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## Moving Beyond “That’s All I Can Do:” Encouraging Musical Creativity in Children with Learning Disabilities

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### Abstract

*Music offers children with disabilities an opportunity to be creative and expressive; however, accommodating the student with a learning disability in the music classroom poses unique challenges. Children with disabilities exhibit learned helplessness and struggle with school socialization that encourages conformity. Inadequate communication among educators regarding the student’s individualized education plan (IEP) and special learning needs also hampers the process of designing appropriate musical experiences.*

*In this study, the researcher used music technology to provide a multi-sensory learning environment for children with learning disabilities. Observation of the students’ improvisational processes provided insight into how learning disabilities interfere with musical understanding and creativity. A case study involving one student is presented and classroom accommodations are suggested.*

### Introduction

Children with disabilities can be found in every music classroom. Most music teachers are able to make obvious adaptations for children with obvious disabilities: visual or hearing impairments, physical handicaps, and even some cognitive limitations. However, learning disabilities are harder to recognize and accommodate. Most children with learning disabilities look and act like their non-disabled peers, and many are successful in music despite their disabilities. For example, a student who has difficulty reading words can learn choral music by rote and perform well. The same child may have difficulty composing or improvising music. Observing the process of creating music provides insight into the musical functioning of children with disabilities. In this study I am interested in how disabilities interfere with improvising and composing music, and how adaptations can be made to ensure musical success.

The literature on musical creativity provides little guidance for educators in designing music lessons for children with disabilities. Miller and Orsmond (1995) investigated creative behaviors of children with a variety of disabilities as they created music. Children explored small portable keyboards linked to computers that provided detailed records of music created during each session. Children identified by their teachers as being “musical” produced “more organized note combinations and sequences suggesting an implicit knowledge of musical structure.” The researchers concluded that children with disabilities could be musically creative.

Often children with learning disabilities experience inaccurate sensory input or output. Music teachers may need to explore alternatives in order to help children recognize and use compensatory modes of learning in musical activities. For example, a child with visual processing difficulties can shut out visual information by closing his or her eyes and focusing instead on the aural qualities of music. “We, as professionals, must learn not only to recognize these compensations when we work with students, but

we also must look beyond what may be termed wrong answers or incorrect approaches by allowing students some latitude in the learning process” (Welsbacher & Bernstorf, 2002, p. 162).

Welsbacher & Bernstorf also explain that for children with sensory disorders, personal choice in creating music is a new concept. “While personal choice does not deal directly with creative or critical thinking skills, though those are clearly involved, it does deal initially with developing the skills of metacognition” (p. 163). Encouraging children to make personal choices contradicts how most children with disabilities are taught to function in school. Instead of learning to think for themselves, many children with disabilities learn that the key to success in the classroom depends most of the time on finding the right answer and using the right social skills, including the right way to be expressive. Children with disabilities are rewarded for conformity rather than for creativity.

Westcombe, Smith, and Poole (2002) identified problems that students with dyslexia have with reading music notation. For example, some have trouble looking ahead to the next note. Others are slow and inaccurate in deciphering rhythms. Hubicki (2002) developed a multisensory approach that involves using a color-coded staff to help students with dyslexia process music notation.

## Creativity

When studying musical creativity in children with special needs it is helpful to examine literature on non-disabled children. Barrett (2003) promotes music composition in the school curriculum in order to introduce students to “materials and techniques of contemporary music and to develop musical thinking and understanding through composing (p. 5). Hickey notes that children who spend extended periods of time exploring sounds and materials before composing produce more creative compositions. “The ability to deal with fewer parameters is a trait that will encourage creative thinking, and this ability should be developed in children who have difficulty coping in open-ended situations” (p. 34).

Torrance (1974, 1981) and Webster (1991) identify divergent thinking as a characteristic of creative people. Divergent thinking and other characteristics of musically creative children are found in children with disabilities; however, in school they are taught to be convergent thinkers in order to be successful. They learn there is a right and wrong way of doing almost everything and they become painfully aware of the need to fit in with others. Therefore, working in less structured learning environments is often uncomfortable and unfamiliar for children with special needs. In order for children to be creative they must be able to adapt to a freer learning environment however, educators need to remember that children with disabilities may need more structure than non-disabled children.

