?” “How do you play each instrument?” (Tambourine—hit/shake; Maracas—shake; Drum—strike with mallet; Cymbals—crash/strike.)
- Write down song created using graphic notation and children can try to “read” from paper, symbol sheet, or staff.
- Develop body or creative movement activity to basic rhythm patterns entered by young children/learning provider into the keyboard memory or to prerecorded rhythm patterns that already can be played.
- Allow young children to develop chord-harmony patterns using chord buttons with rhythm background. Learning provider can write down chord patterns created on a piece of paper for replaying by children.
- Have young children create and play a melody on keyboard that can be identified by keyboard pitches. Place masking-tape letter notes on keys if needed to assist with replaying.

Online Sites for Experiencing and Working with Musical Concepts

• Creatingmusic.com, developed by Morton Subotnick, is an online creative music environment for children of all ages. It's a place for kids to compose music and perform music and interact with music games and music puzzles. This site provides interaction opportunities for early childhood music. The site features the following:

Musical Sketch Pad. Allows student to draw music on-screen with various timbres represented such as trumpet, keyboard, and drum. Interaction may be at various speeds that can be selected easily by using the mouse. Good experience for learning to manage the mouse as well as interacting with timbres and creative composition. Starting and stopping of composition can be accomplished by clicking the conductor icon (www.creatingmusic.com/mmm/).

Rhythm Band. Lets you create and compose your own rhythm band compositions utilizing drums and Latin instruments. Tempo can be changed and sounds played in retrograde. This site allows an opportunity to compose with more than one rhythmic instrument (www.creatingmusic.com/mmm/mmmrb.html).

Games and Puzzles. Games: Allows creation of melodies utilizing instruments selected. Various skill levels increase interest in the creative process. Puzzles: A phrase of music is broken up and player can reconstruct this by placing the broken sections (represented by colored balls) in proper order. Phrase can be played as many times as desired for a model, as parts are assembled (www.creatingmusic.com/puzzles/index.html).

Cartoon Conductor. Moving the cursor around with the mouse allows for various characters to be symbolized by representative sound groups and music (www.creatingmusic.com/cartoons/index.html).

Melodic Contour. The player may select scale direction: up, down, stay the same, or various up and down patterns. Icons illustrate musical direction of sounds played (www.creatingmusic.com/contours/index.html).

The **Playing with Music** site is excellent for con-

sideration of what can be accomplished by including technology in developing timbre awareness and creative composition. Using excerpts from Beethoven's Piano Sonata no. 1, children can experiment with concepts such as slow/fast and forward/backwards (www.creatingmusic.com/playing/index.html). Playing with Scales allows the child to play scales using various timbres in major or minor, featuring clarinet, oboe, or xylophone. Using the 1–8 keys on the computer keyboard allows student to play scale tones and create melodies. An opportunity for creating a rhythmic background for melodies created can be achieved with certain keys on the computer keyboard. Young children, with learning provider supervision, can do the clicking (www.creatingmusic.com/playing/play1.html).

• PBS Kids provides opportunities for games, stories, music, and coloring. The music site allows listening to and singing of songs. Downloading of lyrics is also possible so that parents and teachers can print them out. Other valuable sites, such as *Mr. Rogers' Neighborhood* and its theme, are available with songs, lyrics and music, stories, and make-believe. Information is provided for parents concerning music in the lives of their children (<http://pbskids.org/>).

• JumpStart Reading with Karaoke is a great site for work with integration of reading, music, and other subjects (www.jumpstart.com/featured.aspx).

• Backstage is a page that portrays various instruments of the orchestra (www.playmusic.org/stage.html). Sound illustrations as well as short movie examples of older students playing the various instruments are included. Check out www.playmusic.org/brass/trumpet.html www.playmusic.org/woodwinds/index.html www.playmusic.org/percussion/index.html

• Hop Pop Town is an experimental project that focuses on new technology and its potential for educational applications. An example: Friends at the Happy Hill (www.kids-space.org/HPT/1/11.html). Also look at Singing Leaves (www.kids-space.org/HPT/1/12.html).

- Educational music toys related to this article: <http://fredkersten.com/EarlyChildhood/EarlyChildhood1.htm>. Note the Learn through Music system as it helps students learn about music.

- The Piano Player has an interactive keyboard and features the scale. Children participate in tone recognition by clicking on notes of the piano keyboard, and there are quizzes associated with prior playing of the notes. If the note is played correctly,

reinforcement is provided, and students know their selection was correct. This site requires both Flash and Shockwave plugins (www.funbrain.com/cgi-bin/nt.cgi?A1=s&A2=0).

