ONE STUDENT, TWO LANGUAGES: PRINT LITERACY IN DEAF STUDENTS

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This thesis explores what constitutes bilingualism between signed and oral languages, specifically between American Sign Language (ASL) and English. We consider the challenges deaf students face in acquiring print literacy and in doing so, evaluate what strategies are most effective in overcoming these barriers. We isolate aspects of linguistic awareness that are meaningful for acquiring bimodal bilingualism and present suggestions on how teachers can best impart the necessary knowledge to young deaf learners, determining effective ways to help deaf students achieve bilingualism through print literacy. The focus is on elementary-school-aged children.

1. INTRODUCTION. Bilingualism is the best language option for most deaf people living in hearing society, but it is no easy task. Print literacy is the primary measure of fluency for deaf learners (Moores 2006: 50), and so acquiring reading proficiency in printed English is often the focus of deaf education. Deaf children struggle with reading, and the average deaf student graduating from high school has a fourth grade reading level (Hanson 1989: 71-2) or lower (Wilbur 2008: 123).

A weak linguistic background in the first language and a limited access to phonology are common culprits in negatively affecting deaf students' reading abilities. Language deprivation is more common among deaf children entering school than it is among hearing children (Yang 2000), and the first step in planning for print literacy is to make sure that young deaf children acquire a signed language at an early age—in the United States, this often comes in the form of ASL. They can use knowledge of a natural lan-

guage to assist in learning a second language, English, though it is bound to be more difficult for deaf learners, due to its modality.

The obstacles that are specific to deaf children do not make deaf literacy impossible. Deaf children can and do learn how to read, and many deaf adults are highly proficient in English print literacy, far surpassing the "fourth grade plateau" (Singleton, Supalla, Litchfield, and Schley 1998: 17) that ASL linguists are familiar with. Despite their structural and modal differences, sign language and printed English can be linked through teaching strategies and classroom activities. Careful consideration of the classroom environment and the communication forms used in the classroom will help set the appropriate foundations for language development (Marschark 1997).

2. A. BILINGUALISM: WHY IT MATTERS FOR DEAF. Though bilingualism is a challenge for those who attempt it, it is the ideal language situation for many, including most deaf people in the United States. Bilinguals experience cognitive advantages over monolinguals (Baker 1997: 6), including "greater...linguistic and psycholinguistic competence and better-developed creative verbal processes" (Prinz and Strong 1998: 48). Having command over two languages also allows bilinguals to communicate with a larger cross-section of the population, because their communicative abilities allow them to connect with several cultural groups. All bilinguals benefit from these advantages, but for those whose communication is based primarily on a minority language, such as ASL, it can be especially important to learn the dominant language of the society in which they live. Being fluent, or at least proficient, in the majority language allows individuals to better integrate themselves into society. This language knowledge can assist in overcom-

ing discrimination that minorities are bound to face, and often helps in overcoming disadvantages that they might have.

For deaf individuals in the United States, this means learning English. Though there have been extraordinary communities in US history where hearing and deaf alike communicated through signed language (Groce 1985), hearing culture and spoken language are currently dominant throughout the country. People have access to a greater range of opportunities for professional and academic success if they can participate in two language communities (Wilbur 2008), and so Deaf individuals may benefit by gaining mastery over the language of the majority (Lane 1984; Marschark 1997). Those who speak and hear have access to jobs and educational opportunities that are often not available to deaf people. Learning to use English helps them to break through these barriers.

