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# Using Music Technology in Music Therapy With Populations Across the Life Span in Medical and Educational Programs

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## Abstract

Despite the call for information about using music technologies in music therapy over 20 years ago, few resources have been realized to guide practitioners in the craft of using these tools in practice. A small number of published case studies describe the use of music technology in practice with adults with neurological needs and adolescents with behavioral disorders. The relevance of music technologies in therapy with other populations of different ages is less clear. Training in using these tools remains outside of standard music therapy curricula. Detailed descriptions of methods in using technology remain illusive. Recent exploratory research indicates that music technologies are used in music therapy with populations across the life span. This article presents detailed case descriptions where music technology is used with children, adolescents, adults, and elders in medical, palliative, and educational settings. Lastly, guidance is offered for establishing a technology service within music therapy programs.

## Keywords

music therapy, music technology, software, assistive devices, adults, elders, children

## Background

The use of electronic music technologies (EMTs) and resources in music therapy practice has been of increasing interest over the last 2 decades. Music technologies useful for clinical settings include computer-based applications such as software<sup>1-5</sup>; devices using musical instrument digital interface (MIDI)<sup>6-8</sup>; and assistive devices to trigger musical applications.<sup>3,9-11</sup> Empirical studies reveal that EMTs can quantify physical gains in rehabilitation<sup>11,12</sup>; can correlate musical responses and pathology<sup>13</sup>; and enhance client independence in music-making.<sup>14,15</sup> Motivational aspects of these tools include the capacity to produce a vast array of high-quality musical sounds, particularly those used in current chart music genres,<sup>1,2</sup> thus enabling expression of identity relating to ethnicity or sociocultural needs.<sup>14,15</sup>

Computer music software and other MIDI devices are useful tools in therapy with adolescent clients who are otherwise difficult to engage.<sup>1,2,5</sup> The clinical benefits of using composition software with adolescents with behavioral disorders include developing social skills, group decision-making, and learning

development.<sup>1</sup> Technology used with people with complex needs typically uses alternative input devices (eg, assistive devices such as switches and sensors) to access music software or other MIDI devices. This enables active participation in music-making for clients whose physical disabilities prevent playing acoustic instruments.<sup>3,4,7,8,10</sup> Clinical outcomes

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describe enhanced quality of life; reduced feelings of isolation and withdrawal; a renewed sense of purpose in life; and feelings of self-accomplishment, skill acquisition, and increased self-esteem.

It is over 20 years since the need for training in using such resources in music therapy was identified.<sup>1</sup> Despite this, training in using EMTs in music therapy remains outside standard music therapy curricula. There remain few guidelines for practice, empirical investigations, or detailed descriptions of this emerging area of practice.<sup>16,17</sup> Guidance is required for the optimum use of these tools in therapy, including selecting the most appropriate resources; procedures and principles of practice; and in-depth descriptions of clinical cases from wide and varying populations and the settings in which therapists work.<sup>16,17</sup> With the rapid rate of technological advances, many of the existing case descriptions include technologies that have long been out-of-date. Preliminary indications and contraindications have been proposed although these require further testing.<sup>14,15</sup> The need for research into the effectiveness and outcomes of EMTs with a range of populations continues.

Published case illustrations have signaled the usefulness of music technology with adolescents who are physically able but have behavioral disorders.<sup>1,2,5</sup> Its use has also been described with young adults with complex neurological disabilities.<sup>3,4,7,8,10</sup> It is less evident that music technology might have a place in music therapy with infants, children, or the elderly. However, a recent investigation exploring the application of music technology used by music therapists in health and education settings in the United States found technology is a commonly applied tool in therapy across the lifespan, from neonatal to elderly populations.<sup>18</sup> Computer-based applications emerged as prominent tools for recording, improvising, and composing within therapy. Assistive devices such as switches and augmentative alternative communication (AAC) devices are also commonly employed within music therapy practice; however, there is little information about specific interventions in music therapy in which clients use AAC devices.<sup>19</sup> Furthermore, previous research on this topic indicated that technology has a particular role when working with clients with sensory needs.<sup>14,15</sup> Despite this, published reports using these tools in therapy do not refer to this population.