## Learned Helplessness

Stainback & Stainback (1996) discuss Seligman’s concept of learned helplessness in *Inclusion, A Guide for Educators*; “Persistence is a byproduct of success, and if success is repeatedly out of reach of the student, he or she learns not to try” (p. 210). Children with disabilities experience success as unattainable and they eventually learn not to try. (Seligman 1975; Peterson, Maier & Seligman 1993. “Students exhibit *learned helplessness* when there is not a good match between learning objectives and student attributes; therefore, one single set of standardized objectives cannot be expected to meet the unique learning abilities of individual students in inclusive classrooms” (Stainback & Stainback, 1996, p. 210). In other words, without appropriate support and adaptations, the student with disabilities in the music classroom is at risk for learned helplessness, frustration, and apathy, all of which discourage creativity. Learned help-

lessness in musical composition or improvisation might manifest as resistance to doing a task or a need for constant positive feedback. Some children will exhibit behavior problems in order to avoid an activity in which they are convinced they will compare poorly with their peers. Others will look for clues to the “right answer” rather than being creative. Children with learning disabilities need many examples of composing and improvisation before they will feel confident enough to try on their own. Teachers must be vigilant for signs of learned helplessness and ready to provide support when it seems that children become frustrated or give up easily.

There is a clear need to understand more about how to provide opportunities for children with disabilities to be musically creative. In my previous research (McCord, 1999, 2002) I observed children with disabilities composing using music technology. These experiences helped me better appreciate the impact of various learning difficulties on musical understanding. I found that a multi-sensory learning environment was helpful in enabling children with disabilities to discover and apply adaptations for greater success in composing. Strategies revealed in the composing environment can be successfully applied to other areas of musical learning, whether in private piano lessons or in music classes at the child’s school. For example, a child with a short-term memory disability who is exploring all of the sounds available on a MIDI synthesizer may have trouble remembering any of the many MIDI sounds he or she likes. Providing a copy of the list of sounds that the child can highlight is a good strategy for remembering favorite sounds. Better yet, sounds should be limited to twenty or so at first. Adding pictures of the instruments on the list would help students with reading difficulties.

## The Case Study

In this case study I will describe how a 14-year-old girl with a variety of learning challenges created music using a software program, Music Mania (Hickey, 1999), and a MIDI instrument called Soundbeam. I kept detailed field notes during the Music Mania sessions and used MIDI files, the student’s reflections, and data saved by the software program to supplement my field notes. In addition, Music Mania records the amount of time spent on each screen, an important descriptor when studying children with disabilities who can easily become frustrated and impulsive.

The research was completed over seven Saturday mornings in a large university music technology lab and classroom. This child and her sister were recruited during the fall of 2002 from flyers distributed to parents of children with disabilities by school music and special education teachers. The younger sister, Linda, struggled with ADHD and mild learning disabilities. Although data were gathered on both girls, I will focus on the older sister, Kathy.

### Kathy

I chose Kathy for this case study because many of her behaviors are typical of the dozens of other children with disabilities I have worked with over the years. Kathy is a 14-year-old with identified learning disabilities and speech/language impairment. She also has been diagnosed with attention deficit hyperactivity disorder (ADHD) and takes medication. Her individualized education plan (IEP) indicates she is in a self-contained classroom in a local elementary school; however, her mother reported that she spends most of her day in a sixth-grade classroom with non-disabled children. Kathy participates in general music classes at her school but otherwise has no musical background. Her IEP also identified the following areas that require special instruction or related services: social-emotional status, academic performance, communication status, and motor abilities. She wears glasses but will often take them off and needs to be reminded to wear them. Kathy has difficulty expressing her needs, wants, thoughts, and feelings maturely and rationally. She benefits from having material read to her,

clarification of directions and vocabulary, and small-group and individual instruction. The IEP does not identify what type of learning disability Kathy has, nor are there any educational testing reports that might identify weak areas. Kathy has definite learning challenges that interfere with expressing herself creatively through music. She has none of the oppositional behavior often seen in children with learning disabilities who become frustrated and angry. Instead, she tries to discover the “right” answer.

