

Classroom Auditory GOALS for Children with Cochlear Implants

By Ruth M. Reeder, M.A. and Jill B. Firszt, Ph.D.

It has been well documented that children with cochlear implants demonstrate increased auditory capabilities over time. These increases are a result of many factors, including earlier identification of hearing loss, younger age at time of implantation, and improved implant technology. An additional factor in the high-level performance of children using cochlear implants, is the therapeutic intervention received at school. This intervention often takes the form of individual or small group "pull-out" therapy, where a therapist removes the child from the classroom to conduct a focused therapy session. Children with cochlear implants typically receive individual speech, language and listening therapy on a weekly and sometimes daily basis. The focus of individual therapy is to strengthen the auditory channel for effective use of auditory information in speech and language development.

It is our experience, however, that daily opportunities could also be provided for children to use their newly-developed auditory skills within the classroom, under the guidance of their primary teacher. Activities to reinforce a child's auditory goals can be blended into the child's academic program in general education classrooms or in self-contained special classes.

This article will address ways to develop auditory abilities as a part of a child's academic curriculum. The concepts that are described are taken from GOALS - *Guide for Optimizing Auditory Learning Skills*, which out-

lines practical ways for educators and clinicians to create situations during academic instruction that encourage the use of residual hearing (Firszt & Reeder, 1996). Classroom teachers often have not been trained to work specifically with children who have hearing loss. In addition, large class sizes and the demands of a diverse student population, make it difficult for classroom teachers to implement a unique program for an implanted child. Using GOALS, these problems are reduced because teachers are



shown how to adapt materials from textbooks and work sheets they are already using. We have found that classroom teachers are much more willing to be supportive of the implanted child's auditory program when familiar materials can be used.

The initial step in auditory skill development is identification of appropriate auditory goals. Teachers and clinicians who are unsure of appropriate goals may consult the clinical staff at the child's cochlear implant center to identify a set of goals.

The teacher or clinician could select one or two goals to address in the classroom setting. Auditory goals specifically targeted for carryover into the classroom may be the same goals targeted in therapy or may be goals the child has begun to master in a therapy setting, but does not yet demonstrate outside of therapy.

Once the child's auditory goals are determined and the lessons for the class established, the teacher or clinician may identify activities for the academic lesson that lend themselves to an auditory focus. Some auditory goals blend almost seamlessly into the planned academic lesson while others require a few minutes of the class period to focus on the auditory goal, using the material from the academic lesson. When possible, it is best to match the auditory goal with academic activities that blend most easily.

Some examples of this process are provided below. In each case, the auditory goal and academic lesson or activity are explained. This is followed by a description of ways to incorporate the auditory goal into the activity. The auditory goals are for an auditory-only condition (i.e. no lipreading or signed cues). This can be achieved by using a listening screen or by presenting the stimuli from behind or beside the child, out of view.

Example 1:

Lesson or Activity: "Calendar Time"
Auditory Goal A: Discriminate between two words that differ in syllable length.

Incorporating Auditory Goal A: Select two words that differ in syllable length from the word cards, e.g. "March" and "Tomorrow". Instruct the child to listen for a word, repeat the word, and then point to the correct word card. Present the words – auditorily only – in random order. (Note that with a set of two it will be necessary for the child to score 80% or higher to give a clear indication that correct answers are not just lucky guesses.)

Auditory Goal B: Identify the correct word, given a set of five to ten familiar words.

Incorporating Auditory Goal B: Although the specific activities during calendar time vary from class to class, often word cards are used for the days of the week, names of the months, and weather conditions, as well as "Today", "Tomorrow", and

"Yesterday". When these words are familiar for the child with hearing loss, a set of 5-10 word cards could be displayed and the child asked to find, for example, the word "Tomorrow" – presenting the word auditorily only. After identifying the correct card, the child might be asked to place the card in the correct location on the calendar.

Auditory Goal C: Answer questions or follow directions presented auditorily only about a known topic.

Incorporating Auditory Goal C: The topic for this activity might be either the calendar itself or an upcoming or recent event that is noted on the calendar. Examples of possible questions and directions include: "Billy, choose a girl to do the weather." "Sarah, what day was yesterday?" "Jordan, whose turn is it to be line leader?" "Kim, where is Tiara's family going tomorrow?"

picture. If this is a new goal for the child, it might be difficult, since all the words start with /b/. If the task is too difficult, the activity can be simplified by limiting the set to 2-3 words that have auditorily dissimilar vowels (e.g. bee, boy, bike).

Auditory Goal B: Discriminate between words in which the initial consonants differ only in voicing, given a set of two (minimal pairs).

