

Debra Berlin Nussbaum, MA, is

coordinator of the Cochlear Implant Education Center (CIEC) at the Laurent Clerc National Deaf Education Center at Gallaudet University. She earned her master's degree in audiology from George Washington University and has worked at the Clerc Center since 1977, first as a pediatric audiologist and since 2000 as coordinator of the CIEC. She has spearheaded national efforts to address how spoken language and signed language can be included in the education of children who are deaf or hard of hearing. She has also developed numerous resource materials and professional training workshops; she speaks nationally and internationally on this topic.



Susanne Scott, MS,

is a cochlear implant/bilingual specialist at the Laurent Clerc National Deaf Education Center at Gallaudet University. With a degree in audiology from Gallaudet University, she has worked at Gallaudet University and the Clerc Center since 1980, first as an educational audiologist and then as a



THE “WHY” AND “HOW” OF AN

asl/english bimodal bilingual program

By Debra Berlin Nussbaum, Susanne Scott, and Laurene E. Simms

During the past few years, the teachers and staff at Kendall Demonstration Elementary School (KDES) have reviewed research to identify factors that positively impact language development for deaf and hard of hearing children, and established language and communication practices to reflect what we have learned. Based on the research, which details the advantages of early accessible visual language (Baker, 2011) and documents the variations in spoken language outcomes regardless of the use of hearing aids and cochlear implants (Yoshinaga-Itano, 2006), we have examined how an American Sign Language (ASL)/English bilingual program can be designed to benefit children with a wide range of characteristics—from children who have minimal access to spoken language through hearing aids and cochlear implants to those who benefit greatly from these technologies. We refer to this as an *ASL/English bimodal bilingual approach*, which includes establishment of language foundations and access to learning through two modalities, e.g., auditory and visual, and two languages, e.g., ASL and English (Berent, 2004; Bishop, 2006; Emmorey, Bornstein, & Thompson, 2005). Through our experience in establishing a bimodal bilingual program at KDES and through our consultations with schools and programs throughout the United States, we are finding that with purposeful planning this multisensory approach can be implemented to effectively support the overall development of deaf and hard of hearing children.

Photos by John T. Consoli



Research Support for a Bimodal Bilingual Approach

For children who are deaf or hard of hearing and cannot fully access linguistic meaning through audition, the use of ASL has been documented to promote linguistic, communication, cognitive, academic, and literacy development as well as social-emotional growth and identity formation (Baker, 2011; Cummins, 2006; Grosjean, 2008; Morford & Mayberry, 2000; Yoshinaga-Itano, 2006). Evidence also indicates that there is a risk of language delay if an accessible language is not used as early as possible, even for children who have some level of access to

spoken language through a hearing aid or cochlear implant (Mayberry, 1993, 2007; Mayberry & Eichen, 1991; Mayberry, Lock, & Kazmi, 2002; Schick, de Villiers, de Villiers, & Hoffmeister, 2007). The brain has the capacity to acquire both a visual and a spoken language without detriment to the development of either (Kovelman et al., 2009; Petitto et al., 2001; Petitto & Kovelman, 2003), and there is no documented evidence demonstrating that ASL inhibits the development of spoken English (Marschark & Hauser, 2012). An ASL/English bimodal bilingual approach has the characteristics to be advantageous to language acquisition and learning. The child

clinical educator in the Department of Hearing, Speech and Language Sciences. In 2003 Scott joined the Cochlear Implant Education Center, where she provides expertise in cochlear implants and ASL/English bilingual programming for professionals, students, and families at the Clerc Center and throughout the nation.

Laurene E. Simms, PhD, is a professor in the Department of Education at Gallaudet University. After graduating from the Indiana School for the

Deaf, she earned her bachelor's and master's degrees in elementary education from the University of Nebraska, Lincoln and Western



Maryland College (now McDaniel College), respectively. She received her doctorate in language, reading, and culture from the University of Arizona. An acknowledged expert in ASL/English instruction, Simms has implemented bilingual/multicultural educational environments for diverse deaf and hard of hearing children.

The authors welcome questions and comments about this article at Debra.Nussbaum@gallaudet.edu, Susanne.Scott@gallaudet.edu, and Laurene.Simms@gallaudet.edu, respectively.