### **Music Mania**

Over the first five sessions, Kathy worked through five sections of the Music Mania program, learning elements of music—melody, rhythm, timbre, texture, and dynamics—one section per session. The software scaffolds learning through concepts within five musical elements and prompts the student to create short musical ideas using these concepts. The software program records these musical ideas and longer ideas or compositions. Kathy’s musical ideas were saved as MIDI files on the computer along with reflections about what Kathy liked and didn’t like each week during her sessions. She also could have put ideas in a musical scrapbook that she could use later in other compositions, but Kathy never chose to do this and was not interested in listening to previously recorded ideas and compositions.

Kathy worked on a computer MIDI station with headphones. I also had headphones. Kathy’s sister and her mother were often in the room. This frequently distracted Kathy, who would look at them for approval or speak to them about what she was doing.

I sat at Kathy’s right side, helping her navigate the software program and explaining or modeling concepts to her as needed. Kathy needed information to be presented in many different ways in order to grasp a concept. For example, Music Mania has screens that feature animated pictures of a keyboard playing steps and leaps. Kathy would use these to help her to find her place on her own keyboard. When there was no animation I would play for her. Music Mania expressed the concept of dynamics through graphics getting larger or smaller. Kathy was unable to transfer this concept to the keyboard, so I demonstrated the sounds.

Kathy worked on the melody section of Music Mania in the first session. She seemed very sensitive to the sounds coming from the computer at first. The program starts with an animated character playing “The Entertainer” on a synthesizer and also a bugle call. Kathy immediately pulled the headphones away from her ears. I showed her how to adjust the volume and she turned the sound down very low. The program prompted her to experiment with eighteen different sounds. At first she didn’t realize she had to play the keyboard to hear the sound. When I showed her how to play, Kathy jumped at the sound once again in surprise and adjusted the volume still lower.

She played the lowest note on her keyboard very softly. She looked at me after playing and mumbled, “That’s all I can do.” She continued with the next five sounds, repeating “That’s all I can do” after playing each one. This is a classic example of learned helplessness. Then she continued with each sound in the list, this time playing the two lowest notes slightly louder. She looked at me after each one and didn’t say anything but smiled. When she came to the drum sounds I suggested she play each key because there was a different drum sound on each key, but she only smiled and clicked the next sound. When she played the sound called “funky voice,” she looked at me, smiled, and said, “That’s neat!” She played five keys simultaneously using the organ sound and exclaimed, “It’s scary! It’s scary when it’s like this!” She played the sound called “drops” several times, each time with slightly more force, and said, “Oh yeah, things shake.”

We continued on to the section that explained how melodies could move in leaps and steps. She listened to an audio explanation while an animated piano keyboard on the screen showed highlighted keys moving up in leaps on the keyboard. The program prompted her to try it. She played the first leap exactly as the animation demonstrated, and asked me, “Like this?” Kathy looked at me after each interaction with the software

and often made short comments. She stayed with the lower end of the keyboard and only played one or two notes. She mimicked exactly what the software demonstrated. It was obvious that Kathy was seeking the “right” answer and looking for approval.

At the end of the melody section was the “Recording Studio,” where Kathy was prompted to create four short compositions. The first prompt was to “create a melody containing mostly leaps.” She played two notes in the bass range and then clicked the stop button. The computer prompted her to name her composition, but she clicked the prompt away without naming her composition. Kathy did not seem to be interested in exploring or playing with ideas; each time she responded with the simplest right answer and went on to the next prompt.

Before students quit the program after each session they are prompted to write reflections about their experience. The reflections are typed into the blank box provided and are saved to file on the hard drive of the computer along with all of the MIDI files, time spent on each screen and the student’s personal data. I asked her what she liked about composing and she said “Everything!” I asked her if there was anything she didn’t like and she said “No.” This was how she responded each week to the reflections.

During every section Kathy swiftly moved through the program, trying hard to imitate what she saw on the computer screen and frequently asking for my approval. Over the weeks she played louder and used the full range of the keyboard.