- *teAchnology* is a very valuable omnibus site with music resources, songs, philosophy, access to materials, and music activities (www.teach-nology.com/teachers/early_education/subject_matter/music/).

MENC Resources for Parents and Professionals

- *Start the Music Strategies* is excellent and comprehensive as it includes research, developmental philosophy, lessons, and creative ideas (www.menc.org/guides/startmusic/contents.htm).

- Musical Passports from MENC. The tunes and activities on this page are included in a well-developed lesson-plan format that easily can be used in the classroom (www.menc.org/guides/startmusic/chp3.htm).

- More songs and lesson ideas for young children including “Twinkle, Twinkle, Little Star,” “Hello There,” “It’s So Good To See You” (www.menc.org/guides/startmusic/chp1.htm).

- The MENC Position Statement on Early Childhood Education provides a valuable overall consideration of music in early childhood. A great source of information concerning early childhood that helps in developing parameters of philosophical orientation towards teaching in this important area (www.menc.org/information/prek12/echild.html).

- Start the Music—A Report from the Early Childhood Music Summit. Sponsored by MENC: The National Association for Music Education, the

National Association for the Education of Young Children, and the U.S. Department of Education. Supported by TEXACO; Washington DC—June 14–16, 2000 (www.menc.org/guides/startmusic/stmreport.htm).

- Early Childhood Special Research Interest Group. This dedicated organization provides specific information for early childhood music educators (www.auburn.edu/academic/societies/early_childhood_srig/).

- MENC’s early childhood publications. A well developed comprehensive source of information that can be obtained through MENC (www.menc.org/guides/startmusic/appendix.htm).

- Early Childhood Resources is a good page with links to many fine sources for background and research (www.menc.org/networks/earlyc/earlycres.htm).

- The Performance Standards for Music: Grades PreK–12 are very important for providing assessment criteria for lesson development (www.menc.org/publication/books/performance_standards/prek.html).

Online Sites for Musical Toy Perusal and Ideas for Inclusion

- KB Toys provides a comprehensive offering of current musical toys (go to www.kbtoys.com and search for music). Note Dora's Music Festival Adventure Software. Student with teacher help can work with instrument sounds/recognition, and tempos (ages 3–6).

- Ready Set Learn! Jump and Dance Mat. A colorful dance mat for integrating music and movement. The mat will respond with melody, lights, and sounds to a selected melody or the young learner can play “follow me” and follow lights and music. Motor skills, creative play, and problem solving are included in activities during physical response to music, lights, and sounds, ages 2–4 (go to <http://shopping.discovery.com/> and search for Jump and Dance Mat).

I Can Play Piano System Platform from Fisher-Price allows children age 4 through 8 to learn to play piano, read music and practice (www.pianowizard.com/i-can-play-piano). The three-octave keyboard connects to the home television set to create an inexpensive interactive system that allows optimum eye-contact and focus. Four learning modes provide a transitional learning hierarchy of steps, from initially imitating notes visualized on the screen and played on the keyboard, to playing music utilizing traditional music notation. You can view videos of basic features regarding this system at www.pianowizard.com/movies.php.

- Discovery Mozart Magic Cube allows young child to compose and arrange with orchestra-quality sound to encourage creativity. By pushing instrument buttons with pictures, child can hear a specific instrument or delete it from the ensemble. This toy won a Seal of Approval from Parent's Choice Award in

2000 and was developed through the efforts of medical and educational professionals. Highly recommended for involving children in timbre recognition and experimenting with elements of music, ages 2–6 (www.munchkin.com/products/detail.html?section=prodCategories&ID=10006&pID=253)

- Discovery.com is a good site for examining quality music education toys that are currently available (go to <http://shopping.search.discovery.com> and search “music” and “toys”). The Discovery Phil Harmonic Audio Developer is a toy that includes an internal clock adjustment that can be set to grow with the maturity of child from infancy to toddler (ages newborn +). Over 60 nature sounds, songs, international lullabies, stories, and rhymes are provided and can be activated by baby-friendly buttons and dials. Voice prompts encourage baby to participate in speech development and music composition. The toy description has specific information on growth stages and lesson ideas (go to <http://shopping.discovery.com> and search for the Phil Harmonic Audio Developer).

- Little People Children's Music is a good source of songs and materials that are available and can be utilized by parents with children ages 2 to 6. Available in CD or cassette versions (www.fisher-price.com).

- Shopzilla music site is a good site for research and comparison by price, age, and brand (go to www.shopzilla.com and search for musical toys).

- For the music corner look at the Roll A Piano Electric Piano that you can roll up and put in a pouch. This device includes 10 demo songs, 16 tone choices, and 99 rhythm choices over a full three-octave range. Information at www.welistit.com/tv.html. Search for Roll A Piano.