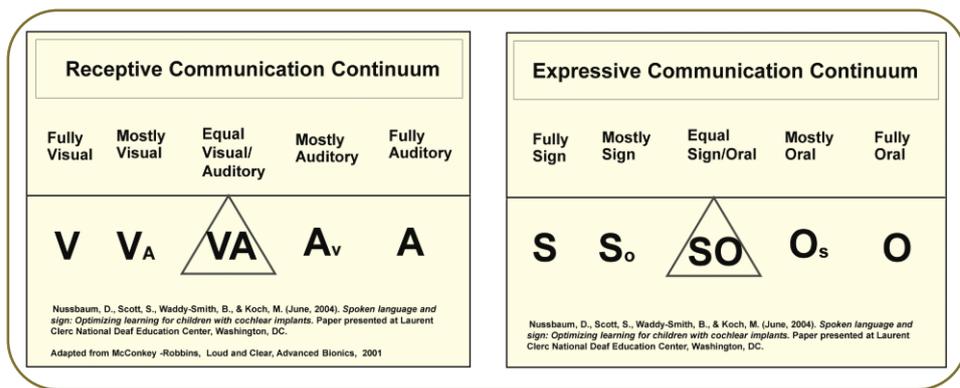


Figure 1: Continuums used at the Clerc Center to document receptive and expressive communication as part of the individualized language planning process

acquires language through his or her intact visual modality while developing spoken English to the maximum extent possible. This approach is “additive”; it builds upon a child’s strength in one language while adding a second language (Baker, 2006).

Evolution of an ASL/English Bimodal Bilingual Approach

Use of a bilingual approach, which addresses the acquisition and use of both ASL and English, emerged during the 1980s. Referred to as the bilingual/bicultural (“Bi-Bi”) approach, this model reflects the importance of including the language accessibility needs as well as the cultural and identity needs of deaf learners. ASL is recommended as a first language and major medium of communication, with English addressed primarily through reading and writing (Nover, 1995; Nover, Christensen, & Cheng, 1998; Reynolds & Titus, 1991; Vernon & Daigle, 1994). A framework later emerged emphasizing the development of ASL and English, including the development of spoken English commensurate with a child’s potential for oral/aural development (Garate, 2011; Nover, Christensen, & Cheng, 1998). As growing numbers of children demonstrate the potential to access language and learning through audition via improved digital hearing aids and cochlear implants, increasing numbers of educational programs have moved towards designing and implementing an ASL/English bilingual program that is also bimodal.

Planning and Implementing a Bimodal Bilingual Program

The key to designing and implementing a successful bimodal bilingual program

is planning (Knight & Swanwick, 2002; Nover, 2004). Regardless of whether this approach is implemented in schools for deaf students or in public or private school settings, three components are integral: school-wide planning, individualized planning, and teacher implementation planning.

School-wide planning is the first step. It is critical that the school administration define and share with the school community the school’s philosophy and guiding principles surrounding the development and use of ASL and spoken and written English (Muhlke, 2000). (See sidebar on “Guiding Principles for Bilingual Planning at the Clerc Center.”) An effective planning process should include teachers, staff, and families. A strategic plan to identify resources for ongoing professional development and family education and a system to monitor program effectiveness is also an important part of the process. From our experience, it has been beneficial to have a designated person(s) responsible for oversight of the school-wide planning and implementation process.

Individualized planning, the development of a language and communication plan for each child, is the second key component. The individualized plan should include the child’s profile (based on informal and formal assessment) and his or her functioning in both ASL and spoken English (Easterbrooks & Baker, 2002); it should also include recommendations for individual goals to facilitate development and use of each language and a system to monitor each child’s progress. (See sidebar on “Planning to Implementation: A Look at Tommy’s

Day.”) The plan can be tailored to reflect the needs of children who:

- Are from families that are culturally deaf
- Have additional disabilities
- Are in the early language development stages
- Are beyond the early language development years
- Use and benefit from hearing aids or cochlear implants
- Do not use or benefit from hearing aids or cochlear implants

As part of the individualized planning process, the Clerc Center has developed and is utilizing a Language and Communication Profile. This profile includes a variety of tools we have chosen to document a child’s language and communication characteristics and reflects a child’s use of language in varied environments. One part of the profile includes a description of the child’s functioning along two continuums (see Figure 1): a receptive continuum for how a child accesses language—visually, aurally, or somewhere in between; and an expressive continuum for how a child expresses language—signed, spoken, or somewhere in between (Nussbaum & Scott, 2011). As placements within these continuums are incorporated into developing an individualized plan, it is important to emphasize the following:

- How a child functions on either continuum may differ in varied settings (e.g., social settings, large classrooms, small groups, 1-1 situations, noisy environments, complicated fast-paced language situations). Language use decisions should reflect a child’s needs in each of these settings.
- How a child functions in understanding ASL and spoken language may differ from how he or she functions in generating either language. For example, a child may be able to readily understand spoken language or ASL; however,

Guiding Principles for Bilingual Planning at the Clerc Center

BELIEF STATEMENT ON LANGUAGE:

We believe that early access to and acquisition of linguistic proficiency in ASL and English are integral to a deaf or hard of hearing student's overall development.

