Just a Toolbox of Resources for Listening and Spoken Language

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Taylor has been working at Sunshine Cottage since December 2016. She received a Bachelor's Degree in Communication Sciences and Disorders from the University of Mississippi in 2015 and a Master's Degree in Speech Language Pathology from the University of Texas at Dallas in 2016. Taylor is in the process of acquiring her Listening and Spoken Language Specialist certification.

Disclosure Statement

We have relevant financial and nonfinancial relationship(s) with the products or services described, reviewed, evaluated or compared in this presentation.

We are full time employees at Sunshine Cottage School for Deaf Children and are affiliated with one of the applications we will be talking about today. We assisted in creating the Speech That Works application, which was created at Sunshine Cottage. The school receives all financial benefit from the sales and proceeds of the application, but no benefit is received by the Speech Department or any individual presenter.

Hearing is just the beginning…

The 1st Auditory-Verbal Principle:

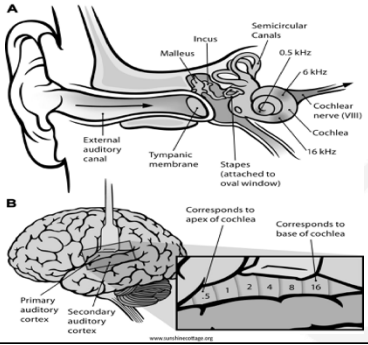
- Children need to hear before they can listen.
- They need to listen before they can process spoken language through listening.
- They need to process to become independent in spoken communication.

Caleffe-Schenck, Nancy, 2013. *Getting Started*

- A typically developing fetus receives 20 weeks of auditory stimulation in the womb.
- 90% of brain growth happens during the first three years of life. (Google Project Aspire)
- Hearing loss is not about the ears; it's about the brain!
  - Hearing aids, FM Systems, and cochlear implants are not about the ears; they are about the brain. They are "Brain Access Tools"
- If a child wears hearing technology for 4 hours a day, it will take him/her 6 years to receive the stimulation a typically hearing child receives in one year.

Flexer, Carol, 2014. *Attaining and Sustaining Language and Literacy Through Hearing Technology*

Whenever you hear "ear" think "BRAIN!"



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Average Number of Words Understood by Typically Developing Children

Age:	# of Words:
2	300
2.5	500
3	900
4	1500
5	2500
6	13,000
7	20,000

Flexer, Carol, 2014. *Attaining and Sustaining Language and Literacy Through Hearing Technology*

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- If the child's technology is not worn every waking moment, no other intervention will suffice if the family's desired outcome is listening and spoken language.
- The child's auditory brain must be accessed, stimulated, and developed to reach the desired outcome of listening and spoken language, and technology is the only way through the doorway for a child with hearing loss.
- The motto should be: "**Eyes open, equipment on**!"

Flexer, Carol, 2014. *Attaining and Sustaining Language and Literacy Through Hearing Technology*

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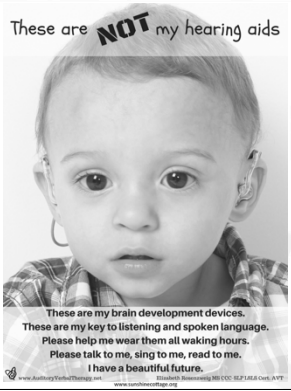

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TEAM

- **T:** Therapists (SLP, AVT, AV Ed)
  +
- **E:** Educators (ECI, Deaf Ed, AI, Mainstream Teacher)
  +
- **A:** Audiologists
  +
- **M:** Members of the family and medical community

= Successful listeners ! ! ! ! ! ! !

Foster, Horner, & Jones, Audiologists, Sunshine Cottage School for Deaf Children, 2015. *Pediatric Audiology Best Practices: Information Every Team Member Needs to Know.*

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Aggressive Audiological Management- Hearing Aids

- Birth to 36 months
  - Un-aided testing every 3 months
  - Aided testing every 3 months
  - Earmolds frequently
- 3 years to 5 years
  - Un-aided testing every 6 months
  - Aided testing every 6 months
  - Earmolds every 6 – 12 months
- 5 years and older
  - Un-aided and aided testing annually
  - Earmolds as needed

Foster, Horner, & Jones, Audiologists, Sunshine Cottage School for Deaf Children, 2015. *Pediatric Audiology Best Practices: Information Every Team Member Needs to Know.*

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Cochlear Implant Programming for Children

- Initial stimulation after clearance is obtained from the neurotologist
- Follow-up mapping within 2-4 weeks after initial stimulation
- Each CI should be mapped at least twice a year or sooner if concerns arise
  - Age appropriate behavioral audiometry techniques should be used during the programming sessions.

