

5-2014

# Bridging Music and the Early Childhood Curriculum in Listening and Spoken Language Programs for Children who are Deaf or Hard of Hearing

Whitney Wright  
*Utah State University*

Follow this and additional works at: <http://digitalcommons.usu.edu/gradreports>

 Part of the [Curriculum and Instruction Commons](#), and the [Disability and Equity in Education Commons](#)

---

## Recommended Citation

Wright, Whitney, "Bridging Music and the Early Childhood Curriculum in Listening and Spoken Language Programs for Children who are Deaf or Hard of Hearing" (2014). *All Graduate Plan B and other Reports*. Paper 366.

This Creative Project is brought to you for free and open access by the Graduate Studies at DigitalCommons@USU. It has been accepted for inclusion in All Graduate Plan B and other Reports by an authorized administrator of DigitalCommons@USU. For more information, please contact [becky.thoms@usu.edu](mailto:becky.thoms@usu.edu).



Bridging Music and the Early Childhood Curriculum in Listening and Spoken Language  
Programs for Children who are Deaf or Hard of Hearing

by

Whitney Wright

A project submitted in partial fulfillment of the requirements for the degree of

MASTER OF EDUCATION

In

Communicative Disorders and Deaf Education

Approved:

---

Lauri Nelson, Ph.D.  
Major Professor

---

Elizabeth Parker, M.Ed.  
Committee Member

---

Sonia Manuel-Dupont, Ph.D.  
Committee Member

---

Nicole Martin, M.S.  
Invited Member

## **Introduction**

Music is an integral aspect of human life. Its impact weaves through arts, culture, communication, recreation, and education. In addition to benefits of enjoyment and entertainment, music is a vital component of early childhood educational settings. Educators routinely utilize music as an embedded component of instruction to meet both group and individual needs of young children in early childhood classrooms. In fact, specialized musical instruction can be particularly beneficial for children with disabilities, including those who are deaf or hard of hearing (DHH) (Gfeller, Driscoll, Kenworthy, & Van Voorst, 2011). Children who are DHH are at significant risk for speech, language, and academic delays (Madell & Flexer, 2008). However, with early detection, use of appropriate hearing technology, and specialized early intervention, many children who are DHH can develop language and academic proficiency similar to their same-aged hearing peers (Nelson, 2008; Yoshinaga-Itano, 2003; Yoshinaga-Itano, 2004).

### **Children who are Deaf or Hard Hearing**

Because of newborn hearing screening (NBHS) programs, many children with congenital hearing loss are identified shortly after birth. According to the National Center for Hearing and Assessment Management (NCHAM), 97% of newborns in the United States are screened for hearing loss prior to discharge from the hospital, resulting in diagnosis at an average of 2-3 months of age (White, Forsman, Eichwald, & Munoz 2010). Prior to the availability of screening technology and the broad implementation of NBHS programs, the average age of identification was 24-36 months of age (Callow-Heusser, 2012; Harrison & Roush, 1996; Mace, Wallace, Whan, & Stelmachowicz, 1991; Toward Equality, 1988). Insufficient access to sound during the critical early years of language and cognitive acquisition can result in significant

delays in age-appropriate development across all early childhood developmental domains (Nelson, 2008). When children who are DHH are identified early and provided with appropriate, comprehensive family-centered early intervention services from properly-trained professionals, most are able to progress at age-appropriate rates and require few, if any, special education services by the time they enter elementary school (Kennedy, et. al., 2006; Moeller, 2000; Nicholas & Geers, 2007; Yoshinaga-Itano et al., 1998; Yoshinaga-Itano, 2003). Positive outcomes associated with early identification and intervention, including better language, speech, and social-emotional development than later-identified children; more typical rates of cognitive development; and lower parental stress as the child acquires language and increases communication have also been documented (Yoshinaga-Itano and Gravel, 2001).

**Advanced Hearing Technology.** Optimal access to sound is essential for the development of spoken language. Therefore, upon identification of hearing loss, families who wish for their child to use listening and spoken language for communication should have hearing aids placed as early as possible. The most common hearing devices used in the pediatric population are hearing aids that fit behind the ear. The hearing aids are connected with an ear mold that fits into the canal to direct the flow of sound into the ear. For children with little or no residual hearing who do not benefit from hearing aids, cochlear implants may be the technology of choice for accessing sound. A cochlear implant differs from a hearing aid because rather than amplifying sounds to make them louder, the cochlear implant captures sound, and then using complex algorithmic processing, stimulates the auditory nerve to send signals into the auditory centers of the brain. The cochlear implant user must learn how to utilize this input so that sounds become linguistically meaningful for the development of spoken language. With advanced

hearing technology, and appropriate audiological management, children who are DHH have access to environmental sounds, music, and most importantly, spoken language.

**Listening Skills Development.** A child's spoken language skills develop through their ability to hear. In fact, access to sound begins in utero in which the developing fetus is able to respond to loud sounds during the last trimester (Porcaro, Zappasodi, Barbati, Salustri, Pizzella, Rossini, & Tecchio, 2006). At birth, children with typical hearing immediately access auditory signals and establish the neurological and auditory foundations for oral communication.

Children with hearing loss are at an immediate disadvantage when access to sound is delayed, both in the initial diagnosis and in the time it takes for appropriate amplification to occur. Upon placement of appropriate amplification, it is essential for the child to engage in activities to promote auditory perception. Gfeller, Dricoll, Kenworthy and Van Voorst (2011) explain that sound transmitted by a cochlear implant is not exactly the same as sounds heard by children with normal hearing. In fact, for some cochlear implant users, the sound may actually be perceived as electronic or tactile rather than as an auditory simulation. At first the sounds may appear more as Mickey Mouse computer speech or similar to static from a noisy radio station. With appropriate listening skills training, the quality of the sound can become more natural over time.

Due to the difference in hearing experiences between typically developing and children who are DHH, frequently there is a developmental delay in speech and language attributed to the child's "hearing age". Gfeller et al., (2011) explain that the hearing age of children is attributed to how old they were when they received amplification and how well they are reaching auditory developmental milestones. These delays in accessing sound can lead to problems in speech, language, behavior, and emotional-social development, as well as lower educational attainment than their same aged hearing peers (Callow-Heusser, 2012).

## **Music and Children who are Deaf or Hard of Hearing**

Helping children who are deaf and hard of hearing (DHH) establish a strong language base provides a necessary foundation for them to develop commensurate with their same aged hearing peers. Children who are DHH, and who use amplification to access spoken language, need to be given tools and methods to stay on par with their hearing peers. According to the American Music Therapy Association (AMTA), music therapy is a certified health profession that uses music in a therapeutic approach towards addressing the five main domains taught in school; cognitive, behavioral, physical, emotional, and social skills (AMTA, 2006a). Music therapy has been shown to help manage young children's behaviors by being both highly motivating and also providing a calming, relaxing effect (AMTA, 2006a). Music therapy is used in varying populations, including children with disabilities. Music therapy is a related service under Individuals with Disabilities Education act (IDEA) and is used to help children achieve or maintain goals as set through their Individualized Education Plan (IEP) ( AMTA, 2006b). Music therapists can provide special education classroom teachers with tools and material to incorporate music into the curriculum appropriate for classroom and individual child goals (AMTA, 2006b).