GUIDING PRINCIPLES:

- Early, unrestricted access to language is critical to linguistic and cognitive development.
- Bilingual development of ASL and English is critical to deaf and hard of hearing children establishing early communication with their parents, developing their cognitive abilities, acquiring world knowledge, communicating fully with the surrounding world, and acculturating into the world of the hearing and of the deaf. (Grosjean, 2008)
- Accessible and consistent ASL and English adult and peer language models are integral to fostering language acquisition and learning.
- Use of visual language, including ASL and a rich English print environment, is critical for access, acquisition, and development of both languages.
- Spoken English is valued, encouraged, and incorporated specific to an individual child's characteristics and goals.
- Family involvement and competence in facilitating early accessible language and communication is critical to a child's cognitive and social-emotional development.

he or she may not demonstrate the ability to express him- or herself at the same level through either language.

Regardless of which assessment tools or documentation system a school uses, the individualized plan should be developed by a team of professionals working with the child, including his or her teacher, speech language specialist, audiologist, ASL specialist, etc. Gathering family input related to a child's use of language and communication in the home, as well as family goals related to the development and use of each language, is an integral part of developing the individualized plan. If professionals or specialists outside of the school are involved with the child, they should also be included in the planning process.

Teacher implementation planning,

the third step in the process, should be coordinated by the child's teacher and include feedback from other support professionals and the family. It should reflect language use for each activity throughout the day, identify who will use each language to facilitate the activity, and determine how to group children with similar language and communication characteristics and goals (Swanwick & Tsvetrik, 2007; Garate, 2011). Part of the plan can also include recommendations for families regarding how and when to use each language in the home.

At KDES, two of the practices used for implementing individual language and communication plans are *language immersion* and *classroom integration*:

- *Language immersion* is the targeted use of either ASL or spoken English for a dedicated period of time guided by the activity, the person facilitating the activity, and/or the place of the activity. This practice provides an opportunity for children to acquire and experience a distinct separation between ASL and spoken English (Baker, 2006). Language use during immersion activities is purposeful, meaningful, and developmentally appropriate, allowing language acquisition to proceed in a way that is natural and incidental. For example, in a preschool classroom, an art activity may be facilitated through spoken English in one area of the classroom and through ASL in another area of

the classroom. Other immersion opportunities we have implemented include lunchtime, facilitated in ASL or spoken English at separate tables, and read-aloud stories, facilitated either in ASL or spoken English. For children in kindergarten through eighth grade, ASL immersion occurs via a dedicated ASL language arts class.

- *Classroom integration* is the use of ASL and English within a lesson, activity, or interaction to facilitate development of skills in ASL and spoken English. Classroom integration provides structured opportunities to address each child's individual language and communication goals. For example, while working on curriculum content in class, one group of children may be with a speech-language specialist and/or teacher to develop spoken English skills and



another group of children may be with an ASL specialist and/or teacher to develop ASL skills. Skill development in each language can also be integrated through use of learning centers (Garate, 2011).

During both immersion and integration opportunities, bilingual strategies can be used to link ASL and spoken English, including:

- *Sandwiching*—Saying it-signing it-

saying it, or signing it-saying it-signing it

- *Chaining*—Signing it-fingerspelling it-using picture support-saying it

While research exists to support the bimodal bilingual approach, research has not yet formally documented student outcomes. However, at KDES we have witnessed positive outcomes in both ASL and spoken English for our students. We have also experienced the benefit to our

school community, families, and students of using a language planning process that is reflective of research and driven by individualized student assessment. While a bimodal bilingual program requires dedicated planning and coordination, we are optimistic that its potential to positively impact the development of linguistic competence of deaf and hard of hearing children will offer strong motivation for educational settings to implement this approach.