Incorporating Auditory Goal B: Select a word from the activity that can be used for a pair of words that differ only in initial consonant voicing. For example, "bee" could be paired with "pea" or "ball" with "Paul". Pictures of the two words should be provided for the child along with instructions to listen, repeat the word, and point to the correct picture. Present the words – auditorily only – in random order. Alternately, a "b" word could be paired with a non-sense word. For example, "book" could be paired with "pook". In this case, the child might be asked to point to the picture of the book only when the word "book" was heard and not respond to "pook".

Auditory Goal C: Follow instructions – presented auditorily only – containing two critical elements. **Incorporating Auditory Goal C:** Again, using the worksheet page or a set of picture cards or objects, ask the child to listen for two words on the page. Instruct the child to repeat the words and point to the correct pictures. For example, "Point to the boy and the boat." Repeat the activity 3-4 times using different pairs of words from the worksheet.

Example 3:

Lesson or Activity: Science unit on plants – making a terrarium. See Figure 2.

Auditory Goal A: Provide a conditioned response to auditory stimuli. **Incorporating Auditory Goal A:** Use

Figure 1.

This is the letter b.
Here are some pictures of words that begin with the letter b.
Point to the pictures and say the words out loud.
Use your pencil to trace the letter b.



Example 2:

Lesson or Activity: A reading phonics activity with the /b/ sound and the letter "b". Children are shown pictures of words beginning with the letter "b" and begin to write the letter "b". See Figure 1.

Auditory Goal A: Identify the correct monosyllabic word, given a set of 4 to 6. **Incorporating Auditory Goal A:** Monosyllabic words can be selected from the worksheet (or picture cards used in the lesson) and given to the child. Present the words – auditorily only – and have the child repeat the word and select the correct

Figure 2. To Make A Terrarium

Materials:

- A large glass bowl (a fish bowl works well)
- A large spoon (for digging)
- Some gravel or small stones
- A small bag of potting soil
- A few small plants
- A roll of plastic wrap

Directions:

1. Wash and dry the bowl.
2. Put a layer of gravel or stones in the bottom of the bowl.
3. Add 3 to 4 inches of potting soil. Pat the soil down.
4. Dig a small hole in the soil for each plant.
5. Place a plant in each hole and gently press the soil around the roots of each plant.
6. Carefully sprinkle water on the soil.
7. Cover the bowl with plastic wrap, leaving a small opening at one corner.
8. Place the bowl by a window where it will get some sunlight each day.
9. Check each week for dryness. If the soil is dry, sprinkle more water on the plants.



a picture of one of the materials to be used for the activity. For example, the bowl. Have the child listen for the word "bowl" and then repeat the word and point to the picture of the bowl (or the actual bowl) each time the word is heard. Present the word – auditorily only – several times being careful to vary the timing of the presentations.

Auditory Goal B: Identify the correct phrase or sentence from a set of 4 to 8.

Incorporating Auditory Goal B: Often an activity like this includes the directions written out on a flip chart, on sentence strips, and/or on a worksheet for the child to take home. This chart or worksheet can be used for an auditory activity during the science lesson. Initially limit the choices to the first 4 directions by covering the others. Present a direction auditorily only and have the child point to and/or repeat the direction that was heard. Continue by presenting each of the directions once or twice in random order. Eventually, the child should be able to succeed with a similar activity using a set of 8 sentences.

Auditory Goal C: Indicate when

what is heard does not match what the child expected to hear (e.g. a change in wording or a clearly nonsensical phrase/sentence).

Incorporating Auditory Goal C: Read each of the directions to the child, changing one word. Have the child indicate which word was changed. For example, in the first direction say aloud, "Wash and break the bowl." The child should be able to indicate that the directions were to wash and dry, not break the bowl. Depending on the auditory skill of the child, this activity might be more appropriately done without forewarning the child that one of the words might be wrong. For example, as a part of the lesson, read one of the directions wrong, and look for the child to identify the error. This activity is similar to those described in the sabotage approach by Robbins and Kirk (1996) and by Robbins in Volume 1, Issue 1 of *Loud and Clear* (April 1998).

Example 4:

Lesson or Activity: Language activity – plurals. (See Figure 3).

Auditory Goal A: Discriminate be-

tween two words in which the initial consonants differ only in manner (minimal pairs), with the words presented in phrases or sentences.

Incorporating Auditory Goal A: This auditory activity could be implemented after the child has completed the worksheet and the answers have been verified as correct. Read one of the sentences from the sheet using either the correct plural word or a minimal pair for that word. For example, the first sentence would be read as either "Mr. Lee has sheep, cows and pigs on his farm" or as "Mr. Lee has sheep, cows and migs on his farm." (Pigs/migs is a minimal pair in which the initial consonant differs only in manner.) The student is asked to indicate whether or not the sentence was read correctly. At times, for an activity like this, an exact minimal pair may not be possible, however a close approximation is usually adequate. For example, "fly" could be paired with "ply" for this goal. (/f/ and /p/ differ in both manner and place.)