Musical input is a very different sound signal than spoken language. Van Besouw, Grasmeder, Hamilton, and Baumann (2011) reported that children with typical hearing and those who are DHH typically are generally exposed to the same amount of music. However, teaching children who are DHH to fully perceive all aspects of acoustic information from music is a skill that is often overlooked by teachers and parents. Regular music therapy sessions and integrating music into the everyday preschool classroom is a very beneficial way to begin teaching children

the numerous sound attributes that can be found in both music and speech, such as pitch, duration, intensity, and timbre (Terrell, 2012).

Chen, Chuang, McMahon, Hsieh, Tung and Li (2010) recruited 27 cochlear implant users who were pre-lingually deafened, ages 5-14, with a mean of 6.7 years, to examine if music instruction benefitted pitch perception. Eleven of the 27 children had received structured musical training after implantation, and two children had received formal training before and after implantation, the rest of the children had no formal musical training. Music perception was evaluated by using a test set of pure tones, presented by a tuned piano. The children were placed in an acoustically shielded room where two notes were presented to the child. The children were asked to determine if the two notes were the same or different. If the notes were different, they were asked to identify if the first note presented was higher or lower than the second note. The results showed that regardless of age of implantation, gender, and pitch range in children <6 year old (preschool aged), the duration of musical training had a strong correlation with overall pitch perception. The impact and duration of musical training on pitch perception was clearly evident in the preschool aged population but also showed strong correlation in  $\geq 6$  years old. The authors concluded that early musical training in pre-lingually deafened children with cochlear implants should be used in the post-implantation habilitation process as it improves pitch perception. Pitch perception and discrimination is essential for children who are DHH to learn as it will help them to understand and intelligibly participate in spoken language (Lenden, & Flipsen, 2007; McGarr, & Osberger, 1978).). Furthermore, rhythm is an essential element found in both music and speech. Musical training helps to emphasize rhythm which can lead to success in exercising the auditory-system and strong sound-to-meaning associations. In addition to the documented

benefits of music to auditory perception, music has also been shown to have a positive impact on literacy development in young children.

### **Music and Literacy Development**

Development of early literacy and language skills has been the focus of much research and investigation. Age-appropriate reading acquisition is seen as such a priority in a child's education, that the failure to do so has been targeted as a public health issue by the National Institute of Child Health and Development (Salmon, 2010). In fact, literacy acquisition in young children has been shown to be a predictor of advanced reading and oral language abilities in the teenage years (Bartl-Pokorny et al., 2013). The National Reading Panel (NRP), convened by the congress in 1997, evaluated and identified empirical evidence to determine effective strategies for teaching literacy skills to children (Report of the national reading panel, 2006). Among the educational priorities identified by the NRP were the importance of establishing strong foundations in phonemic awareness, phonics development, oral reading fluency, vocabulary development, and targeted reading comprehension strategies (Report of the national reading panel, 2006).

Music has been shown to be a viable tool in teaching children early literacy skills consistent with recommendations of the NRP (Armbruster, Lehr & Osborn, 2003). For example, Kouri & Telander (2008) evaluated 30 children ranging in age from 5-8 years old, who were considered to have potential risk in developing reading problems due to current speech and language delay or weak phonological skills. Picture books were used to evaluate the story-recall abilities and participation levels during retellings of stories that were spoken or sung. The words were set to familiar children's songs chosen for their repetitive tune and narrow pitch range ("The More We Get Together" and "She'll Be Comin' Round the Mountain"). Each participant

attended 3-4 sessions. During the first or second session the participants were administered standardized tests to establish the child's level of phonological processing and expressive language abilities. The two remaining sessions involved either the reading or singing of two books, for a total of 4 books per participant. After listening to either the researcher read the book or a recorded version of the book which was sung, the participants were asked to retell the story or to state as many facts as could be remembered from the story telling. Each participant's response were recorded and scored, measuring their mean length of utterance (MLU) and their type-token ratio (TTR) (number of different words vs. total words) and their behavior during either sung or spoken stories was observed and recorded. Although the results of the study did not demonstrate a significant improvement across all test variables, the TTR showed very positive results. Story re-tellings by children who heard the sung versions of the stories contained richer and more varied vocabulary. The repetitive nature of music and lyrics can become a great means of chunking words and sentences together, making it easier for the right hemisphere of the brain to store the lexical information in short term memory storage. This helps the child to remember the new vocabulary and use it in description of the story. This study helps to show that music can be used as a means of teaching and increasing a child's vocabulary.

Holmberg (2011) reported that "the unique role of music in young children's education provides multi-sensory experiences, which in turn promotes aural discrimination skills. The refinement of aural discrimination skills is the basis of phonemic awareness, which is the foundation of early language literacy". In fact, music and literacy acquisition require similar skills, meaning that teaching a child music will help them to generalize those skills towards their reading and literacy. For example, visual sequential memory facilitates the ability to remember

sounds and words long enough for the child to be able to find the meaning as compared to being able to remember the tune and lyrics to play or sing a song (Wiggins, 2007).

Music instruction has also shown positive impact on auditory memory and recall (Legg, 2009; Roden, Kreutz & Bongard, 2012; Wallace, 1994). For example, Roden, Kreutz & Bongard (2012) evaluated verbal memory skills of 73 children, mean age of 7 years old, when involved in intensive music instruction or natural science/mathematics instruction. Children were randomly assigned to each group; 25 in music instruction, 25 in natural science instruction, and 23 to serve as a control with no extra instruction. The interventions took place over an 18 month period. The music group received weekly, private 45 minute instrumental instruction on the instrument of their choice (guitar, violin, cello, flute, trumpet, clarinet, and drums) and the natural science group received more focused lessons on mathematics and general studies during the course of the regular school day which still included regular music instruction. Each group completed standardized tests of visual and verbal memory at the beginning of the study, the middle, and at the conclusion. Verbal memory was tested using an adaption of the Rey's Auditory Verbal Learning Test (RAVLT). Each subject was asked to 1) listen and immediately recall 15 words, 2) recall the list of words 25 minutes later without hearing them again, and 3) point out the 15 words amongst a list of 30 words. Results of baseline testing revealed that each group began the study with similar verbal memory skills. At the conclusion of the experiment, the musical group showed significant increases in the verbal memory testing over the natural science and control groups. The musically trained children showed increased performance during each set of testing, showing that continued, focused music education is a very beneficial way to enhance the building blocks of literacy skills.