Planning to Implementation: A Look at Tommy's Day

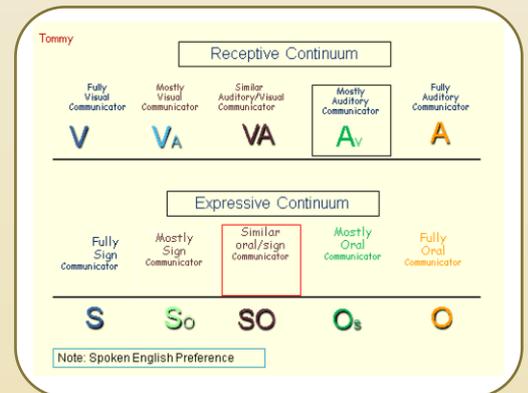
BACKGROUND: Tommy is 5 years old and enrolled in an ASL/English bilingual kindergarten class. He is one of 12 students with varying degrees of hearing levels, varied use and benefit from listening technologies (e.g., hearing aids, cochlear implants), and varied skills in ASL and spoken English. He has a teacher who is hearing and bilingual in ASL and English as well as an instructional aide who is a native ASL user.

Tommy has a bilateral, moderate to severe sensorineural hearing loss that was identified via newborn hearing screening. Tommy's parents are hearing and he has a 2-year-old sister who is also hearing. He started receiving early intervention services at 4 months of age. At that time he was fitted with digital hearing aids that he uses consistently, and his parents started learning and using ASL. The primary language of the home is spoken English; however, the family also uses ASL. Based on the results of formal and informal assessments, Tommy's language and communication functioning is as follows:

- **ASL:** Tommy understands simple, familiar information when language is context embedded and predictable. He demonstrates the emerging potential to understand and use ASL for increasingly complex new information in one-on-one or small group settings. His signing is generally understood by family members, teachers, and peers.
- **SPOKEN ENGLISH:** Tommy receives significant benefit from his hearing aids and is able to understand and use spoken English for complex new information in a variety of settings. He has few articulation errors, and his speech is generally understood by family members, teachers, and peers.

Below: A description of Tommy's individualized plan to address how and when to use ASL and spoken English.

ACTIVITY	IMPLEMENTATION PLAN
Arrival/Breakfast	Daily hearing aid check
Morning Meeting	ASL used for full class
Language Arts	Spoken English used to facilitate activities; Tommy grouped with peers having similar access and skills for spoken English
Math	ASL used for full class
Lunch	Spoken English used at lunch table; Tommy grouped with peers having similar access and skills for spoken English
ASL Language Arts	ASL immersion* *ASL taught as a content class
Social Studies/Science	ASL integration*: 2x a week Spoken English integration*: 2x a week *Skill development in each language using classroom content
Additional Supports	Spoken language habilitation services: 2x a week for 30 minutes. Family ASL class once a week Development of a family plan for language use in the home



Communication Continuum:

Tommy's primary language for communication in most situations is spoken English; however, he is comfortable using ASL with his peers and for specific class activities. On the receptive continuum Tommy is rated "Av," indicating that he primarily accesses information through listening but benefits from visual clarification through signs in noisy situations or when content is unfamiliar. Expressively he is rated "SO," suggesting that he has equal ability to use spoken language and ASL.

