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Right: Parents, involved heavily with their children's learning, attended a workshop.

learning how to read and bypassing sound

By Sam Supalla and Laura Blackburn

For signing deaf students, we encounter a unique linguistic situation. American Sign Language and English are not simply two languages. They are languages that rely on separate modalities, one in hearing, the other in sight (Singleton, Supalla, Litchfield, & Schley, 1998). In this sense, hearing students enjoy at least two advantages compared to deaf students in learning how to read. For hearing students, the text is consistent with the way they speak. Further, they can use a system of phonetic skills to decode individual words and discover their meanings. Deaf students, on the other hand, are confronted with sentences that are constructed differently from what they sign. There is a gap between the deaf student's knowledge—his or her competency in American Sign Language—and how print represents English, a language that he or she cannot hear.

At Laurent Clerc Elementary School, a charter school in Tucson, Arizona, that operated for six years, we used a reading process that incorporates five big ideas that link American Sign

Language to English. Hearing students, especially those born to deaf parents who were growing up in signing environments, attended and experienced our reading formula as well. The hearing and deaf students experienced a common ground of learning how to read without relying on sound. Instead they relied on American Sign Language to develop reading skills in English.





Scenes from a classroom: Clerc Elementary children worked together, with each other, and with their parents as they learned to read through use of American Sign Language.

How then did we teach signing deaf students how to read?

Phonological Awareness Exploring Structure

Through American Sign Language, we can expect a deaf student to achieve the critical prerequisite of a strong language base (Meier, 1991; Newport & Meier, 1985). Kindergarten through third grade is considered a critical time for learning how to read. If a student does not engage in a reading program that works, he or she may not reach the next stage where he or she uses reading as a tool to learn. This stage occurs at the fourth year and continues through the rest of the student's school experience. (Carnine, Silbert, & Kameenui, 1997)

Developing phonological awareness, the first step in learning to read, occurred easily with Clerc students when they became aware phonologically of

their own signs and sign language. At the beginning of every school day, the students sang songs. One of the songs, meant to develop respect for the code that teachers use to get attention from the class, focused on the flashing lights. The wording was rhythmic, with repetitions of signs and patterned use and blending of handshapes, movements, and locations in the signing space. Within the structured language of song, students are unaware that they are learning how to decode sign components by blending them together and segmenting them apart. The students



recited the song and sang it enthusiastically. As they did so, the formalized and systematic use of language fostered the awareness that would prepare students for an American Sign Language alphabet and gloss conventions in use at the school (see Supalla, Wix, & McKee, 2001, for a description of American Sign Language-based literacy tools).







The Alphabetic Principle Words into Print

When Clerc students began to examine print, they learned the American Sign Language alphabet. This has traditionally meant fingerspelling—the representation of printed letters through handshapes in space. But for our students, we developed the ASL-phabet, a series of characters representing the handshapes, locations, and movements of signs in American Sign Language. As students learn the ASL-phabet, they are able to link their own language to print on the page in small and manageable

Left: An illustration from the materials shows the sign and its ASL-phabet “letters.”

The English translation for this sign? *Cat*.

-  = handshape is *F*.
-  = location is near the mouth.
-  = movement is away from body.
-  = movement repeats.