## **Music and Cognition**

Music has been shown to activate many parts of the brain at the same time. If young children are exposed to music, it can even help to create or keep synapses open creating more ways for the brain to organize information (Hallam, 2010). Schlaug, Norton, Overy, and Winner (2005) evaluated the difference between musical and nonmusical adults and saw consistent results showing that musical adults had differences in brain structure and cognitive abilities. This line of research led them to question whether children are predisposed to liking or wanting to participate in musical activities and does the difference in brain structure and cognitive skills express itself in young brains. Brain responses of 50 children, ages 5 – 7, who were just beginning formal musical training, using functional magnetic resonance imaging (fMRI) were completed to determine if there were pre-existing differences of brain structure, function, and/or cognitive skills, compared to those who were not beginning to study music. Test measures included norm-referenced standardized testing in the following areas; behavior, vocabulary, auditory analysis, phonemic awareness, and fine motor tests. The results of the first scan showed no significant differences in grey matter or cognitive ability, showing that children are not predisposed to be musical. After a 14 month period, the 50 children, who had received musical training, were compared to 25 same-aged peers who were not receiving training. The same fMRI scans and standardized tests were done. The scans showed a marked difference in grey matter volume between the musical and nonmusical children. The tests also showed musical children receiving greater scores in assessments of fine motor skills and auditory discrimination skills, skills linked to musical training. These findings led to a cross-sectional study of children ages 9–11 years old who were either instrumentalists, receiving musical training on the instrument of their choice, or non instrumentalists, receiving no musical training. The

instrumentalist children in this study had an average of four years of training. Each group received the same assessments that were given to the longitudinal group; vocabulary, phonemic awareness, and auditory analysis. The instrumentalist children performed significantly better on all of the assessments, and their imaging showed significantly more grey matter volume. These results compared to imaging and testing performed on adults who had been studying music for an extended period of time show the positive trend associated with musical training and the ability to perform better than their nonmusical counterparts in several school subjects.

### **Music and the Common Core Standards**

Establishing strong foundations of language and literacy during the early childhood years in preparation for kindergarten readiness is consistent with the national priorities contained within the K-12 Common Core standards. The K-12 Common Core Standards have been adopted and individualized by 45 states, the District of Columbia, and four US territories (National Governors Association Center for Best Practices, Council of Chief State School Officers & Council of Chief State School Officers, 2010). The Common Core Standards have created a uniform set of knowledge and skills to describe expectations and to identify the foundations needed for children to succeed in post-secondary education and the modern workforce. Currently, the national Common Core does not include standards for early childhood education, leaving these determinations at the state level. Utah's Early Childhood Core Standards identify preschool and kindergarten readiness standards in preparation for entry into the K-12 curriculum (Utah state office of education, 2013). The Utah Early Childhood Core Standards (UECCS) include six categories of targeted areas of proficiency: language arts, math, science, creative arts, social/emotional and social studies, physical/health and safety. The

UECCS also describes activities and strategies the teacher can use to elicit developmentally appropriate skill development across all learning domains.

Children who are DHH have been shown to start school with smaller vocabularies, thus leading to a difficult time with literacy and communication skills (Williams, 2012). Research has shown that less than 50% of students, who are deaf and hard of hearing, graduate high school with a fourth grade reading level (Parault & Williams. 2010).

### **Music and the Preschool Classroom**

The preschool classroom is a place for children to prepare for the demands of kindergarten. Kindergarten teachers expect that preschoolers making the transition to kindergarten will be prepared with knowledge in the basics of language arts, math, science, social-emotional, creative arts, and physical abilities as described in the Core Standards (Utah state office of education, 2013). The goal for children who are DHH is to get them mainstreamed into classrooms and on track with their same aged hearing peers as soon as possible. Music has been shown to be a tool for preschool teachers to help teach these fundamentals. As literacy has been revealed to be one of the most difficult for students who are DHH to grasp, incorporating music into the preschool literacy curriculum; story recall, vocabulary acquisition, etc., could help students learn these principles and carry them on to their next education environment. Music has also been shown to be an asset to teachers in preventing or helping during problem behaviors by setting guidelines, teaching behavioral expectations, and escalating or deescalating an emotional outburst (AMTA, 2006b; Wilson, 2013).

### **Parents and the Preschool Classroom**

The work and efforts of the preschool teacher would be ineffectual without the help and support of the parents. The parents' role in their child's education begins at home. Children who

were read to more frequently and with a variety of books were found to have more complex syntactic abilities than those children who were not (Purcell-Gates, McIntyre, & Freppon, 1995). With preschool teachers and parents working together, children who are DHH will have the opportunity to practice the new information in a more naturalistic setting. Students learn information faster and with more depth when it can be generalized throughout the entire day. It has been observed that any amount of parent involvement in a child's school work, leads to improved academic performance (Brooks, 2013). Preschool teachers could offer materials and demonstrations for parents to take home and practice the curriculum materials at home. In this manner, the child receives the reinforcement needed to acquire the fundamentals of language and literacy, and the parents receive the support they need to support and enhance their child's education throughout the entire day.

### **Project Proposal**

Music has been shown to be an asset to teachers in teaching students appropriate behaviors, speech and language, and literacy skills (Chen et al., 2010; François et al., 2013; Kouri & Telander, 2008; Roden et al., 2012; Schlaug et al., 2005). Through the current amplification technology available to young children who are DHH, the benefits of music can also be extended to them. By working with classroom teachers and parents of students who are DHH, music can be a part of the classroom curriculum and at home with parents, providing these children with a way to reach their goals and get on track with their same aged hearing peers.

### **Project Goals**

The goal of this project is to integrate music into the classroom curriculum and take-home activities of preschool students who are deaf and hard of hearing and want to access spoken language. Music will be used as a tool to teach literacy goals such as vocabulary

acquisition and story-recall. It will also be used as a tool to teach suprasegmentals and proper vocal qualities. I would also like to create information for teachers to incorporate music to help with behavior management and to offer support for smooth and appropriate transitions in the preschool classroom.

### **Collaboration with Music Therapy program**

I have the opportunity to work closely with the music therapy advisor and student clinician working in the Sound Beginnings Preschool located on the Utah State University campus in Logan, Utah. A music therapy session is held once a week for a half hour for all students in the preschool. I will be able to observe the session while helping the children participate correctly. Afterwards I will participate in a review session with the music therapist and student clinician, where we will discuss teaching techniques that were and were not effective, ways to improve the next week's session, and what goals the student clinician would like to work on during therapy sessions.

### **Project Outcomes**

To meet the goals and requirements of this project, I will first meet with Nicole Martin, and other Sound Beginnings staff to gain insight on needs or suggestions for the music activities that will be implemented in the classrooms. Next, I will develop and implement four major activities to connect music to literacy in the preschool curriculum. All activities will be created in duplicate: one copy for the Sound Beginnings program and one copy for Utah Schools for the Deaf.