This article aims to offer broader applications of EMTs which are currently employed to meet therapeutic goals. We offer examples with a wider range of populations than previously described (age range 8 to 71 years) with varied sensory, medical, physical, and cognitive challenges in medical, educational, and palliative settings through 7 case vignettes. Through presenting populations of differing ages, with different needs and in widely varying clinical settings, we illustrate that music technology is a versatile tool requiring a range of methods. It is a challenge for therapists to develop the relevant knowledge and the scope of clinical skills to deliver appropriate methods using EMTs. We offer a brief introduction to the array of methods in current practice with the intention of inspiring therapists to explore these further in their own practice.

Drawing from a recent exploratory study of current practice,<sup>18</sup> we offer examples of EMTs in individual and group

work, focusing first on the use of assistive devices in educational settings. The first 2 vignettes describe switch use to enable inclusion in group settings for adolescents with complex physical and cognitive problems. Vignette one illustrates using AAC devices in joint music/speech therapy; vignette two depicts switch use to play in the school band. Vignette three shows how AAC devices are used in music therapy with clients with sensory impairments. We then present computer-based applications in individual therapy in hospital and school settings. Vignettes four and five demonstrate using software for composition and creating personalized compact discs (CDs) with a hospitalized child following a burns injury and an adolescent with sensory impairments and cognitive challenges. Vignette six illustrates using recording software with an elderly woman in hospital. The final vignette describes a man in the palliative stages of cancer treatment using production software. Lastly, guidance is offered for establishing a technology service as part of a music therapy program.

## Assistive Devices in Music Therapy Programs

When individuals have limited capacity for speech or physical interaction with their environment due to severe movement disorders or complex combinations of physical, cognitive, and sensory needs, assistive devices enable access to computer-based software. Devices include switches, which can trigger musical output from computer-based applications similar to using a mouse and “voice output communication aids” (henceforth called “VOCA”). VOCA are typically used with individuals who cannot communicate using speech, involving switch activation to express a single word or short phrase that has been recorded onto the aid. In addition to spoken output, therapists can record single sung words, short sung phrases, single musical notes, or instrumental motifs onto VOCA quickly and easily during the session.

Assistive devices, and in particular VOCA, offer a hierarchy of complexity along the spectrum of communication development at levels of one or two words, single phrases or complex sentences. For students with multiple disabilities, the use of VOCA allows for independent participation in group music making. Co-led interdisciplinary intervention (eg, music/speech therapy) incorporates the technology that best allows each client access to participation across all settings. Working to meet the client’s program goals, music therapy activities are designed to provide opportunities for rehearsing switch use. This reinforces broader program goals and enables interdisciplinary working with colleagues from speech therapy and occupational therapy. Initially, the client needs to learn to use the device including establishing the client’s awareness of “cause and effect.” The focus can then change to using the device for intentional communication. Using a switch/VOCA, the client “sings” or “plays” the word/phrase/note/motif at a specific time within tasks.

In settings where assistive devices are routinely used in daily life due to physical, communication, and cognitive challenges, incorporating devices in music therapy can be

motivating, assist with developing “cause and effect” and enable social communication skills within musical turn-taking exchanges and group interactions. Interdisciplinary teams in such settings are challenged to facilitate shared experiences where students of differing abilities may contribute equally. Pairing technology with music helps learners with diverse educational and social needs become a cohesive group.

### *Case Vignette One: Using VOCA With an Adolescent With Complex Needs in a Joint Music/Speech Therapy Group*

Amando exudes a natural warmth and the ability to connect easily with others. He is a student with significant cognitive challenges and fragile health status who is nonverbal. Due to Spastic Quadriplegia, Amando’s only active movement is a slight head turn. An understanding of cause and effect is noted along with the ability to make basic needs known. Amando demonstrates significant interest in social interaction; he frequently communicates his pleasure in response to being part of the music therapy group experience through vocalizations and affective responses. He uses a multistep VOCA that is activated through the use of a switch positioned at his left temple area (known as a “toggle” switch). The VOCA allows him access to participation in his class group of 5 friends, each of whom presents with unique communication abilities and ways to interact with others.

For Amando, incorporating technology creates the possibility for active and independent participation in this group. The type of activity determines whether he will use the VOCA to participate freely or if he will participate in an orchestrated manner, activating the switch only at the time indicated by the musical structure. For example, during the greeting activity, a sung “Hello” is prerecorded on his VOCA. Amando activates his VOCA (via the toggle switch) only during his turn, waiting and listening during other’s turns. Time-dependent use of the switch also occurs when a specific song phrase or lyric is recorded on the switch. With a multistep VOCA, Amando is able to sequence phrases of the song; each activation of the switch produces a different phrase.