References

- Baker, C. (2006). *Foundations of bilingual education and bilingualism* (4th ed.). Clevedon, England: Multilingual Matters.
- Baker, S. (2011). *Advantages of early visual language*. Available from the Visual Language & Visual Learning website, <http://vl2.gallaudet.edu/assets/section7/document104.pdf>
- Berent, G. P. (2004). Sign language-spoken language bilingualism: Code mixing and mode mixing by ASL-English bilinguals. In W. C. Ritchie & T. K. Bhatia (Eds.), *The handbook of bilingualism* (pp. 312-335). San Diego, CA: Academic Press.
- Bishop, M. (2006). *Bimodal bilingualism in hearing, native users of American Sign Language*. Unpublished dissertation, Gallaudet University, Washington, D.C.
- Cummins, J. (2006). *The relationship between American Sign Language proficiency and English academic development: A review of the research*. Unpublished paper for the Ontario Association of the Deaf, Toronto, Ontario, Canada.
- Easterbrooks, S., & Baker, S. (2002). *Language learning in children who are deaf and hard of hearing: Multiple pathways*. Boston: Allyn and Bacon.
- Emmorey, K., Bornstein, H. B., & Thompson, R. (2005). Bimodal bilingualism: Code-blending between spoken English and American Sign Language. In J. Cohen, K. T. McAlister, K. Rolstad, & J. MacSwan (Eds.), *ISB4: Proceedings of the 4th international symposium on bilingualism* (pp. 663-673). Somerville, MA: Cascadilla Press.
- Garate, M. (2011). Educating children with cochlear implants in an ASL/English bilingual classroom. In R. Paludneviene & I. Leigh (Eds.), *Cochlear implants evolving perspectives* (pp. 206-228). Washington, DC: Gallaudet University Press.
- Grosjean, F. (2008). *Studying bilinguals*. New York: Oxford University Press.
- Knight, P., & Swanwick, R. (2002). *Working with deaf pupils: Sign bilingual policy into practice*. London: David Fulton.
- Kovelman, I., Shalinsky, M. H., White, K. S., Schmitt, S. N., Berens, M. S., Paymer, N., et al. (2009). Dual language use in sign-speech bimodal bilinguals: fNIRS brain-imaging evidence. *Brain & Language*, 109, 112-123. doi: 10.1016/j.bandl.2008.09.008
- Marschark, M., & Hauser, P. (2012). *How deaf children learn: What parents and teachers need to know*. New York: Oxford University Press.
- Mayberry, R. I. (1993). First-language acquisition after childhood differs from second-language acquisition: The case of American Sign Language. *Journal of Speech & Hearing Research*, 36(6), 1258-1270.
- Mayberry, R. I. (2007). When timing is everything: Age of first-language acquisition effects on second-language learning. *Applied Psycholinguistics*, 28(3), 537-549. doi: 10.1017/S0142716407070294
- Mayberry, R. I., & Eichen, E. B. (1991). The long-lasting advantage of learning sign language in childhood: Another look at the critical period for language acquisition. *Journal of Memory and Language*, 30(4), 486-512. doi: 10.1016/0749-596X(91)90018-F
- Mayberry, R. I., Lock, E., & Kazmi, H. (2002). Linguistic ability and early language exposure. *Nature*, 417(6884), 38. doi:10.1038/417038a
- Morford, J. P., & Mayberry, R. I. (2000). A reexamination of "early exposure" and its implications for language acquisition by eye. In C. Chamberlain, J. Morford, & R. Mayberry (Eds.), *Language acquisition by eye* (pp. 111-127). Mahwah, NJ: Lawrence Erlbaum.
- Muhlke, M. (2000, Winter). The right to language and linguistic development: Deafness from a human rights perspective. *Virginia Journal of International Law*, 40, 705-760.
- Nover, S. (1995). Politics and language: American Sign Language and English in deaf education. In C. Lucas (Ed.), *Sociolinguistics in deaf communities* (pp. 109-163). Washington, DC: Gallaudet University Press.
- Nover, S. M. (2004). *A theoretical framework for language planning in ASL/English bilingual education*. Manuscript in preparation.
- Nover, S. M., Christensen, K. M., & Cheng, L. L. (1998). Development of ASL and English competence for learners who are deaf. *Topics in Language Disorders*, 18(4), 61-72.
- Nussbaum, D., & Scott, S. (2011). The Cochlear Implant Education Center: Perspectives on effective educational practices. In R. Paludneviene & I. Leigh (Eds.), *Cochlear implants evolving perspectives* (pp.175-205). Washington, DC: Gallaudet University Press.
- Petitto, L. A., Katerelos, M., Levy, B. G., Gauna, K., Tetreault, K., & Ferraro, V. (2001). Bilingual signed and spoken language acquisition from birth: Implications for the mechanisms underlying early bilingual language acquisition. *Journal of Child Language*, 28, 453-496.
- Petitto, L. A., & Kovelman, I. (2003). The bilingual paradox: How signing-speaking bilingual children help us resolve bilingual issues and teach us about the brain's mechanisms underlying all language acquisition. *Learning Languages*, 8, 5-18.
- Reynolds, D., & Titus, A. (1991). *Bilingual/bicultural education: Constructing a model for change*. Paper presented at the 55th Biennium Meeting of the Convention of American Instructors of the Deaf, New Orleans, Louisiana.
- Schick, B., de Villiers, J., de Villiers, P., & Hoffmeister, R. (2007). Language and theory of mind: A study of deaf children. *Child Development*, 78(2), 376-396.
- Swanwick, R., & Tsverik, I. (2007). The role of sign language for deaf children with cochlear implants: Good practice in sign bilingual settings. *Deafness and Education International*, 9(4), 214-231.
- Vernon, M., & Daigle, B. (1994). Bilingual and bicultural education. In M. Garretson (Ed.), *Deaf American monograph*, 44 (pp. 121-126). Silver Spring, MD: National Association of the Deaf.
- Yoshinaga-Itano, C. (2006). Early identification, communication modality, and the development of speech and spoken language skills: Patterns and considerations. In P. E. Spencer & M. Marschark (Eds.), *Advances in the spoken language development of deaf and hard-of-hearing children* (pp. 298-327). New York: Oxford University Press.