The four major proposed activities to be developed and implemented are:

**1. Use music to enhance story recall.** To enhance story recall, I will create three literacy-based units for teachers to use in the classroom and for parents to utilize as carry-over activities in the home. The literacy-based activities will include:

- a) Billy Goats Gruff or other similar child literature:
- b) Holiday Theme-Based Curriculum
- c) Food, Family, & Fun Thematic Curriculum

**2. Preschool: Use music embedded within the preschool curriculum to teach vocabulary.**

To facilitate development of age-appropriate vocabulary, music tasks will be developed that will highlight targeted vocabulary within three classroom units:

- a) Activities will be developed using a CD of musical songs and passages connected with three popular child literature books (e.g., Very Hungry Caterpillar, Goldilocks and the Three Bears, Green Eggs and Ham, The Giving Tree).

**3. Toddler Group and Parent Activities.** Develop materials for parents to use in the home to connect music to the child's development:

- a) Develop three music and literacy-based toddler group activities, including parent suggestions and materials for home carryover.

**4. Develop Resource of Materials.** A binder and/or packet of materials will be developed, with tabs and headings, as a resource for teachers to implement music across the preschool day.

- a) Suprasegmentals song activity
- b) Transition activities
- c) Behavior improvement

- d) Auditory perception
- e) Other activities as identified

### **Materials Needed**

Materials that will be required for each unit are:

#### **Activity #1:**

- Two copies each of all literature books associated with this activity. I project this to be six books total.
- Two sets of musical instruments, appropriate for preschool age children (e.g., shakers, tambourines, small symbols, set of drums).

#### **Activity #2:**

- Two copies of the *Literacy in Motion* musical CD ([learninstationmusic.com](http://learninstationmusic.com)) and two copies each of the associated books. I project this to be two CDs and six books in total.

#### **Activity #3:**

- Materials to be determined (e.g. rain sticks, small guitars (Kleenex boxes and rubber bands), and/or drums).

#### **Activity #4:**

- Binders, page protectors, USB drive/memory stick, and other similar items needed to make materials.

## **Dissemination**

Over the course of this project I aim to observe in weekly music therapy sessions for the course of the semester, present in the preschool classroom and toddler group at least four times, and attend a Orff-Schulwerk Music and Movement workshop focusing on literacy and music in the classroom. All materials acquired throughout this project will be duplicated and made available in the Sound Beginnings Preschool materials room and the USDB materials room in Salt Lake City, Utah.

## **Outcomes documentation**

The outcomes that I desire to obtain from this project are if parents and teachers find the activities and materials to be a beneficial way of teaching literacy, vocabulary, behavior, etc., in the preschool classroom. Teachers and parents considerations and input will be measured through short questionnaires offered after each activity or observation.

## **Project Summary**

At the conclusion of my project, I have been able to successfully collaborate with music therapists and create the 4 major proposed activities; using music to enhance story recall, using music to embed within the preschool curriculum to teach vocabulary, toddler group and parent activities, and developing a resource of the above materials.

## **Collaboration with Music Therapy program**

Through the music therapists I was able to find resources and curriculum boosting activities that I would not have had access to by looking only through the field of speech language pathology and deaf education. The music therapist introduced me to wonderful resources such as the Orff-Schulwerk music education curriculum, [musictherapy.org](http://musictherapy.org), and connections within the field.

## **Music Education Workshop**

I had the opportunity to participate in an Orff-Schulwerk Music and Movement workshop. This particular workshop focused on the benefits and fun that can be had by incorporating music and literacy throughout all ages of children. The presenter was a well known and experienced music educator. Thom Borden holds a bachelor in music education and a master in curriculum management and is a certified Orff-Schulwerk teacher. He has taught in Kentucky, Illinois, and Nevada. He offered many great suggestions that were literacy based and musically enhanced. Many of the concepts that we practiced were; pitch detection, rhythm and beat perception, internal audiation, how to use our bodies as musical instruments (human percussion), using our bodies to move along with the music to create kinesthetic memories between our bodies and the music, and most importantly, creating links between songs and the books.

Some of my favorite books that were covered during this workshop were; *Knuffle Bunny* by Mo Willems, *Ten Apples Up On Top* by Dr. Seuss, *Yellow Umbrella* by Dong Il Sheen and Jae-Soo Liu, *Hello, Hello!* by Miriam Schlein, and *From Head to Toe* by Eric Carle. *Knuffle Bunny* is a preschool favorite. It is an easy to follow book with effortless text and simple enough that the children are able to easily recall the sequence and characters. The activity, that was very straightforward, was to work on suprasegmentals. One of these activities was to use our voices to follow the tracks of the daughter and dad to and from the Laundromat as the little girl climbs up and down the stairs, the students can follow her tracks by using their voice to go up and down, or when she goes around the park to make a swooping noise to follow the sidewalk. Along with this book, there was also a play activity. The teacher passed around a laundry basket full of socks. Each sock had notes (or dots) going up and down, down and up, staying the same, etc.. The child chooses a sock and then must recreate the pattern of the dots with their voice.

We did one activity that I really enjoyed with *Ten Apples Up On Top*. A poem about apples was written on paper apples, one word per apple. We then said the rhyme while clapping the beat out. After going through the rhyme several times, we would take an apple/word away from the poem. This meant that we had to try and remember the beat and the rhyme while leaving out the words that had been removed. This was an excellent source of working on beat perception and internal audiation, which helps to encourage correct communication skills and text memory.

*Yellow Umbrella* is a picture book with no words, but the activities were excellent for color identification, focus, and a great beginning to reading music. Every time the teacher pointed to the yellow umbrella in the book a child would play finger symbols and every time the page was turned someone would turn over a rainmaker making this a very engaging book. The activity after the book was also very fun. We used a picture of an umbrella with several different colors each representing a specific instrument (red=chimes, blue= wood blocks, green=tambourines, etc.). On the umbrella were purple spots representing finger symbols and the umbrella handle which was a rainstick. We were divided into groups and given a color and the instruments that went with it. One of use was chosen to be the “conductor”. The conductor decided what the umbrella would sound like by pointing to the different colors. When they felt their song was done they would point to the handle cueing the rainstick and another child would be chosen to conduct a new song. These activities are great for teaching pitch detection, differentiating timbre, focus, timing, and presenting in front of a group.

*Hello, Hello!* is a book that teaches and explains how different animal species greet one another (humans say hello, lions rub their foreheads together). Incorporated within this book there was a “hello” song that also involved a dance. We would sing the lyrics of the song after

we were introduced to a new animal. We were partnered up in a circle with the teacher in the center. The teacher would read the page and then cue us to begin our song/dance. The song is a short 9 measures and the dance went like this:

Measure 1-2 Shake with right hand and hold

Measure 3-4 Shake with left hand (cross over right) and hold

Measure 5-8 2-hand turn (8 beats)

Measure 9 Take 4 steps to right to greet a new partner

Interlude right-arm swing (4 beats), L-arm swing (4 beats)

This was a great activity to engage the class in a story, practice pragmatics and other appropriate communication goals.