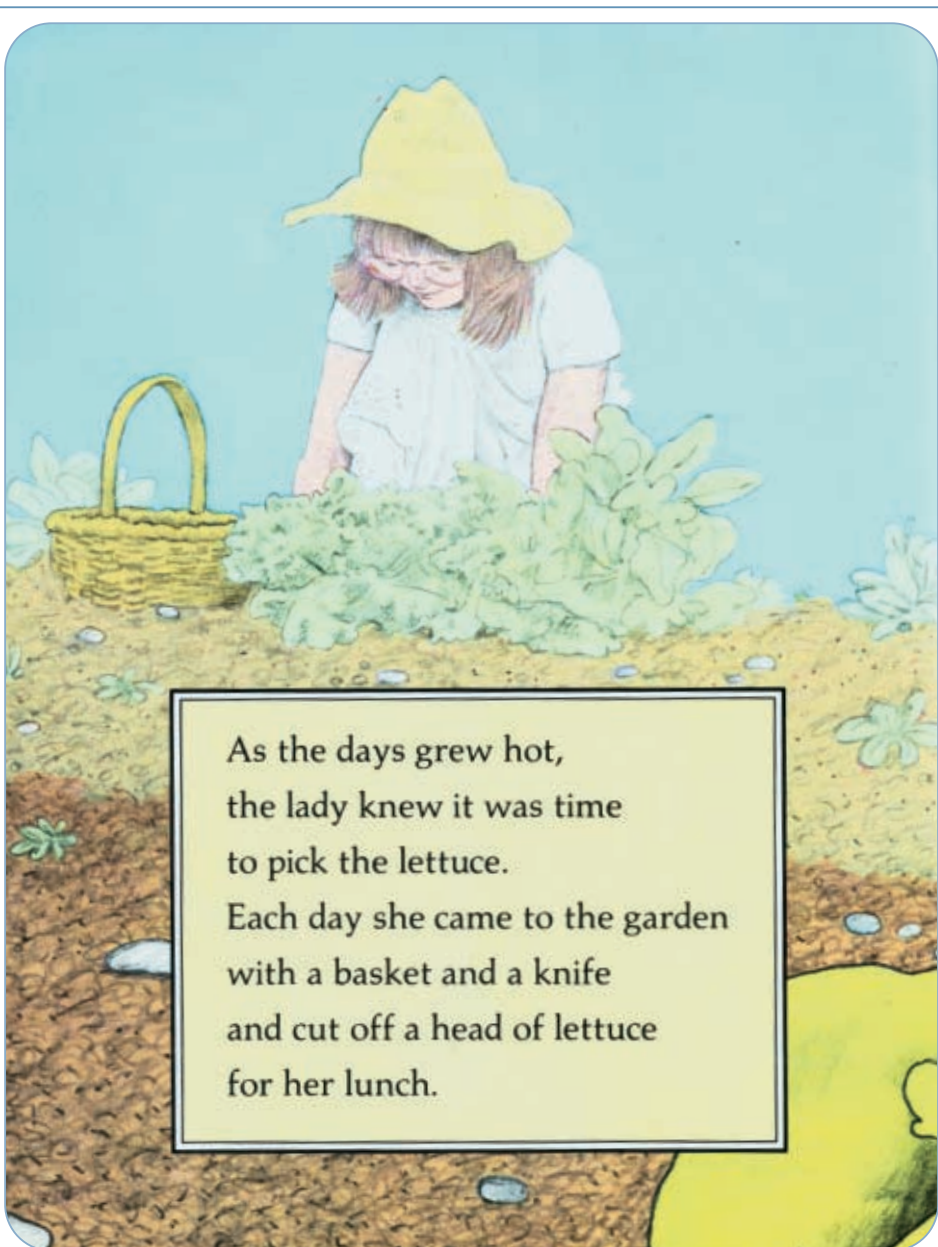
Right: A page from *The Lady and the Spider*, by Faith McNulty, one of the children's books for which students could see a gloss text for the sign translation, with gloss translation below. From *The Lady and the Spider*, 1986, Harper & Row Publishers.

components. They can use the structured print as building blocks to make signs or words. The phonemes—or pieces of signs—that they previously organized through the air are now introduced as individual letters that will be used to construct written signs.

With the ASL-phabet, deaf students link their own language to print on the page and express their linguistic knowledge in print for the first time. They begin with small, manageable components that we call letters. These letters become building blocks to make words as they are expressed in American Sign Language.

The ASL-phabet has 22 handshapes and five representations for location categories. Knowing the ASL-phabet provides the basis for another basic reading skill that helps students to develop fluency with the decoding process to support spelling and vocabulary retention. As they master identification of the handshape and location letters, students begin to blend the five movement letters. At this point in learning to read, students are actively making sense of the decoding process, signing out and segmenting words as they encounter them written in the ASL-phabet on paper.

The Resource Book is a literacy tool that links signs written in the ASL-phabet to their English word equivalents. It allows the deaf students to decode a written sign, while simultaneously introducing English vocabulary and reiterating the steps of the decoding process. While students decode printed signs, they are simultaneously introduced to English vocabulary. As they continue to use *The Resource Book* and reiterate the decoding process, the English and sign print become familiar to them. At this point, the code presents itself to be solved so



DAY# GROW HOT, LADY KNOW IT-IS-TIME (2h) *1-PICK#
LETTUCE. EACH DAY IX=3 | -COME GARDEN WITH
BASKET KNIFE [*1-LETTUCE 1-CUT] FOR EAT+NOON.