When the group is engaged in improvised music making, Amando activates the switch to play music with other group members. During the initial setup of this type of activity, the music therapist offers him a selection of instrumental sounds. Amando uses his prerecorded device to say, “That’s what I want,” indicating his choice. The therapist records onto the VOCA a melodic or rhythmic motif played on the indicated instrument. The tonality or style of this motif will have been determined by general activity in the group, such as the pitch of vocal sounds offered by group members, or known preferences for musical styles. Once recorded, Amando can then play within the group’s music making, pressing his toggle switch with his head, which in turn activates his VOCA onto which the motif was recorded.

The therapist facilitates interaction by creating a musical structure that includes both the acoustic instrument playing and switch activations of group members. Developmental progress has allowed Amando to discover the possibilities a VOCA holds for interaction with others. This has followed a path from perseverative switch use to an understanding of cause and effect, leading to the start of purposeful communication. Amando no longer depends on hand-over-hand assistance to participate in the group. Technology allows him to make independent contributions and actively respond to the music of others.

### *Case Vignette Two: The Use of Switches to Enable Inclusion in the School Band*

At the Massachusetts Hospital School (MHS) in Canton, Massachusetts, integration is a major challenge with a population of students hospitalized in a medical setting and with widely varying needs. Responding to this challenge, the music therapy team established an ensemble for students with complex cognitive and physical disabilities who demonstrated strong cause and effect skills and could follow simple conducting cues. The ensemble enabled switch users to become a part of the school band. Playing in the band alongside students with less complex needs presented switch users with musical challenges that they may not have experienced in groups using switch activated music only. With students aged 12 to 22, the band addresses nonmusical goals such as team building, peer support, and self-expression. Musical goals include reading adapted notation, exposure to repertoire, following musical cues and performing in a group.

A group of switch accessible music software programs for playing music using assistive devices, “Switchintime,” was designed for use with the MHS band and has been used for over 15 years in this setting (see note 1). The first switch group, known as the “The Headbangers,” was created in 1998. This performing group planted the conceptual seed for integrating students of various abilities into an ensemble. In this model, 6 students activate the software using assistive devices to play chords, sound effects or melodies within a section of the school band. The music therapy team arranges the songs and exposes students to a variety of music from different genres. Through the use of specialist software and assistive devices, the band offers students with complex physical and cognitive challenges the experience of playing similar music to that played in music programs by students without special needs.

Technology allows the students an opportunity to play in an ensemble and perform in the band for their community, families and friends, even though their challenges prevent them playing traditional instruments. Parents are frequently amazed and thankful to see their child on stage performing music. Students have reported feelings of accomplishment, contributing to a group, validation and praise from family and friends. Joining the band has become a sought-after status within the school. After a recent performance, a parent approached the music therapist asking how her daughter could get a place in the band. She commented how much the group would mean

to her daughter and that she would be working on her switch skills without knowing that it is work. The band experience motivates students to utilize their assistive devices with peers and to create a shared musical moment that is rewarding to them and the listener.

### *Using Assistive Devices With People With Sensory Impairments*

Conceptual learning can be difficult without visual information but is aided with the addition of auditory sensory cues. When working with children with visual impairments, VOCA devices are useful tools for developing an understanding of abstract concepts and can be integrated well into music therapy treatment. Once a student demonstrates a working understanding of VOCA in a simple greeting song, therapists can create activities to further appropriate developmental goals.

#### *Case Vignette Three: Using VOCA With an Adolescent With Sensory Impairments*

Brendan was a teenage boy with cerebral palsy who was blind, nonverbal, and severely neurologically impaired. He had significant sensory integration issues. The collaborating therapists (speech and music) observed how Brendan became engaged during activities in which switch-use was embedded within the music. They became inspired to teach him concepts using sung phrases on the VOCA as a motivator and for directional auditory cues.

After consulting with Brendan's teacher, directional concepts of "up" and "down" were chosen as a target area. The music therapist wrote a song that repeated the direction to reach "up" or "down" in a simple melody. Within the melodic structure, a space was created for Brendan to hit a switch that was held above his head or down by his feet. When hit, each switch produced a concluding recorded phrase of the music therapist singing "up, up, up, up" in an ascending line or "down" in a similar descending line.