Foster, Horner, & Jones, Audiologists, Sunshine Cottage School for Deaf Children, 2015. *Pediatric Audiology Best Practices: Information Every Team Member Needs to Know.*

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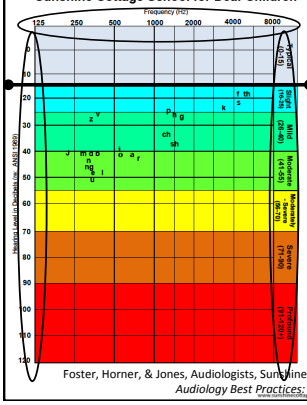
CI Programming Schedule After a "Good" Program is Attained

Age of child	Frequency of programming and verification sessions*
1 to 3 years	Every 3 months
3 to 5 years	Every 6 months
6 years and older	Every 12 months

*Programming and verification should be scheduled more frequently if speech is not audible or if steady gains in speech/language skills are not being attained

Ludueña, Linda Audiologist, Sunshine Cottage School, 2012.

Sunshine Cottage School for Deaf Children



DEGREE Or Level of Hearing loss

- 0 – 15 dB: Normal
- 15 – 25 dB: Slight hearing loss
- 26 – 40 dB: Mild hearing loss
- 41 – 55 dB: Moderate hearing loss
- 56 – 70 dB: Moderately-severe hearing loss
- 71 – 90 dB: Severe hearing loss
- 91+ dB: Profound hearing loss

FREQUENCY RANGE

- In Hertz
- LOW to HIGH pitch
- 250 Hz thru 8,000 Hz

Foster, Horner, & Jones, Audiologists, Sunshine Cottage School for Deaf Children, 2015. *Pediatric Audiology Best Practices: Information Every Team Member Needs to Know.*

Audiogram Symbols

RIGHT

- Air Conduction Unmasked = **O**
- Air Conduction Masked = **△**
- Bone Conduction = **<**
- Bone Conduction Masked = **[**

LEFT

- Air Conduction Unmasked = **X**
- Air Conduction Masked = **□**
- Bone Conduction = **>**
- Bone Conduction Masked = **]**

Air conduction in Soundfield = S

Aided (with hearing technology) in Soundfield = A

Arrow means no response at limits of equipment.

Foster, Horner, & Jones, Audiologists, Sunshine Cottage School for Deaf Children, 2015. *Pediatric Audiology Best Practices: Information Every Team Member Needs to Know.*

Checking Amplification

- Equipment should be checked at the **beginning of every day**.
- Before therapy begins, administer the Ling Six Sound check to determine if the equipment is functioning properly.
- Working on auditory-oral skills with equipment that is not functioning properly will prove to be ineffective.

Listening Check Box

- ✓ Battery tester
- ✓ Listening stethoscope
- ✓ Blower
- ✓ Extra batteries
- ✓ Wax loop
- ✓ Otoease & otoferm
- ✓ Toupee tape
- ✓ Scissors
- ✓ Monitor earphones from CI companies, listening check equipment from CI companies, signal check from CI companies
- ✓ TOYS

Foster, Horner, & Jones, Audiologists, Sunshine Cottage School for Deaf Children, 2015. *Pediatric Audiology Best Practices: Information Every Team Member Needs to Know.*

Video 01

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Ling Six Sound Check

- Developed by Daniel Ling
- Six sounds and a silent period
- Have child "listen"
  - Child can look down
  - Stand behind the child
  - Try using an acoustic speech hoop
- Child will detect or identify sound

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Ling Sound Check

- /a/, /i/, /u/, /s/, /ʃ/, /m/, "nothing"
- Sound randomly produced
- Period of silence
  - To allow child to recognize a sound was not produced
  - Speaker asks, "What did you hear?"
  - Child says, "Nothing!"
- Can be done in 10-15 seconds
- Should be done at 3ft, 6ft, and 9ft

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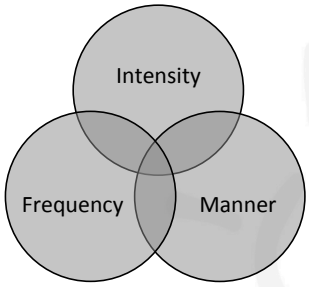
Ling Sound Check