Auditory Goal B: Identify words correctly, given a set of 5 to 8 words of the same syllable number.

Incorporating Auditory Goal B: Have the child help divide the plural form of the words into one and two syllable sets. With this particular worksheet there would be five monosyllabic words and five 2-syllable words. Begin with the set of monosyllabic words. Present the words in a random order and have the child either repeat the word or read the appropriate sentence. If there is time, repeat the activity using the 2-syllable words.

Auditory Goal C: Correctly imitate a 3 to 5 word phrase that is presented auditorily only.

Incorporating Auditory Goal C: Instruct the child to listen for phrases from the completed worksheet. Then present some of the phrases audito-

Figure 3. Name _____

Write the plural form of the word to complete each sentence.

pig	Mr. Lee has sheep, cows and _____ on his farm.
fly	The _____ flew around the picnic tables.
couch	The _____ in this store are too expensive.
pencil	Alex has a pen and two _____ in her backpack.
leaf	In the fall the _____ on the trees change to red, yellow and orange.
dish	Please put all the dirty _____ in the dishwasher.
bunny	Mother is upset because the _____ have eaten all her flowers.
shelf	Please move these _____ to the other side of the room.
cat	I helped take care of Ann's _____ while she was out of town.
watch	Most of the _____ that were on sale had already been sold.

rily only, such as "out of town", "on his farm", "all the dirty dishes", "a pen and two pencils", or "the leaves on the trees". Have the child repeat the phrase and perhaps also find it on the worksheet.

Example 5:

Lesson or Activity: A science, social studies, or reading activity with sections of text to be read by the students.

Auditory Goal A: Follow along with text being read aloud and indicate the point in the text where the reader stops.

Incorporating Auditory Goal A: It is common at the upper elementary level to have the teacher or another student read a selection aloud as the other students follow in their texts. It is easy for a teacher to know whether or not the student with the cochlear implant is following along correctly by asking students to mark the spot where the reader ends with their finger. This is a much easier task for students if the reader always stops at the end of a sentence. It becomes more difficult if the reader stops in the middle of a sentence. Typically, this activity is easier if the teacher reads aloud, since some students can be difficult to hear.

Auditory Goal B: Answer content questions, presented auditorily only, about a familiar subject matter.

Incorporating Auditory Goal B: This

auditory goal works well with review lessons when the material is familiar. A game format can be used with teams competing against each other or with the entire class working to increase their score from the last review session. The teacher moves through the class, stops behind each student to ask a review question, and indicates the number of points earned. The format can be modified in several ways to add variety or to meet individual class needs. This activity is a review for the entire class and becomes an auditory activity for the student with the hearing loss.

Auditory Goal C: Identify the topic of a short paragraph that is presented auditorily only.

Incorporating Auditory Goal C: This is another auditory goal that fits well with a variety of academic lessons. A young child might be asked to identify the picture from a set of four that best fits the paragraph that was read aloud. Older children might be provided a written set of choices or asked to write the main idea of the paragraph. As students read text, it is often helpful for them to stop periodically and identify a main point. These are common classroom activities. The only necessary modification for the child with a hearing loss is to present the material auditorily-only.

For additional examples of academic lessons blended with auditory goals, readers may wish to refer to the *Guide for Optimizing Auditory Learning Skills (GOALS)*. GOALS is designed for teachers and clinicians to use with children who have hearing loss and are assisted by either hearing aids or cochlear implants. It is appropriate for use with children regardless of the degree of hearing loss, grade level, mode of communication, or school placement. GOALS presents auditory activities for 36 separate lessons that follow the Teacher's Edition text books by Scott Foresman for math, social studies, science, reading and health. This guide consists of tips, resource materials, and sample charts and plans that assist teachers and clinicians with incorporation of auditory goals into academic learning. GOALS is available through A.G. Bell Association for the Deaf Publications, 3417 Volta Place, NW, Washington, DC 20007, (202) 337-5220 (Voice/TTY).

REFERENCES:

- Firsat, JH & Reeder, RM (1996). *Guide for Optimizing Auditory Learning Skills*. Washington, DC: AGBell.
- Robbins, AM & Kirk, KI (1996). Speech Perception Assessment and Performance in Pediatric Cochlear Implant Users. *Seminars in Hearing*, Vol 17, 4, 353-369.
- Robbins, AM (1998). Two Paths of Auditory Development for Children with Cochlear Implants. *Loud and Clear*, Vol. 1, No. 1, Advanced Bionics Corporation.

Advanced Bionics Corporation
12740 San Fernando Road
Sylmar, California 91342
Tel: (+1) 818-362-7588
Tel: (+1) 800-678-2575 (in U.S.)
TDD: (+1) 800-678-3575 (in U.S.)
Fax: (+1) 818-362-5069
Web: www.cochlearimplant.com
Email: info@advancedbionics.com