In the fourth session, on texture, I noticed a new behavior that perplexed me. When Kathy concentrated on replicating Music Mania’s example of “Twinkle, Twinkle Little Star,” which included melody and harmony, she leaned back in her chair and looked at the ceiling, squinting. She played a single melodic line with her right hand and multiple notes with her left hand. Kathy demonstrated an understanding of melody with harmony even though she couldn’t play “Twinkle.” I wondered if looking away from the computer and keyboard was a self-adaptive strategy. I thought she might be shutting out the visual images in an effort to eliminate information that wasn’t helping her. Often as I work with learning disabled children in Music Mania I will see them look away from the screen or shut their eyes if there is a visual image and they have a visual learning disability. Children with aural learning disabilities sometimes will take off the headphones and focus on either the keyboard or the computer screen. In this way they eliminate the dysfunctional mode of learning.

I checked Kathy’s IEP for an explanation. There was nothing that indicated any type of visual processing disorder, and during our sessions she kept her glasses on. The following week her mother stayed for the entire session as Kathy worked in the dynamics section of Music Mania. I plugged in a set of headphones for her and she sat behind her daughter. Kathy looked up at the ceiling and squinted as she played her version of soft to loud. I pointed this out to her mother, who said, “You know she has an auditory processing problem, don’t you?” Based on the IEP I had been looking for visual learning disabilities but her mother clarified that the disability was auditory.

When I called Kathy’s mother later to ask her about this, she explained that Kathy has been tested repeatedly by the University Speech/Hearing clinic and went to therapy at the clinic once a week. The school district however, refused to include this information on her IEP. Kathy’s mother brought copies of the University reports to the next session.

The University report explained that Kathy had a decoding deficit, which impacted “fine speech discriminations and makes auditory closure difficult to achieve.” Speech was difficult for Kathy to understand and the report recommended that Kathy use an Assistive Listening Device (ALD). The ALD is worn by the teacher to help increase the volume of what the teacher says in class. Kathy would wear a hearing aid that is an FM signal transmitted from the teacher to Kathy’s ears that allowed for ease in hearing the teacher over room noise and also helped to clarify speech. Both Emily Watts, my colleague from Special Education, and I read the reports. Kathy’s mother explained to us that the school district refused to acknowledge the University speech



and hearing clinic recommendations. Kathy had not shown improvement in learning for two years. When she visited the classroom, her mother saw Kathy sitting by herself, unfocused, and deduced that Kathy did not understand anything going on in the classroom. Dr. Watts explained to Kathy's mother her rights as a parent and how much better Kathy's experience would be if the ALD were used.

### **The Soundbeam**

During her last two sessions with me, Kathy worked with the Soundbeam, an ultrasonic beam that responds to movement by producing MIDI sounds. I used two Soundbeams mounted on microphone stands that could be adjusted to respond to movements from feet, arms, hands or the entire body. Each beam could be programmed to play a specific sound or chords.

Kathy and her sister Linda both participated in the first Soundbeam session. I invited Dr. Watts to help me incorporate adaptations based on the girls' most recent IEPs and the results and recommendations of the University Speech & Hearing tests. I also asked Dr. Watts to provide feedback as a means to triangulate data. I videotaped these sessions and used the videotapes to construct field notes later the same day.

We were in a large classroom with all the desks pushed aside so there was plenty of room for the two sisters to move. Previously I had worked with one girl at a time, but this time I put them together because there were two Soundbeams. I placed the two Soundbeams at opposite ends of the room and each girl moved in front of the closest beam. Linda, moved every way possible and was totally absorbed by the sounds she created by moving in her beam. Kathy stood in front of her beam waving her hands and looking around while shrugging her shoulders. She looked at her sister often.

I switched sounds on the beams to see what their reactions would be. "Tell me if you like the sound; tell me to stop if you want to keep the sound," I directed them. Kathy stood at her beam waving her hand, shrugging, and looking at her sister, who was running back and forth between the two beams and jumping up and down.

I asked Linda to stop moving so Kathy could hear the sounds she was making. Kathy moved her entire body back and forth and said, "When I move back it changes the sound." I told her to tell me when she liked a sound. She said, "Stop, I like that one." She waved her hand back and forth and said, "I think it sounds like that one," and pointed to a picture of a vibraphone. "I like that."