The first task introduced was to reach up. Initially, Brendan required verbal cues and physical prompts at his elbow, as well as auditory cues created by tapping the side of the switch. Brendan learned to localize to these auditory cues and began to reach in the desired direction. Once well-integrated, Brendan was introduced to the task of reaching down in the same fashion.

While the concept of reaching down was challenging for Brendan, he was able to complete the task by a process of elimination; when Brendan reached up for a switch and could not find it, he began to reason that the switch must be down at his feet. Brendan would sweep his arm down through the air to find the illusive switch.

Using the single switch provided a concrete task (ie, activation) while underscoring an abstract concept (ie, reaching in a specific direction). The activated recording was embedded within a musical phrase where melody and rhythm assisted in

placing the words in time. Thus, the auditory sensory cue compensated somewhat for the lack of visual information. The use of a VOCA in this instance gave him realistic, concrete feedback related to the concept being learned, which acoustic instruments would not have been able to provide.

### **Computer-Based Applications in Music Therapy Programs**

Computer-based applications have several primary uses in music therapy. First, software with recording capacity is used to record live music created during the clinical session. Recordings can be made of any event within the session, including instrumental or vocal improvisations, group and individual songwriting, and verbal material. Beyond what is possible with traditional recording methods, software enables postproduction of a musical product to a professional standard, either to change existing recordings of favored artists or edit music created within the session.

Second, repeated segments of music may be "looped" and used within compositions or live improvisations. Loops are formed using either segments of live music recorded within the session or selected from the application's library of samples. Software programs provide banks of widely varying synthesized or sampled sounds, useful when using either recording or looping methods. The use of synthesized sounds to create music in the style of a client's favored musical genre was noted sometime ago.<sup>1</sup> However, with the increased use of computer applications in professionally produced popular musical genres (eg, hip hop; electronic; dance) these tools are now more relevant to therapy providing limitless possibilities for creating music in any genre. The capacity to create loop-based projects is particularly pertinent for music therapy practice. The use of ostinati patterns is an important feature of clinical improvisation using acoustic instruments within music therapy. Loops in various software programs can be used as ostinati patterns forming the basis for improvisation. This frees the therapist from the role of playing the ostinato to take other musical roles within a group. Loop-based projects can layer a variety of prerecorded instrumental patterns as well as live instrumentation or vocalization created in the session, which may then be treated with digital effects. This facility is particularly significant for popular music genres such as rap, where the therapist can be freed to engage in vocal improvisation with the client.<sup>20</sup>

Third, applications may be used to access existing recordings, often of favorite artists or songs (eg, iTunes; YouTube) and make CD recordings of music of personal meaning. This provides a culturally relevant means for self-expression for people of any age and background. Within all 3 methods, computer applications are also frequently used to produce a tangible product of the therapy process in the form of a CD. The following vignettes illustrate the use of computer-based applications with children, adolescents, adults, and elders in educational and medical settings.

### *Case Vignette Four: Computer-based Applications With a Child Hospitalized Following Burns*

Marta (8) was injured in a house fire with her sister, Maria, and mother, Frida. All were flown to Boston from Honduras for burn care, having sustained second and third degree burns. Marta's injury was the least severe. Maria and Frida were intubated and sedated.

Marta expressed feelings of helplessness and grave concerns about her mother and sister during the initial music therapy session. The music therapist suggested creating personalized CDs for Maria and Frida with their favorite songs and messages from Marta. Marta eagerly agreed. Using iTunes, the music therapist helped Marta choose specific songs for each family member. Using GarageBand (see note 2), Marta recorded herself speaking personalized messages for her sister and mother. These messages were interspersed through the playlist so that each recipient would hear Marta's voice throughout her CD. Next, the therapist helped Marta write a song for her mother. Using samples on GarageBand including Latin Lounge Piano, Funky Latin Drums, Conga Groove, and Cartoon Chipmunk, Marta wrote a short tune she titled "Barbie Bailar." She smiled and said she felt proud of the song. Finally, the music therapist delivered the individualized CDs to Frida and Maria and gave a copy of each to Marta.