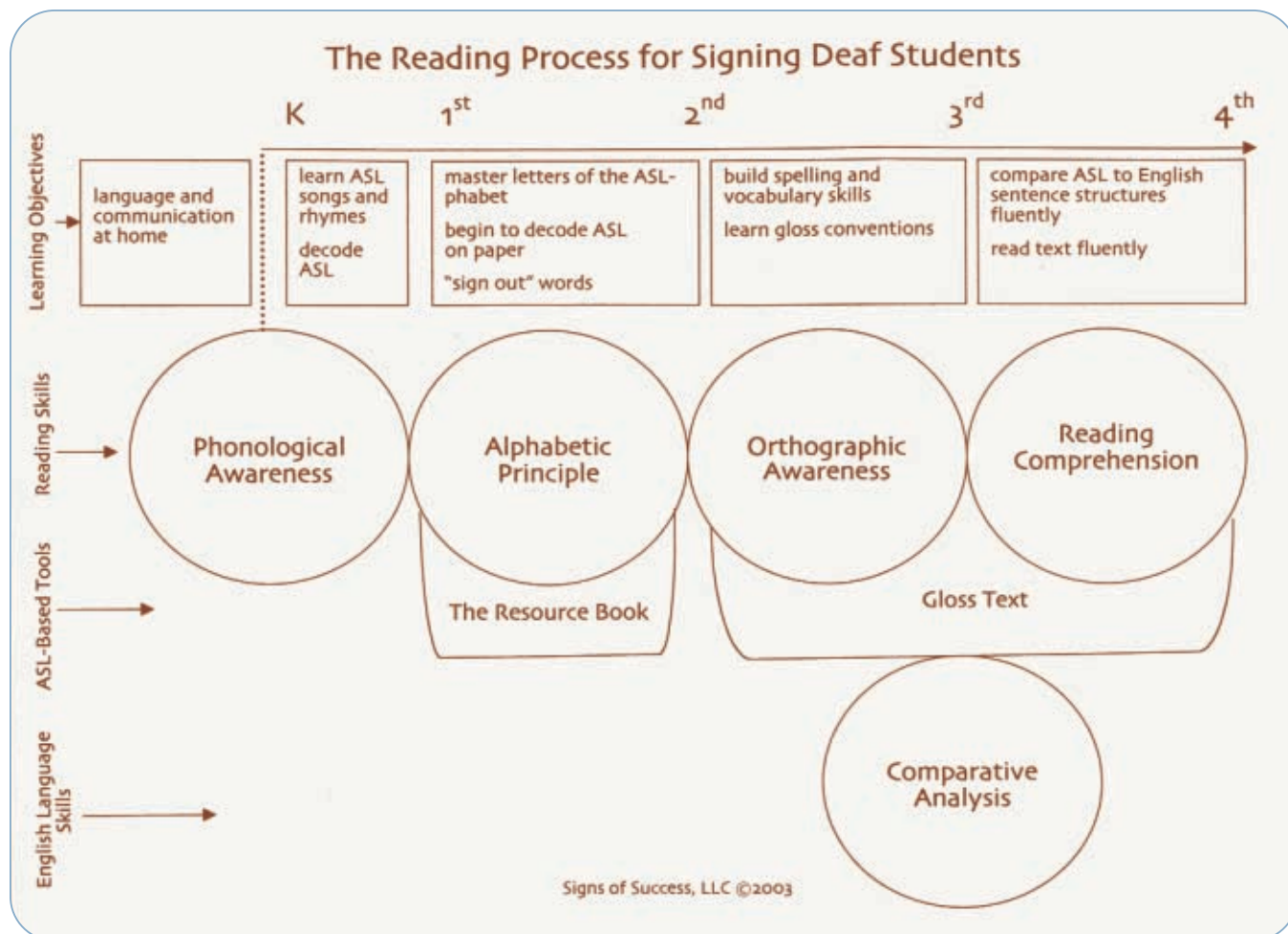
that students can move from merely identifying parts of their language on paper, i.e., the phonemes, morphemes, and lexicon, to engaging these components with one another in order to read.

Each reading skill is associated with a selected set of learning objectives. Specific tools, based in American Sign

Language, are used to support the learning-to-read process, from reading signs through the air, to reading signs in print, to reading English alone.

Orthographic Awareness Priming for Literacy

At the sentence level of the learning-to-read process, deaf students use a gloss



text. Gloss has been used extensively in American Sign Language instruction in university and college settings. Our students use it as an intermediary writing system that includes American Sign Language grammar and English words to connect their signed sentences with those that are printed.

Language control occurs when students' language corresponds directly to the text. This match enables students to monitor the accuracy and fluency of their reading based on how they sign as they read "aloud." As students exert control of the language, they are able to apply standard reading skills to text written at varying degrees of complexity.

Thanks to the gloss text, for the first time deaf students experience successful reading because their signing matches the text on the page. Moreover, teachers can monitor students' abilities because of the print-to-sign correspondence. Miscue

analysis and other commonly used measures of reading progress become beneficial.

Reading Comprehension Exercising Skills with Fluency

This critical idea in the reading process, where deaf students become comprehenders of text, students combine previously acquired subskills to decode words in context using gloss text. Higher reading rates or fluency are indicative of students who possess an accomplished vocabulary and who eventually become independent readers.

These students have internalized the alphabetic principle, attained automaticity at the word level, and are able to apply this across the gloss text. In essence, they can cognitively connect reading knowledge from gloss text to English print. In contrast, in traditional settings neither teacher nor student has

the tools to monitor the signing of text while it is being read because the language he or she is using does not match the English print. This discrepancy interferes with the ability to monitor errors, resulting in a breakdown in the reading process (see Clay, 2001).