*From Head to Toe* had a great story recall aspect, we began by reading through the story several times and practicing the movements involved with each character. After, we took the pictures from the book and created a “movement clock”. We set the pictures in a circle and had to try and remember what movement each animal made, and also be able to tell the rest of the class what animal it was and how to do the movement.

The workshop was a very eye-opening experience in how music can be incorporated and used in a preschool setting. Music is not just a choir or band performance. It is also the movement of the body, repetition, beat and rhythm, working together, and listening. This workshop focused on music and literacy, but offered so much more: colors, pragmatics, focus, presentation, and communication skills.

### **Music Therapy Resources**

Musictherapy.org is run by the American Music Therapy Association (AMTA). It offers great information on what music therapy is, what music therapy can do, who can benefit from

music therapy, and where and how to locate qualified, licensed music therapists. The information that I found most helpful from AMTA was found in hand-outs titled; *Music Therapy and Young Children* (AMTA, 2006a) and *Music Therapy and Special Education* (AMTA, 2006b). I have included these handouts in the additional resources so that educators and parents can see the research that has made this project worthwhile. I also contacted the music therapist I worked with throughout this project and had her create several easy to read handouts. These handouts include information about what music therapy is, how and who it can be used for, music therapists and collaboration with other professionals, and how music helps children with hearing loss.

### **Music Therapy Rotation**

Working with the music therapists was a wonderful experience. The therapy sessions always led to great discussions on using music in the classroom. Music is not just for fun. As shown above, music is great for teaching many academic, social, and musical concepts. Through the therapists I learned that music is also a great source for behavior and classroom management. During our first several sessions the advisor and student clinician discussed the goals and objectives they would like to accomplish throughout the semester. Several of those goals were what I considered to be typical music related goals; the ability to differentiate timbre, pitch identification, and to sing along with a song. Others were directed towards speech and language; specific speech sounds, suprasegmentals and prosody, and pragmatics. The next objectives surprised me as something that could be worked on through music; impulse control and transitioning.

Impulse control activities were incorporated throughout the entire session. Music has strict rules such as rests, length of certain notes, or when the different instruments enter or exit a

piece. When we give children instruments they want to play with and explore them. If we give them a song to go along with that instrument, it helps to set the rules of when and how to play. The children have to follow those rules to create the correct song. Instruments that were often used for impulse control activities were egg shakers and maracas. These instruments would have to be held quietly until it was time to play. If you have ever watched a room of preschoolers holding egg shakers, you know how difficult this can be. The children loved the idea of creating music and used their best self control to participate correctly in these activities.

Transitioning in a preschool setting is when the children move from one activity to another. This can be from large to small groups, recess to circle time, centers to snack, etc. Those transitioning periods are most often when preschool teachers see problem behaviors. Often children are not ready to move on, do not like the next activity, or, within those few moments of not having direct instruction, find themselves getting into trouble. Watching children transition with music was a very new experience. When it was time to transition to a new activity, the music therapist would sing a little song to help gather the materials and signify that it was time for something else. I watched in shock as the children easily parted with the desired materials and prepared for the next activity. It felt as if it was easier to comply to the transition as the children knew what the song signified, that the instruction was given in a non threatening way, and they were able to feel like moving from one activity to another was a game and not a chore. One of the reasons I believe the “Clean Up” song from the television show “Barney” is still sung by preschoolers around the world.

Another way that music can help with classroom management is by helping with problem behaviors. This was never a problem during our music therapy sessions, but it was something we discussed. The Iso Principle is a music therapy standard. This is when the music therapist lets the

client's emotions and mood guide them to what music to play during the session. When a client is excited, nervous, or scared, their heart rate is going to be faster. By playing music that matches that rate and then slowly taking it down they can lead the client to a more relaxed state. The same goes for when the client is feeling sad or down. They meet the client and then slowly bring them up. This can be used as a way to lead children from a high activity level to a lower level or to help children while they are experiencing problem behaviors.

My time spent in the music therapy setting was amazing. I was able to look at my classroom in a whole new light. I feel that through the resources and information given, I am better able to use music in my preschool classroom within many different settings.

#### **Four Major Proposed Activities and Resources-**

As I began this project my foremost objective was to incorporate music and literacy. Through my research and experiences I found that there are many ways that music can be used in the preschool classroom. My first two activities are based on literacy, story recall and learning vocabulary. The third activity is working with the toddler group and their parents on suprasegmentals, Ling sounds, and literacy. The final aspect of this project was to combine all of my activities, resources, and music into one easy-to-use binder for educators and parents to access and use in their classroom and home.

#### **Music to Enhance Story Recall**

**1. Preschool: Using Music to Enhance Story Recall.** I have created three literacy units surrounding the topic of classic children's literature, holiday theme-based, and other fun themes that are often incorporated within the preschool curriculum (family, body, and bugs). The following list is the books in each unit:

- a) Children's literature  
Goldilocks and the Three Bears

The Three Billy Goats Gruff  
Little Red Riding Hood

b) Holiday Theme-Based

The Gingerbread Man  
Thanks for Thanksgiving  
The Little Old Lady Who Wasn't Afraid of Anything

c) Common Preschool Themes

Me and My Family Tree  
Bugs! Bugs! Bugs!  
From Head to Toe

I decided to separate the books and activities into these three categories as each of these topics is used often in the preschool curriculum.

**Why Books Were Chosen**

Classic Children's literature has often been written to teach children moral, safety, or behavioral lessons. Due to these lessons and the popularity of such stories they are often incorporated into the preschool curriculum. The three classic stories I have chosen to include in this unit are extremely popular in preschool as they emphasize academics and speech and language; size concepts, prepositions, adjectives, counting, sequencing, etc.. These stories also teach pragmatics and adaptive skills; to be aware of strangers, sharing, listening to teachers and parents, etc. During the first half of the school year there are three major holidays; Halloween, Thanksgiving, and Christmas. I wanted to provide activities for this busy time of year that teachers could turn to and know that their students will be able to have fun, but also continue to learn. My third category is a mix of several very popular weekly themes that are frequently used during the preschool year; family, bugs, and the body. Each of these stories has their own activity to accompany it, but the same methods of teaching and encouraging story recall are comparable.

### **Story Recall through Use of Instruments**

Three of the stories within this unit use the same method; Little Red Riding Hood , The Three Billy Goats Gruff , and The Little Old Lady Who Wasn't Afraid of Anything. In these activities, each character is assigned a specific instrument. The story is read to the children several times. Then, the children use the instruments to help tell the story as the teacher is reading. Finally, the children can tell the story through using the instruments and acting it out or with pictures. This activity helps the children to distinguish timbre, focus, and to recall the information.

