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## Severely-disabled students making music with specialized programs

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Nov 3, 2007 12:32 PM (22 days ago) By [JESSICA M. PASKO](#), AP

**POUGHKEEPSIE, N.Y.** (Map, News) - Using subtle motions of her head and a newly developed computer program, 16-year-old Annemarie grinned with the realization that she was making music. The teenager is a student at the REHAB school in Poughkeepsie. Severely physically disabled, Annemarie can't walk or speak and has little control over the movements of her head and arms. Annemarie is one of three students at the facility who are being given a rare opportunity to create something of their own using new computer technology and music therapy. Music therapy, widely considered a valuable tool for emotional and physical therapy, has not always been accessible for everyone. With the "adaptive use musical instruments for the physically challenged" project at REHAB, its founders are hoping to bring musical instruments to those whose disabilities prevent them from playing regular instruments. They're hoping the project will not only allow students a chance for creative expression but will provide a wealth of other valuable experiences.

Musician and Rensselaer Polytechnic Institute professor Pauline Oliveros and drummer Leaf Miller had for years discussed the idea of bringing music to those too severely disabled to play any standard instruments. Miller, an occupational therapist at REHAB, a facility for the physically disabled, had long looked for a way to bring her love of music to the kids she worked with. She'd started a drumming class with the kids about a year-and-a-half ago, but wanted to find a way for those unable to beat a drum, such as those with cerebral palsy, to join in the experience.

Playing music isn't something that's typically accessible for severely disabled children," said Miller. "Opening up this opportunity for them is amazing."

"This really is helping them to gain a certain amount of control over their bodies, which is just great," she added.

Oliveros is also the founder of Kingston-based musicians organization, the Deep Listening Institute. Through her connections, she was able to secure a \$20,000 grant in February for her proposed project. One of her students, Zane Van Dusen, began working in December to develop a computer program that could help the students "play" music using the little range of movement they have.

Van Dusen, who was a double major in computer science and electronic media arts and communication, came up with the idea of using a digital video camera to display the child's image on the computer screen. A cursor is "placed" on a portion of their head, such as the tip of their nose, and then follows their movements. As it does, it produces music notes - either in piano mode or percussive mode. Moving your head completely in one direction produces a scale in piano mode, while percussive mode creates a series of quick drum beats or a drum roll. This version was first tested with the students in May, and remote robotic instruments are now being tested as well. RPI faculty members and former students have been working to construct and program the devices and implement controllers.

Oliveros asked Miller to pick three of the most physically limited students to try out their research. Annemarie, 11-year-old Billy - whose parents asked that their last names not be used - and Geoffrey Eisen, 11, use wheelchairs, are unable to speak and have little or no control over the movement of their arms or hands.

Geoffrey, who has been working with the staff at REHAB since he was a little over 2 years old, is also visually impaired. For his mother, Tarez Eisen, seeing her son learning how to "play" an instrument was something she'd never expected to see.

"The first time I saw him do this, it just blew me away," said Eisen. "Anything independent that you can do, especially music, is just wonderful."

Several companies in the U.S., England and Canada already sell adaptive musical aids, such as special instrument holders and modified drum sticks. The Magic Flute, co-created by Ruud van der Wel of the Netherlands and David Whalen of Glenville, was developed for use by quadriplegics and its pitch can be changed by head movements. But for some of the most severely disabled, most of those aids still required more controlled movement than they could manage. Like the Deep Listening Institute, some other organizations, including London-based Drake Music Project and Bronx-based Institute for Music and Neurological Function, are also working with new software programs for students to play music.

At the Institute for Music and Neurological Function, a lot of work is being done with Musical Interface Digital Instrument equipment. MIDI, a processing system, is incorporated into electronic instruments for use with computer programs, according to executive director Dr. Connie Tomaino.

"We also have a lot of digital drum pads, which allow us to regulate the force the patient needs to use to make a sound, and reinforces motor strength," said Tomaino, adding that it also helps improve physical coordination.

Unlike some music therapy, the goal here is to eventually begin "composing," providing a rare mode of expression for these students, said Oliveros, who said she believes teaching the creative process is the most important thing.

In music therapy, the goals are usually nonmusical, said Al Bumanis, spokesman for the American Music Therapy Association.

"The client or patient doesn't have to be a musician to participate. the goal is not usually a performance, it's increasing communication skills, understanding, relearning lost skills. Usually the goals are specific to the client's individual treatment plan," he said, adding that sometimes a performance is a byproduct and you discover a patient does take musicianship to a different level.

"From my point of view, making something empowers. That can be very healing, and exciting," said Oliveros. "In (a lot of) music therapy, there's no empowerment for patients."

Eisen agreed.

"We have a tendency to focus on the physical therapy, but we sort of forget about the creative stuff," she said.

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On the Web:

<http://www.youtube.com/watch?vC9SessVJ04I>

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