Being a child who was alone in a foreign country, Marta's goals were to connect to her loved ones, to be empowered, to gain control, and to experience being successful. This simple use of technology addressed these goals. First, creating the CDs facilitated her connection to her injured family members whom she was unable to visit. Second, Marta was able to help her family members by reassuring them with her messages (eg, "The nurses here are nice" or "Mama, I am doing good"). Third, the intervention helped Marta experience feelings of control through her creative direction within the work. Finally, these interventions allowed Marta an opportunity for mastery. Providing Marta copies of both CDs gave her a tangible symbol of her success. Using music technology allowed Marta to meet her goals and create immediate products (the CDs) that were aesthetically pleasing. She would not have had the same outcome with acoustic instruments for she did not have any previous music training and her tolerance for frustration was severely limited by her emotional state. Technology met her desperate desire to help her mother and sister as they struggled for their lives. Later in her music therapy treatment, the music therapist did combine acoustic instruments and music technology to further her creative expression and continue to give both sisters ways to remain connected to their mother.

### *Case Vignette Five: Computer-based Applications With an Adolescent With Sensory Impairment*

At the Perkins School for the Blind, students in the Lower School program are 10 to 15 years of age. These students are generally highly verbal, but often present with social, emotional, behavioral, and learning needs. Garageband is used in

music therapy with these visually impaired/blind children in both group and individual sessions. Musically, many of these students are drawn to contemporary pop, rock, dance, hard rock, and metal styles of music. Students are extremely motivated to utilize music software because it provides them with an opportunity to create music that is a more authentic representation of their preferred music.

Gary was a 15-year-old visually impaired client living with mild cognitive impairments and emotional regulation difficulties. Garageband software provided opportunities for creativity and self-expression that had not been available to him within standard acoustic music-making. He used Garageband to collaborate and compose with his peers in group settings and also in individual sessions. His projects varied stylistically, covering a wide range of compositional and arranging techniques. These included recording "live" performances of compositions or improvisations; integrating loops and digital effects to expand his repertoire of sound; and as he became more proficient, he fused these different elements, thus creating advanced arrangements. While Gary often relied on the therapist to help navigate through the visual elements of the software, he was able to explore and assume leadership within virtually all other aspects of the creative process. When Gary completed his tenure at the school, he had a collection of more than a dozen original recordings. The process for Gary concluded with a CD release party at which he shared his music with an audience of staff and peers. As a student with significant self-confidence and self-esteem issues, Gary was rewarded and took great pride not only by the process of creating his music but also in the product that was the end result of his work.

### *Case Vignette Six: Recording Software With an Elderly Woman Receiving Radiotherapy*

A 78-year-old woman completing radiotherapy treatment in an acute hospital setting was referred to music therapy to commemorate the end of her treatment protocol. The goal was to reduce the anxiety that often accompanies this treatment milestone. She and her 55-year-old daughter were only seen once, for a 15-minute session in the waiting room of the infusion clinic. Although the patient was struggling with her emotions, she was eager to talk about music and its role in her and her family's life. Both mother and daughter identified themselves as singers, fondly remembering the times they spent together in their community choir. Music technology was briefly introduced, explaining that it could record a song and transfer their music to a CD within 5 minutes. Although this was an entirely foreign concept to the patient, she agreed, stating that she was "going to make a record." The mother-daughter pair easily fell into their musical past, singing 2 songs together, hand-in-hand, in perfect harmony. The patient then watched in wonder as the CD was created, providing her with an instantaneous gift of captured memory. The daughter's eyes were filled with tears as the nurse came to wheel her mother back to the infusion unit. She thanked the music therapist for transforming their

day of uncertainty into a day of remembering, celebrating, and music that they would never forget with their personalized CD.