### **Story Recall through Songs and Movement**

The three stories; From Head to Toe, Bugs! Bugs! Bugs!, and Goldilocks and the Three Bears, have songs that have taken the words of the story and put them to a tune. Telling the story through music is a great way to get the entire brain involved. Instead of just using the speech and language centers of the brain; music, movement, beat and many other centers in the brain are awoken and used to help retain the information provided through the music. The CD *Literacy in Motion* has songs for From Head to Toe and Goldilocks and the Three Bears. Another song for From Head to Toe can be found through the youtube.com channel of Eric Carle, the author of the book. The song for Bugs! Bugs! Bugs! was put together by myself.

Story Recall through

### **Story Recall with Musical Activities**

The last three books under this unit use songs and activities that I created. I used tunes from popular children's music and rewrote the words to go along with Me and My Family Tree and Thanks for Thanksgiving. The songs do not follow the exact words of the story, but follow closely. They can be used before or after reading the story and help the children to understand

the content and sequencing of the story. The activity that accompanies The Gingerbread Man uses beat and rhythm to remember and retell the famous lines of the Gingerbread Man; Run, run as fast as you can. You can't catch me! I'm the Gingerbread Man! The music and activities accompanying these books were created to help the students remember the stories and be able to retell that information.

### **Teacher Feedback**

I was able to go into a LSL preschool classroom of 4-5 year olds and share several of these books and activities: Me and My Family Tree, The Little Old Lady Who Wasn't Afraid of Anything, Thanks for Thanksgiving, and The Gingerbread Man.

At the beginning of this project I had a meeting with the preschool classroom teacher. We discussed the coming weekly themes and material that she thought would be beneficial for the class. During our meeting we discussed how she had never been able to find a song or book to help convey the complicated subject of extended family relations (aunt, uncle, cousin, etc.). After our meeting I began brainstorming and researching songs and/or books for this subject. I was able to find a book through amazon.com that portrayed the idea of extended family with a tree. From this book I was able to create a song that followed the books progression through the family and created an easy-to-use prop to use while singing or reading. After sharing this book, song, and activity with the preschool teacher we discussed ways to connect it even more with the students. We had parents of the students send pictures of their families so that they could create their own family trees. The song is created in a way that makes it easy for the teacher to stop and discuss the material throughout the song.

The following themes were; Scarecrows, Thanksgiving, and Christmas. Songs and activities for these themes were created after discussing the material and ideas with the

classroom teacher. Teacher feedback on these materials was positive. Every activity was thought to be a very fun and beneficial tool to help teach the concepts, stories, and encourage story recall. The activities were engaging for students and the classroom teacher said that these and other musical activities would be used throughout the school year.

### **Music strategies used and other skills practiced in this unit**

- Timbre differentiation
- Instrument differentiation
- Putting the words of the story to song
- Using a beat to memorize key phrases
- Body movement to encourage kinesthetic memory
- Focus
- Pragmatics/adaptive skills
- Listening skills

### **Embed Music within Preschool Curriculum to Teach Vocabulary**

#### **2. Preschool: Use music embedded within the preschool curriculum to teach vocabulary.**

Along with encouraging story recall, I wanted to give the children opportunities to learn new vocabulary to enhance their ability to participate in story recall activities. Through the *Literacy in Motion* CD, I found three books that teach age-appropriate vocabulary within appropriate preschool literature.

Where the Wild Things Are  
Alexander and the Terrible, Horrible, No Good, Very Bad Day  
The Hungry Caterpillar

#### **Why Books Were Chosen**

Each of these books and activities can fit easily within commonly used preschool themes.

Where the Wild Things Are could fit well with Halloween, monsters, family, or manners, and Alexander and the Terrible, Horrible, No Good, Very Bad Day provides a great opportunity to

discuss feelings and emotions and to focus on adjectives and descriptive language, and The Hungry Caterpillar can go with food or bugs.

### **Acquire Vocabulary through Movement and Song**

The song for Where the Wild Things Are is an interactive song meant for the children to listen and know when to start and stop dancing, encourage their imaginations, and a great introduction and review of the vocabulary taught within the book. Alexander and The Terrible, Horrible, No Good, Very Bad Day offers many opportunities to discuss and use descriptive language and teach the correct vocabulary for emotions and feelings. The music from the Literacy in Motion CD for The Hungry Caterpillar was not quite what I was looking for. I felt it did not focus on enough of the vocabulary I wanted to emphasize during the book. Therefore, I created another song to accompany the book and CD. The song goes to the tune of “I’ve Been Working On the Railroad” and focuses more on the food names and sequencing of the story.

### **Music strategies used and other skills practiced in this unit**

- Body movement to encourage kinesthetic memory
- Putting words of the story to song
- Focus
- Descriptive language
- Listening skills

### **Music to Encourage Knowledge of Ling Sounds and Use of Suprasegmentals**

**3. Toddler Group: Toddler and Parent Activities.** As well as incorporating music into the preschool curriculum, I also wanted to become look into working with toddler group. I felt that it was very important to work with children ages 1-3 years old and to involve the parents and families of the students. Two areas I felt would be beneficial for this age group and their families were the Ling sounds and suprasegmentals.

## **Purpose of Toddler Group**

Toddler group is held to prepare children and families for preschool. Teachers of toddler group focus much of their time coaching the parents on appropriate auditory verbal strategies to elicit language and encourage listening in the home. When these strategies are generalized throughout the child's entire day they will be better able to learn and incorporate their newly acquired skills. As most children are receiving amplification by 6 months and/or being implanted by 1 year, it is important that we begin their listening and language skills with the basics. To maintain that children are able to hear across the entire spectrum of speech, we need to know that they are hearing all of the frequencies of the speech sounds.

## **Ling Sounds and Suprasegmentals**

The Ling sounds are six sounds (/ah/, /oo/, /ee/, /sh/, /ss/, /mm/) that cover the frequencies of speech from low to high. When a child can hear these sounds from a distance, you know that they are hearing the frequencies required for spoken language. Children must be taught to recognize and become familiar with these sounds. The early interventionists at Sound Beginnings Preschool had already placed each sound with a tangible, concrete object (/aa/ goes with an airplane, /ee/ with a ghost, etc.). I decided to take those sounds and images, that they have become familiar with, and put them into a song. Through music parents and teachers can bring up the Ling sounds in the naturalistic mode of singing.

Another basic part of speech and language are suprasegmentals. Suprasegmentals which are; speed, pitch, volume, and duration are used to convey meaning into our everyday language. As we are teaching these young children to listen for speech signals, they also need to learn to listen for and use suprasegmentals.

## **Teacher and Parent Feedback**

I have been introduced to or created four songs to emphasize the Ling sounds and suprasegmentals. Two of the songs I created were used in the Sound Beginnings Preschool Christmas program and were received with praise from parents and teachers alike. The parents involved in the toddler group program were very excited at the idea of teaching their children these important aspects through such a fun and easy method. One of the parents told me that the songs were so catchy; their other children were joining in and helping to expose their toddler to these important concepts.