Meanwhile, Linda couldn't resist moving and jumped back in, kicking up her leg. Kathy looked at her and kicked too, but couldn't kick high enough to activate the beam. Kathy kept trying to imitate the movements her sister made. Dr. Watts suggested new movements that both girls tried. Their mother suggested that Linda sit out for a while so Kathy could experiment by herself. I adjusted Kathy's beam so it was wider and picked up more of her movements. She was trying a variety of movements and asked, "Can I record this?" When she worked alone, she made more comments and was more focused.

Kathy asked me if she could use other sounds, such as the guitar. She experimented with movements and we moved the two beams closer together so she could play them both at the same time. I put different sounds on each beam, hoping she would associate one sound with each beam. When she chose a scratchy sound, Kathy said, "It sounds like claws!" She asked me to put the same sound on both beams and said, "I like that!" She came to look at the list of sounds and asked for koto. She wanted koto on both beams.

This was an example of Kathy using self-adaptation. She had trouble focusing on the two sounds so she asked for the same sound on both. She used this tactic for the next session as well. Eventually she eliminated one beam and was able to focus on one beam and one sound and made comments about the sounds she was making, such as "It's funny! I like it!"

In the second Soundbeam session I worked with Kathy alone. I had copied the list of sounds and brought a highlighter pen that Kathy used to mark the sounds she liked.

Kathy remembered she liked koto and kalimba from the previous session. She tried one on each beam but asked for both sounds on both beams. We tape-recorded her improvisations. I asked her to make two recordings of each improvisation and she tried her best to duplicate the improvisations. This way she could take her tape home with her at the end of the session and I could keep one. She showed some sensitivity to dynamics when one beam was set to play chords instead of single sounds. I showed her how to adjust the volume on the speakers and she turned the volume down. Eventually she decided she didn't want the chords at all and moved that beam away. She continued to record her improvisations and discovered that she could take the beam off the stand and hold it in her hand and wave it around. She used the beam that way for the rest of the session.

When using Soundbeam, Kathy showed a remarkable ability to adjust her environment to her needs. In the last session she began to name her improvisations, although the titles were the names of the instruments whose sounds she used. I told her that she could make up her own titles rather than using the names of the sounds, but she explained, "Then I can remember it." Kathy was finally exploring and experimenting with sound. Her comments were now about what she thought of the sounds. With no one else in the room she was focused and did not seek approval from me. She was absorbed in her world of sounds and movement. She liked the world music sounds such as koto, kalimba, and ocarina. She asked me, "Where does this sound come from?" When I said "Japan," she commented that they had talked about Japan in one of her classes. She seemed very pleased that she was playing Japanese sounds on the Soundbeam.

Kathy's improvisations were relatively short, but longer and more varied than anything she created using Music Mania. She enjoyed experimenting and listening to the tape. She looked at her sound list and carefully highlighted the sounds she liked so she could remember and choose new sounds to try. She asked about the sound "crystal." "What is it?" I explained that it is the sound that glasses make when you fill them with water and rub your finger on the rim of the glass. She said, "Wow it's cool!" She talked about the sound while I recorded her making a song using "crystal." As we listened to the replay she asked, "Can I put different water in and it makes it lower?" This demonstrated her ability to think in sound, something very challenging and abstract for someone with auditory learning problems.

Kathy was finally beginning to create music. Using the Soundbeam allowed her to relax and enjoy the process. She had greater control over the sound she produced and used kinesthetic strategies for varying her sounds, including taking the beam off its stand and waving it around, a technique that had never occurred to me. She used her list to keep track of the sounds she liked and then to experiment with others.

In previous sessions wanting to get the right answer inhibited her from straying from what she thought she was supposed to do. As Kathy worked in Music Mania, she was reluctant to explore and create because she recognized Music Mania as an educational program. She was anxious about getting the right answer and she tried very hard to replicate what she heard and saw in Music Mania. I tried to put her at ease but she could not relax enough to improvise creatively.

Using the Soundbeam was more spontaneous. Because I was taking care of all the technical aspects of the technology, Kathy was free to explore making music. She was enthralled with the freedom to make her sounds however she wanted. She understood that whatever she liked was the right answer. Kathy even enjoyed playing the beams with her sister. When her sister moved too much or confused her she asked Linda to stop, at the same time showing how to put her hand over the sensor to silence it. This was another strategy Kathy discovered independently; covering the beam with her hand to silence the sounds. Whereas in previous sessions Kathy was distracted by Linda, now Kathy was learning to ask for accommodations that helped her remain focused. I believe that if Kathy continues to explore with the Soundbeam she will create more and more sophisticated music.