### **Case Vignette Seven: Production Software With an Adult in the Palliative Stages of Cancer Treatment**

Tyrone was a 21-year-old man who had dreams of being a famous music producer. Music was central to his existence: he rapped, wrote rhymes, and created electronic beats. Tyrone was also a patient with cancer who had reached the end of curative treatment options. After his third and final relapse, he spent the majority of his last 6 months in the hospital. He was angry and maintained seclusion, keeping his door closed, shades drawn and often turning away all visitors including supportive staff. However, music technology was the key to breaking through that barrier and crafting an initial working relationship with the music therapist. Using a laptop with music software and MIDI keyboard, she created a portable, digital studio in his room, motivating Tyrone to get out of bed. Bringing his world of music technology into the hospital during the first 2 months of palliative care decreased his isolation and increased feelings of empowerment. Staff were amazed to see Tyrone sitting up at his studio, shades up, headphones on, and surrounded by laptops and MIDI keyboards. He spent many sessions with the therapist “showing off” his beats and teaching her about his preferred music software applications. However, his pain rapidly increased necessitating major doses of narcotic medication. Prior to starting the new medications, the therapist asked Tyrone’s help to create a music technology project that would be shared with patients throughout the hospital. Tyrone agreed to help, spending the next 2 hours developing the “*Music Is*” project with the therapist. He played a rhythm he heard in his head on the acoustic drums; at this stage, he could not successfully control the computer due to increased pain. The therapist recorded this into an electronic beat that became the rhythmic foundation of the song. Despite anticipating increased drowsiness due to medication, he requested further music therapy sessions in which he continued work on the project. He was able to participate in 2 more music therapy sessions, adding digital effects and finishing the production of the project using software. During his last music therapy session, he invited several staff members to his room for a grand unveiling of the “*Music Is*” project. He told them that his song was going to be shared with other patients so that they could add their music to his. Music technology enabled him to demonstrate his full professional capacity in the final weeks of his life, overcoming debilitating pain.

### **Developing a Technology Service Within Music Therapy Programs**

As beneficial as music technology can be, integrating technology into a clinical service can be overwhelming for the technological novice. To select the appropriate technological tools and avoid being lured into purchasing equipment that is attractive but overly sophisticated, the therapist needs to

remain goal-centered. By doing so, the therapist can ensure that technology is not being “used for technology’s sake”; rather, that it is being used because it is the best option for that client. Consulting multidisciplinary team colleagues assures a goal-centered approach to determine the risks and benefits of particular technologies.

Once it has been determined that technology is the best solution to a problem, therapists are advised to research the devices available on the market using websites specializing in adapted and assistive technology. Consulting with interdisciplinary colleagues provides opportunities to learn the capacity of different devices and the vocabulary used. Developing this knowledge will optimize finding the appropriate technology to meet a client’s goals. Existing technology may be adapted, if necessary, using a consultant who has the expertise and can fabricate new devices as needed. Consultants include assistive technologists, music therapists with specialist knowledge, electronic engineers, and occupational therapists who have a particular interest in technology. These professionals can be found by partnering with local universities that have an assistive technology or electronic production and design programs. Companies that develop assistive devices can also advise on finding the right device to match a client’s need.

When the therapist approaches a college program or consultant about a music technology idea, it is imperative that she or he has a clear idea of the clinical need and can express this need in a concise way. This facilitates collaboration to develop an appropriate design. The therapist needs to be a part of the design process in order to assist the consultant in understanding positioning needs, muscular strength, movement trajectory, and other aspects of the client’s health that may affect the design. It can also be helpful for the therapist to discuss equipment size and secure storage so that these do not become issues once the device is in the facility. Equipment portability should also be considered; will it be stationary or does it need to travel to several rooms? If so, then equipment dimensions play a role in the design.

### **Summary**

Using assistive devices in music therapy can compensate for physical limitations, enabling enhanced emotional expression, increased communication, and increased autonomy and motivation, particularly for those with complex physical and sensory needs. When a client realizes the control to create a musical sound with movement or the touch of a switch, the possibilities for success are endless. Assistive devices equalize abilities within group settings and enable a sense of belonging and contributing to the purpose of an organized group. This is an experience from which many people with complex needs are excluded. Interdisciplinary collaboration can widen the knowledge base required for complex clinical work.

Recording software is a tool that is easily portable and has the capacity to capture and convert transitory live music moments into tangible, lasting memories, even within the shortest of sessions. Software also provides basic facilities to mix the

music and create a CD in less than 5 minutes, which can engage people of any age. Combined with loop libraries and digital effects, music software provides many options to record messages of love, create soundscapes, capture songs and live improvisation, or create advanced songwriting projects.

Electronic music technologies can enhance the care provided by music therapy programs offered in educational, medical or palliative settings with populations across the life-span, from infants through to elders.

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### Notes

1. See <http://switchintime.com/> for information about these music applications for switch users created by faculty member Jon Adams.
2. GarageBand is a software application that allows users to create music or podcasts with capacity for audio recording, virtual software instruments and MIDI editing. See <http://www.apple.com/ilife/garageband/>.

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