#### **Music and strategies used for this unit**

- Songs written to emphasize target sounds and pitch
- Focus
- Listening skills

#### **Develop Resource of Materials**

**4. Educators and Parents: Develop Resource of Materials.** As I have created and gathered materials for this project I have developed a resource for teachers and parents. This resource has been combined into an easy to read binder divided into sections.

- a) Introduction to the project, information on what music therapy is, short message about how anyone can sing, etc.
- b) Individual books, songs, and activities. Within their appropriate category (story recall, vocabulary acquisition, and toddler group.)
- c) Memory sticks with recordings and examples of songs.
- d) Other ways to incorporate music into the preschool classroom such as:
  - Transition activities
  - Behavior improvement
  - Impulse Control

#### **Other Uses for Music in the Classroom**

Music has been shown to be an extremely beneficial way to enhance a child's learning in literacy and language. It has also been shown to be a great tool in transitioning, behavior improvement, and impulse control. During my time working with the music therapists at Sound Beginnings Preschool, I saw firsthand how music was able to play a huge part in classroom management. These skills are easy to implement within a classroom setting and very well received by the students.

**Materials Needed.** This is an all inclusive curriculum. All of the materials used and referenced to in the resource binder are available within the final project.

**Activity #1:**

- Books- As we tried to use common preschool book, I felt that only some of the less used books were needed to be included. Those books are: Bugs! Bugs! Bugs!, Alexander and the Terrible, Horrible, No Good, Very Bad Day, Where the Wild Things Are, Me and My Family Tree, and Thanks For Thanksgiving.
- Instruments-
  - 2 sets of hand drums
  - 4 tambourines
  - 4 sets Egg shakers
  - 4 triangles
  - 4 pairs of finger cymbals
  - 12 pairs of rhythm sticks
  - 6 wood tone blocks
  - 12 slider whistles
  - 2 boxes of bells (set of 8)

### **Activity #2:**

- Two copies of the *Literacy in Motion* musical CD ([learninstationmusic.com](http://learninstationmusic.com)).

### **Activity #3:**

- Two rain sticks were made as additional musical instrument.

### **Activity #4:**

- Binders, page protectors, USB drive/memory stick, and other similar items needed to create an easy to use and access resource of information.

**Dissemination.** All of the materials have been doubled. One set of the materials will be given to the Sound Beginnings Preschool to be placed in the teachers supply closet. The other set will be sent to the Utah Schools for the Deaf and the Blind to be placed in their teachers supply closet.

## **Conclusion**

### **Notes for Educators and Parents**

This project is meant to be built upon. Teachers and parents can create or find musical activities to go along with new concepts in literacy or other academic fields (number, colors, shapes, letters, etc.).

Things to know and remember when incorporating music into the classroom:

- You don't need to reinvent the wheel. youtube, pinterest, and google.com are great places to find ideas. Search for the book title, subject, or author. Often times, people have already created a song or activity that can be incorporated into your lesson.
- Create songs by using familiar children's tunes. If you can't find something that fits with what you are trying to teach then create your own by using a familiar tune. You do not have to be musically inclined to create your own songs. I found that the children were better able to sing along if they already knew the tune.
- Get to know your local music therapist or music educator. Get on [musictherapy.org](http://musictherapy.org), contact your school district, local hospital or university to find a music therapist or student near you. They have wonderful ideas on how to use music and would love to

share their knowledge. As it is a growing field they are always looking for ways to enter communities and show people what music therapy is all about.

- Music doesn't always have to involve singing or instruments. Even though singing and instruments are a great way to incorporate music into the curriculum, they are not the only way to do so. As we have mentioned music and musicality can be found all around you: beat, rhythm, suprasegmentals, body movement, etc. Having the children create a steady beat while clapping and saying a poem, creating a small dance to go along with a book or song, giving characters in books different voices by using different pitches, volume, or speed. There are many ways to incorporate the benefits of music without having to own an entire orchestra worth of instruments or having an exceptional voice.

### **End Remarks**

The opportunity to research the benefits of incorporating music into the preschool curriculum has been extremely beneficial. It has added to and changed how I plan on teaching my future classroom. This research has shown me how I can better the speech, language, and auditory perception skills of my students with hearing loss. As I have taken my project into the classroom I have been able to see the positive and excited reactions of teachers, parents, and students. All of the professionals I have encountered know that music has great educational qualities, but some have not connected that these qualities can be transferred and used within the preschool aged deaf population. My hope is that this project will continue to grow and improve children's literacy skills as new research is found and as more creative minds have the opportunity to contribute.

### **References**

AMTA (2006a). *Music therapy and young children*. Retrieved from

[http://www.musictherapy.org/assets/1/7/MT\\_Young\\_Children\\_2006.pdf](http://www.musictherapy.org/assets/1/7/MT_Young_Children_2006.pdf)

AMTA (2006b). *Music therapy and special education*. Retrieved from

[http://www.musictherapy.org/assets/1/7/MT\\_Special\\_Ed\\_2006.pdf](http://www.musictherapy.org/assets/1/7/MT_Special_Ed_2006.pdf)

ASHA (n.d.). *How does your child hear and talk: Birth to one year*. Retrieved from

<http://www.asha.org/public/speech/development/01.htm>.

Armbruster, B. B., Lehr, F., & Osborn, J. Center for the Improvement of Early Reading

Achievement, U.S. Department of Education. (2003). *Put reading first: the research building blocks of reading instruction*.

Bartl-Pokorny, K. D., Marschik, P. B., Sachse, S., Green, V. A., Zhang, D., Van Der Meer, L., &

Einspieler, C. (2013). Tracking development from early speech-language acquisition to reading skills at age 13. *Developmental Neurorehabilitation*, 16(3), 188-195.

Brooks, T. (2013). Measuring parent involvement in relation to student

achievement. *Dissertation Abstracts International Section A*, 73.

Callow-Heusser, C. A. (2012). The effects of early identification and intervention on language

outcomes of children born with hearing loss. *Dissertation Abstracts International Section A*, 73.

Chen, J., Chuang, A., McMahon, C., Hsieh, J., Tung, T., & Li, L. (2010). Music training

improves pitch perception in prelingually deafened children with cochlear implants. *Pediatrics*, 125(4), e793-e800. doi:10.1542/peds.2008-3620.