## Implications

Children with disabilities are conditioned by the schools to focus on skills to help them function in the real world. They are painfully aware they do not achieve the way other students in the regular classroom achieve. Learned helplessness almost always emerges whenever children with special needs are presented with something new. It is much easier to say, "I don't know" than to risk being wrong. Teachers must recognize signs of learned helplessness and adapt the learning environment accordingly. Learned helplessness will interfere with musical creativity unless activities are planned carefully to ensure all children will be successful during creative musical activities. Knowing the strengths of the students with disabilities in the classroom will help with planning lesson material that matches the ability levels of all children in the class. Removing barriers experienced in the academic classroom will encourage children with disabilities to be more creative and expressive. Hickey identified the need to encourage exploration as an important process in composing music. Children with disabilities must be given the time they need for exploration as well as additional attention and praise for using divergent thinking. These children benefit enormously from expressive opportunities music can provide.

Understanding the learning needs of children with disabilities can be challenging. In my research, I used the Soundbeam to better understand how children with disabilities create music. If a Soundbeam is not available, the music educator can use other technology or can adapt the strategies I have described in a non-technological context.

Children with aural types of learning disabilities experience confusion in any environment with multiple simultaneous sounds. Kathy cannot focus on the important sounds and put the unimportant ones in the background. It is virtually impossible for her to create music with other sounds over which she has no control occurring at the same time. To be successful at composing and improvising music, children like Kathy need accommodations. For example, the student could use a corridor or another room where he or she could hear and focus on sounds while other children explore together in one room. Thus the student with a learning disability could do the same activity as other students, and would rejoin the class when appropriate.

Providing an individualized approach can be challenging for music teachers who have large classes for short periods of time. Special educators can help music teachers design accommodations, and in some cases special educators or aides can help children in their own classrooms. Special educators are usually enthusiastic about music and if a recording is provided they will often play it and help their students to learn songs. Having extra time to learn is almost always beneficial for children with disabilities.

When music educators do have the option to choose technology for creating music, they should look for ways that children can experience making music through different learning modes. Even in the multi-sensory environment of a MIDI computer station, children with special needs will respond the way others expect them to do in and outside of school. Computer tutorials are most often used by special educators for children with disabilities to work on areas of weakness. In my study, both sisters commented on how they often worked with computerized math programs at school. These types of educational programs use computer animations and sounds that seem like games but the child with a disability recognizes that the purpose of these "games" is to come up with the correct answer. Many of these programs reward the student with music, playful animations, and sound when the right answer is given. I would suggest that music software developers could experiment with creating programs that are less like tutorials and that encourage more open-ended exploration.

Many children with disabilities are most successful when making music through movement. The Soundbeam offers exciting possibilities for individual creativity. The Soundbeam enables children with even the most severe physical disabilities to become independent music makers by simply moving an eyebrow or using a beam set

to recognize a wider area large enough for a wheelchair to activate the beam. The Soundbeam environment provides both structure and flexibility to create music without having to learn how to use software or MIDI synthesizers. The Soundbeam will soon be available as software with less of the hardware now required.

I am looking forward to research with children using rubber synthesized drum pads that can be played with hands or sticks. This MIDI instrument may be even more accessible to some children with disabilities because it requires less practice to master. The pads are very sensitive to even weak playing and the equipment is affordable for music teachers on a tight budget. Best of all, using headphones would help a child who needs to filter out distractions.

For learning disabled children to be expressive in music they often need an innovative alternative to traditional music classes. Children with disabilities may need to close their eyes, focus on hearing a sound, concentrate on the feel of playing an instrument, or learn by observation and imitation. Students with dyslexia may learn well by ear rather than through written notation. When a music teacher identifies such strategies, they should become a part of the child's IEP so future music teachers who work with the child will be aware of these important adaptations.

The music teacher must read and understand each child's IEP and then talk with the special education staff about accommodating the child in the music classroom. Children with disabilities can actively create music because there is music inside every child. It is our mission as music educators to bring their songs out.

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