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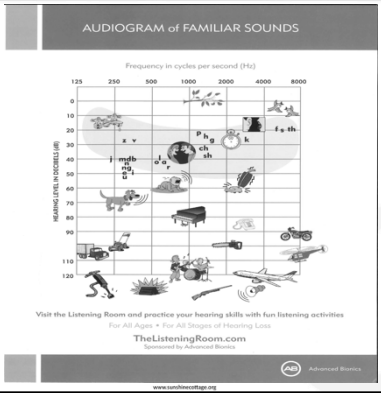

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Video 02

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Behavioral Observations

- Change in frequency of vocalization, voice quality and/or vocal intensity
- Omission or confusion of consonants that were formerly present
- Emergence of disruptive or withdrawn behavior

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Environmental Acoustics

- Signal to Noise Ratio is the key to hearing intelligible speech – speech must be 10x louder than background sounds. (Flexer, Carol, 2014. *Attaining and Sustaining Language and Literacy Through Hearing Technology)*
- Be aware of background noise
  - Other children
  - TV/stereo on
  - Dishwasher running
- Room acoustics
  - Hardwood floors – noisy
  - Area rugs – dampen sounds

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Auditory Oral Strategies

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Cochlear Americas: Listen Learn and Talk Guide

- Guide for parents and therapists on auditory-oral techniques, goals, hierarchies, and therapy.

http://www.cochlear.com/wps/wcm/connect/64666766-c7e8-47cd-8984-5f2fc3107e6f/product_cochlearimplant_rehabilitationresources_earlyintervention_listenlearnandtalk_en_1.93mb.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=64666766-c7e8-47cd-8984-5f2fc3107e6f

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Positioning

- Cochlear implant side for most benefit (if 1 sided CI only)
- 6 inches from the microphone of HA or CI
- Single CI does not allow localization of sound
- Get on the child's level

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Speaker's Voice

- Avoid using a:
  - High-pitched voice
  - Breathy voice
  - Over-exaggerated mouth movements
  - Monotonous voice
- Use parentese
  - Intonation
  - Pitch patterns

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Reduce Visual Cues

- Allow students to rely on their cochlear implant(s) or hearing aid(s)
- Inhibit pointing, gesturing, tapping
  - "Close the door"
  - "Sit down"
- Don't give it away with eye gaze

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Auditory Sandwich

- Give information auditorally
- Give visual cue
  - If information is NOT understood
- ALWAYS go back to audition

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Acoustic Highlighting

- Emphasize particular words or sounds
  - Intensity changes
  - Pitch changes
  - Duration changes
  - Repetition

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Auditory Bombardment

- Use of target frequently in therapy
- Don't miss an opportunity to use their target
- Therapy may be the only opportunity for the child to hear the target again and again

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Check for Comprehension

- Comprehension verses pleasing the listener.
- "What did you hear me say?"
  - Child is obligated to respond to the question
  - Builds self-confidence
  - Check themselves

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Clarify the Message

- Reword
- Repeat
- Visual cue – deliberate use of eye gaze
- Use shorter utterances
- Use simpler language
- Use familiar language

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Wait Time

- OWL
  - Observe
  - Wait
  - Listen
- At least 8 second wait time
- Limit teacher talk/ explanation

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Sabotage

- Deliberately do something wrong to cause a reaction
- To encourage communication don't have everything ready or available for the child

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Hand Cue

- Use only when necessary
- Use to prompt for vocalization
- Use to prompt for listening
- Can substitute as a stuffed animal, toy, acoustic screen or book

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Repetition

- Repeating what the child has said for reinforcement
- Repeating what the child has said to draw attention to an error

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Expansion/Extension

- Expansion: expand the child's utterance for correct grammar but do not provide new information
- Extension: expand the child's utterance for correct grammar and include new information

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Increase Listener Responsibility

- Avoid rescuing
- Avoid translating
- Avoid yes/no questions
- Avoid using a pattern of responses
- Don't overlook the quiet child who is behaving
- Teach clarification strategies

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Video 03

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Therapy Considerations

Easiest to Hear	Hardest to Hear
• Greatest acoustic contrasts	• Less varied (minimal pairs…)
• Small set of choices (2-4)	• Large set (4-12)
• Distance – **close** to the microphone (6 inches)	• Distance – far from the microphone

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Therapy Considerations

Easiest to Hear	Hardest to Hear
• No background noise	• Noisy background
• Key word at the end of the sentence	• Key word in the middle of a sentence
• Slightly slower rate	• Normal rate