- François, C., Chobert, J., Besson, M., & Schön, D. (2013). Music training for the development of speech segmentation. *Cerebral Cortex*, 23(9), 2038-2043. doi:10.1093/cercor/bhs180
- Gfeller, K., driscoll, v., Kenworthy, M., & Van Voorst, T. (2011). Music therapy for preschool cochlear implant recipients. *Music Therapy Perspectives*, 29(1), 39-49.
- Hallam, S. (2010). The power of music: Its impact on the intellectual, social and personal development of children and young people. *International Journal Of Music Education*, 28(3), 269-289. doi:10.1177/0255761410370658.
- Harrison, M. & Roush, J. (1996). Age of suspicion, identification, and intervention for infants with hearing loss: A national study. *Ear and Hearing*, 17, 55-62.
- Holmberg, S. D. (2011). Music teachers' perceptions: The role of music education in early literacy. *Dissertation Abstracts International Section A*, 71.
- Kennedy, C.R., McCann, D.C., Campbell, M.J., Law, C.M., Mullee, M., Petrou, S., Watkin, P., Worsfold, S., Yuen, H.M., & Stevenson, J. (2006). Language ability after early detection of permanent childhood hearing impairment. *New England Journal of Medicine*, 354(20), 2131-2141.
- Kouri, T., & Telander, K. (2008). Children's reading comprehension and narrative recall in sung and spoken story contexts. *Child Language Teaching and Therapy*, 24(3), 329-349.
- Legg, R. (2009). Using music to accelerate language learning: An experimental study. *Research in education*, 82(1), 1-12.

- Lenden, J. M., & Flipsen, P. r. (2007). Prosody and voice characteristics of children with cochlear implants. *Journal Of Communication Disorders*, 40(1), 66-81.  
doi:10.1016/j.jcomdis.2006.04.004.
- Mace, A. L., Wallace, K. L., Whan, M. Q., & Stelmachowicz, P. G. (1991). Relevant factors in the identification of hearing loss. *Ear and Hearing*, 12, 287-293.
- Madell, J., & Flexer, C. (2008). *Pediatric audiology: Diagnosis, technology, and management*. (pp. xix-xxi). New York, NY: Thieme medical publishers, inc.
- McGarr, N. S., & Osberger, M. J. (1978). Pitch deviancy and intelligibility of deaf speech. *Journal Of Communication Disorders*, 11(2-3), 237-247. doi:10.1016/0021-9924(78)90016-3.
- Moeller, M.P. (2000). Early intervention and language development in children who are deaf and hard of hearing. *Pediatrics*, 106(3), E43.
- National Governors Association Center for Best Practices, Council of Chief State School Officers. , & Council of Chief State School Officers, (2010). *Common core state standards*. Retrieved from National Governors Association Center for Best Practices, Council of Chief State School Officers website: <http://www.corestandards.org/the-standards>.
- Nelson, L. (2008). Academic achievement of children with cochlear implants. *Dissertation Abstracts International*, 69.

- Parault, S. J., & Williams, H. M. (2010). Reading motivation, reading amount, and text comprehension in deaf and hearing adults. *Journal Of Deaf Studies And Deaf Education, 15*(2), 120-135.
- Porcaro, C., Zappasodi, F., Barbati, G., Salustri, C., Pizzella, V., Rossini, P., & Tecchio, F. (2006). Fetal auditory responses to external sounds and mother's heart beat: Detection improved by Independent Component Analysis. *Brain Research, 1101*(1), 51-58.  
doi:10.1016/j.brainres.2006.04.134.
- Purcell-Gates, V., McIntyre, E., & Freppon, P. A. (1995). Learning written storybook language in school: A comparison of low-SES children in skills-based and whole language classrooms. *American Educational Research Journal, 32*(3), 659-685.  
doi:10.2307/1163327.
- Report of the national reading panel: Teaching children to read.* (2006, October 11). Retrieved from <http://www.nichd.nih.gov/publications/pubs/nrp/pages/smallbook.aspx>.
- Roden, I., Kreutz, G., & Bongard, S. (2012). Effects of a school-based instrumental music program on verbal and visual memory in primary school children: A longitudinal study. *Frontiers In Psychology, 3*doi:10.3389/fpsyg.2012.00572.
- Salmon, A. (2010). Using music to promote children's thinking and enhance their literacy development. *Early Child Development And Care, 180*(7), 937-945.  
doi:10.1080/03004430802550755.
- Schlaug, G., Norton, A., Overy, K., & Winner, E. (2005). Effects of Music Training on the Child's Brain and Cognitive Development. In G. Avanzini, L. Lopez, S. Koelsch, M.

- Manjno (Eds.) , The neurosciences and music II: From perception to performance (pp. 219-230). New York, NY US: New York Academy of Sciences.
- Terrell, S. (2013). Elements of music and speech: A methodology to incorporate the elements of music into teaching pronunciation to speakers of English as a second language. *Dissertation Abstracts International Section A*, 73.
- Tierney, A., & Kraus, N. (2013). The ability to move to a beat is linked to the consistency of neural responses to sound. *The Journal of Neuroscience*, 33(38), Retrieved from <http://www.alphagalileo.org/ViewItem.aspx?ItemId=134464&CultureCode=en>.
- Toward Equality (1988). *A Report to the Congress of the United States: Toward equality Commission of Education of the Deaf*. Washington, DC: U.S. Government Printing Office.
- Utah state office of education. (2013). *Utah's early childhood core standards with strategies and activities*. (Vol. 2). Salt Lake City:
- van Besouw, R. M., Grasmeyer, M. L., Hamilton, M. E., & Baumann, S. E. (2011). Music activities and responses of young cochlear implant recipients. *International Journal Of Audiology*, 50(5), 340-348. doi:10.3109/14992027.2010.550066.
- Wallace, W. T. (1994). Memory for music: Effect of melody on recall of text. *Journal Of Experimental Psychology: Learning, Memory, And Cognition*, 20(6), 1471-1485. doi:10.1037/0278-7393.20.6.1471.

- White, K.R., Forsman, I., Eichwald, J., & Munoz, K. (2010). The evolution of Early Hearing Detection and Intervention programs in the United States. *Seminars in Perinatology*, 34(2), 170-179.
- Wiggins, D. (2007). Pre-K music and the emergent reader: Promoting literacy in a music-enhanced environment. *Early Childhood Education Journal*, 35(1), 55-64.  
doi:10.1007/s10643-007-0167-6.
- Wilson, M. (2013, September 2). [Web log message]. Retrieved from <http://topangamusichtherapy.wordpress.com/2011/09/02/music-therapy-for-children-with-emotional-challenges/>.
- Williams, C. (2012). Promoting vocabulary learning in young children who are deaf and hard of hearing: Translating research into practice. *American Annals Of The Deaf*, 156(5), 501-508. doi:10.1353/aad.2012.1597.
- Yoshinaga-Itano, C. (2003). From screening to early identification and intervention: Discovering predictors to successful outcomes for children with significant hearing loss. *Journal Of Deaf Studies And Deaf Education*, 8(1), 11-30. doi:10.1093/deafed/8.1.11.
- Yoshinaga-Itano, C. (2004). Levels of evidence: Universal newborn hearing screening (UNHS) and early hearing detection and intervention systems (EHDI). *Journal Of Communication Disorders*, 37(5), 451-465. doi:10.1016/j.jcomdis.2004.04.008.
- Yoshinaga-Itano, C. & Gravel, J.S. (2001). The evidence for universal hearing screening. *American Journal of Audiology*, 10(2), 62-63 D.