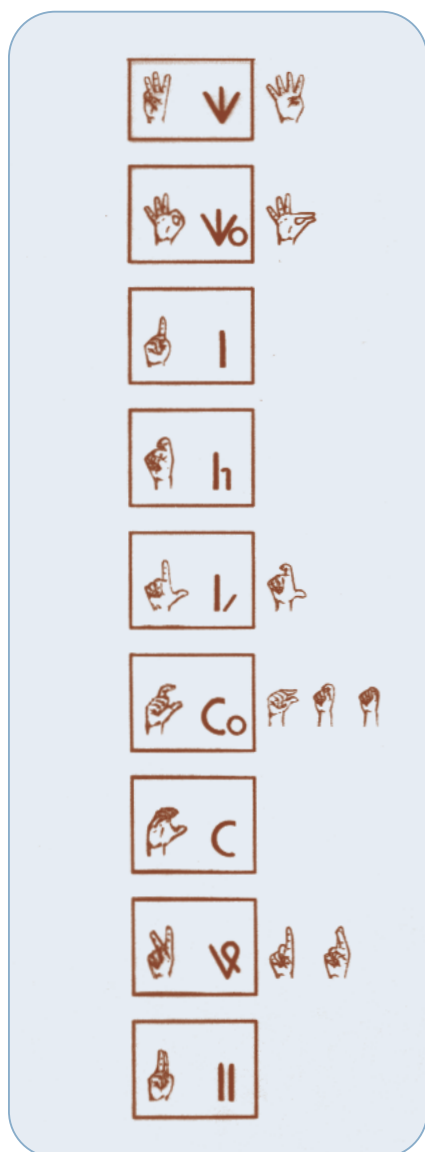
Comparative Analysis

English structures remain to be taught. We do this through comparative analysis. In comparative analysis, gloss is paired with English text and guides students through a process of systematic comparison of structures in a scaffolded scope and sequence. The next level of comparisons occurs when students learn sentences that are represented differently in American Sign Language and English print. Finally, there are certain English vocabulary and structural items for which there is no American Sign Language equivalent. These concepts are taught

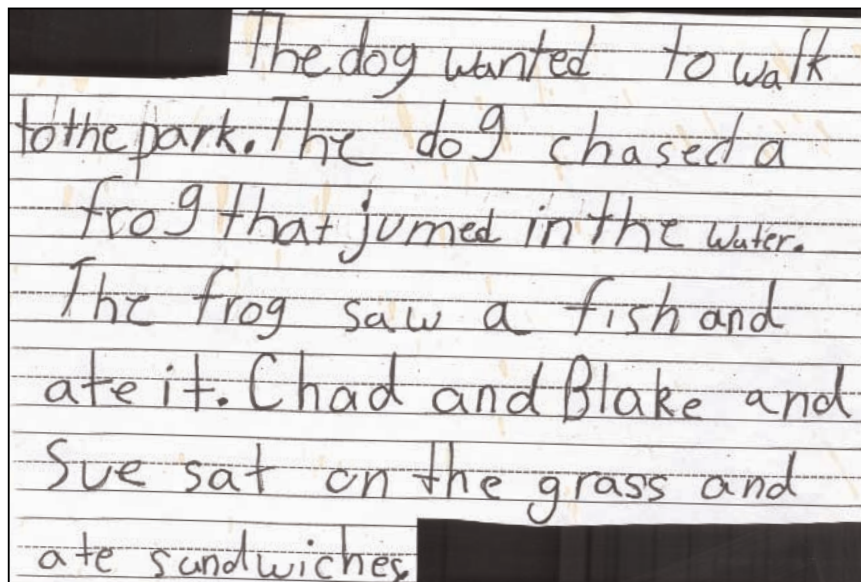
through lessons that utilize grammar in a variety of contexts. This activity allows students to engage in metalinguistic and metacognitive processes. An advanced form of contextual analysis, it is the big idea to bypassing sound in the reading process.

Future Considerations Materials for All

With the closure of the Clerc school last year, we have turned our attention to making our curriculum and materials widely available. We established Signs of



Above: A sampling of handshapes and the ASL-phabet "letters."



Above: After writing in gloss first, a Clerc student wrote an English translation.

Success, a vehicle through which we can train teachers and parents and share our tools, the *Gloss* text, the *Resource Book*, and how we incorporate the strategy of comparative analysis.

One of our former students initiated a due process in the Flowing Wells Unified School District in which the court ruled that she be able to continue using this curriculum as part of her

work in public school. Apparently, our courts have recognized that a deaf child has the right to a methodology designed to bypass the sound barrier and link American Sign Language to English via the process of reading.

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