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Therapy Considerations

Easiest to Hear	Hardest to Hear
• Increased pitch variation and rhythm	• Normal rhythm
• Clear enunciation	• Less clear and/or unfamiliar voice
• Increased repetition	• No repetition

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Therapy Considerations

Easiest to Hear	Hardest to Hear
• Simple language, short sentences	• Complex language
• Emphasis on unaccented words (prepositions, articles)	• No special emphasis
• Consonants when vowels are whispered	• Consonants when vowels are shouted

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In Order for Therapy to be Efficient and Effective, Remember……

- Make sure equipment is working
- Use an FM System or Positioning Strategy
- Room acoustics
- Auditory Oral Strategies
- Communication with parents and professionals

Practice makes PERMANENT!– not Perfect!!!

Resources

Alexander Graham Bell Association
www.listeningandspokenlanguage.org

- Find services in your area.
- Family resources including: teen resources, financial aid programs, and parent/family blogs.
- Professional resources- career center, parent guidance education and support, listening and spoken language development, web resources
- Advocacy resources
- Conventions for professionals and families offered every two years (CEUs available).

Advanced Bionics
www.advancedbionics.com

- Online event calendar – find online, local and regional events.
- The Listening Room – free resources to support the development of language and listening skills
- Hearing Journey
- Familiar Sounds Audiogram
- Ling Six Sounds cards and games
- Tool for Schools – classroom management and assessment tools
- Tools for Toddlers – free resources for young listeners
- Apps - ABle Clix, AB Listening Adventures, VocAB Scenes, IT-MAIS

Cochlear Americas
www.cochlearamericas.com

- Cochlear Hope Online Courses
- Cochlear Hope Speech Sounds – consonants and vowels
- Telephone with Confidence
- Communication Skills Program
- Sound Foundation for Babies
- Sound Foundation for Toddlers
- Cochlear Implant School Resource Guide
- Cochlear Implant Listening Skills Development
- Listen, Learn and Talk Program
- Track a Listening Child
- The Communication Corner

MED-EL
www.medel.com

- HearPeers – online community for implant users
- SoundScape Interactive Listening Activities
  - Birth-Adult
- My LittlEARS Diary Activities
- Little Listeners
- Mellie Storybook and Coloring Book
- Music and Young Children with Cis
- Loudness Scale Charts
- Online Hearing Test

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Oticon Pediatics

www.oticonusa.com

- Product support for all devices
- Brain Hearing
- Hearing Solutions for Teenagers
- Connectline Products

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Phonak

www.phonak.com

- Online Hearing Test
- The Listening Room
- Phoneme Perception Test
- eLearning
- Child Hearing Assessment Toolkit (C.H.A.T.)
  - Click on "For Professionals" then choose "Pediatrics:"
  - Includes checklists and rating scales for listening, communication access, placement, self-advocacy, and educational performance.
  - The checklists/scales can be emailed to all team members

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Toolbox for Hearing Aids

- Battery Tester
- Listening Stethoscope
- Earmold blower
- Wax Loop
- Otoease and Otoferm
- Toupee Tape
- Scissors
- Spare batteries
  - Size 13 (orange package)
  - Size 675 (blue package)

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Toolbox for Oticon Medical Ponto

- Battery Tester
- Listening Test Rod
- Magnet Tool
- Spare batteries
  - Size 13 (orange package)

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Toolbox for Cochlear Americas Baha 5

- Battery Tester
- Baha Listening Test Rod
- Magnet Tool
- Spare batteries

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Toolbox for Cochlear Americas Nucleus 6 & 7

- **Your Toolbox**
  - Monitor earphones
  - Signal Check
  - Extra 675 Cochlear Implant Batteries
  - Toupee Tape
- **Child's Backpack**
  - Extra Batteries
    - Disposable &/or Rechargeable
  - Remote Assistant

Toolbox for Advanced Bionics Naida CI Q70 & 90

- Your Toolbox
  - Listening Check
  - Headphones/earbuds
  - Extra 675 CI batteries
  - Toupee Tape
- **Child's Backpack**
  - Extra Batteries
  - Disposable &/or Rechargeable

Toolbox for MED-EL Sonnet

- **Your Toolbox**
  - MED-EL Listener
  - Headphones
  - Signal Checker
  - Extra 675 batteries
  - Toupee Tape
- **Child's Backpack**
  - Extra Batteries
    - Disposable &/or Rechargeable
  - MED-EL Listener
  - MED-EL Fine Tuner

Listening Check /Troubleshooting Resources

Hearing Aids

- Oticon Medical Ponto

http://www.oticonmedical.com/~asset/cache.ashx?id=38587&type=14&format=web

  - Troubleshooting the soft band

www.oticonusa.com

  - Click on "Products" then "Product Support"
- Cochlear Americas Baha

http://www.cochlear.com/wps/wcm/connect/us/home/home#camSukle

  - Click on "For Recipients" tab
- Phonak

www.phonak.com

  - Click on "Usage and Support"

Listening Check /Troubleshooting Resources

Cochlear Implants

- Cochlear Americas

http://www.cochlear.com/wps/wcm/connect/us/home/home#camSukle

  - (click on "For Recipients" tab)
- Advanced Bionics

http://www.advancedbionics.com/us/en/support/troubleshooting_guides.html

- MED-El Rondo

http://www.youtube.com/watch?v=R0cVyp0yq3U&feature=c4-overview-vl&list=PLT --N4wea5BDj9Dqcay-oMJ1T8XpgTG5

http://www.youtube.com/watch?v=0QXG5zvDzAs&list=PLT --N4wea5BDj9Dqcay-oMJ1T8XpgTG5

- MED-El- Opus 2

http://www.med.unc.edu/ent/adunka/files/MEDELOPUS2QuickGuide.pdf

Listening Training Resources

- Cochlear Americas: Listen Learn and Talk- guide for parents and therapists on auditory oral techniques, goals, hierarchies, and therapy.
  http://www.cochlear.com/wps/wcm/connect/64666766-c7e8-47cd-8984-5f2fc3107e6f/product_cochlearimplant_rehabilitationresources_earlyintervention_listenlearnandtalk_en_1.93mb.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=64666766-c7e8-47cd-8984-5f2fc3107e6f
- The Listening Room- Advanced Bionics provides printable activities for listening development.
- Funzee Everyday Sounds CD-ROM by Super Duper Inc.- Environmental sounds.
- Cottage Acquisition Scales for Listening, Language and Speech (CASLLS) by Sunshine Cottage- listening, language, and speech developmental hierarchies.

Listening Training Resources

- www.angelsound.com - Online listening program that includes environmental sounds, vowel and consonant discrimination, word identification and more!
- Sound Touch iPad App- Environmental sounds.
- ABleClix iPad App- Advanced Bionics application that targets vowel and consonant discrimination.
- Contrasts for Auditory and Speech Training (CAST) by ProEd- Informal listening assessment and training program.
- Telephone with Confidence- Cochlear Americas provides audition training with the telephone.
- Auditory Learning Guide- http://www.firstyears.org/c4/alg/alg.pdf

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Professional Educational Resources

- *Speech and the Hearing Impaired Child* by Daniel Ling (2002)
- *Foundations of Spoken Language for Hearing-Impaired Children* by Daniel Ling (1989)
- *Children with Hearing Loss , Developing Listening and Talking: Birth to Six, 3rd Edition* by Elizabeth Cole & Carol Flexer (2016)
- *50 FAQs about AVT* edited by Warren Estabrooks
- *Facilitating Hearing and Listening in Young Children* by Carol Flexer (1999)
- Cochlear Hope Courses- free webinars
- www.lslogic.org- online professional learning community
- www.sunshinecottage.org- webinars and free audiobytes
- www.carolflexor.com

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Additional Articulation & Language Tools for Therapy

- Pacific Kid (www.pacifickid.net)
- Enchanted Learning (www.enchantedlearning.com)
- Articulation Station App (by Little Bee Speech)
- Speech That Works App (by Sunshine Cottage)
- Jumbo Artic Books and CD ROMs
- Speech Corner (www.speechcorner.com)
- Primary Concepts – Articulation Boxes (www.primaryconcepts.com)
- Make A Scene apps (by Innivo)
- My PlayHome apps (by PlayHome Software Ltd.)
- Listening Adventures app (Advanced Bionics)

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Video 04

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References

- Caleffe-Schenck, Nancy, 2013. *Getting Started*
- Flexer, Carol, 2014. *Attaining and Sustaining Language and Literacy Through Hearing Technology*
- Foster, Horner, & Jones, Audiologists, Sunshine Cottage School for Deaf Children, 2015. *Pediatric Audiology Best Practices: Information Every Team Member Needs to Know.*
- Ludueña, Linda, Audiologist, Sunshine Cottage School, 2012.

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