2. B. BILINGUALISM: WHAT IT ENTAILS FOR DEAF. Fluency often connotes a proficiency with speaking and listening, but if we conform to this expectation and define fluency for an oral language as the ability to read, write, speak and listen to it, then deaf learners are "expected to communicate and learn in ways that are antithetical to their biological capacities and requirements" (Kuntze 1998: 12). Taking this into account, Singleton et al. (1998) modify the concept of ASL-English bilingualism. Instead of considering ASL the first language and English the second language—implying equal accessibility to each—they reframe it so that ASL is the first language, and the *printed component* of English is the second language. Through this distinction, they assert that the second language is constrained by modality, and that the expectations for learning it must be modified for deaf learners. The "modality-constrained bilingualism" they pro-

pose (Singleton et al. 1998: 20) eliminates the need to discuss aspects of English outside of the printed medium. Unlike English in its spoken form, written words do not have components that are unavailable to a profoundly deaf student; a print medium is usually the most accessible form of a spoken language for deaf learners. For these reasons, native signers' proficiency in English is based on print literacy. When discussing *bilingualism* for deaf students in this thesis, it will exclusively refer to this type of bilingualism: between signed ASL and printed English.

Although English is a natural language, written words are not. Printed English is a coded form of a language (Moores 2006: 43). For students who are unable to learn English in a way outside of the printed medium,[1] the only grammatical English input they can be effectively exposed to is through written words. If a person's only exposure to a language is through print, though, it is unlikely that they will acquire fluency in the natural language it encodes. This could lead to language deprivation, which will be discussed in a later section. If we aim to decrease the frequency of language deprivation, written English cannot be the deaf child's first language.

To learn a second language, particularly one that is constrained by modality, a child must first have strong skills in a natural language (Wilbur 2008: 121). Language learners benefit from a common underlying proficiency (Cummins Interdependence Model, as referenced in Strong 1988; as referenced in Prinz and Strong 1998), in which

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[1] While some students learn to speak and speechread well enough to communicate with hearing non-signers, this deals with deafness as an issue to be solved or avoided, instead of looking at the ways that parents and teachers can best provide for deaf students. In addition, most who gain proficiency do so through hours of daily practice that can only take place at the expense of other valuable learning experiences, such as social activities, Deaf culture, or academic content (Lane 1984). To focus on acquiring these skills is to put students at a disadvantage in other areas.

skills from one language correspond to similar abilities in another. There are some concerns that standard bilingual models do not transfer well when the languages differ in modality (Summaries of these concerns can be found in Singleton et al. 1998; and in Erting, Thumann-Prezioso, Sonnenstrahl Benedict 2000), but many ASL linguists claim otherwise. Sign language research often shows that ASL proficiency is strongly correlated with English literacy abilities (Baker 1997; Prinz and Strong 1998; Singleton et al. 1998; Goldin-Meadow and Mayberry 2001, Chamberlain and Mayberry 2008). Goldin-Meadow and Mayberry (2001) assert that this positive relationship means that good signers make good readers; Chamberlain and Mayberry (2008) claim that signers who understand the structure of ASL tend to perform better on tests of literacy. This is unsurprising if there is in fact an underlying proficiency that transfers from one language to another (Cummins 1976, 1979, 1981). The languages do not need to be related to each other for this model to apply. Having knowledge of the structure of one language is enough to cognitively prepare a young learner to acquire another.

Children must be introduced to a language with a "linguistically accessible" (Kuntze 1998: 4) structure if they aim to use it as a first language for achieving bilingualism. Because the receptive aspect of ASL communication can be entirely visual, it fits the constraints set forth by deafness. Kuntze (1998) argues that ASL is a "biological match" for deaf learners because it has been "evolutionarily shaped by the constraints of the visual modality" (3) making it the best option for language input. It has already been established that print literacy is crucial, but we reiterate that it must be a child's second language, after a fully accessible natural language (Baker 1997; Chamberlain and Mayberry 2008), and that ASL fulfills these requirements.

There have been claims that ASL is not a full language, that it too is a system for coding another language, but this assertion is misinformed. ASL contains its own morphology, phonology, and syntax that are distinct from those of other languages it may have come into contact with over the course of its development. It can be used to communicate any thought or concept, and can be used for all of the same purposes as any other fully developed language. Wilbur (2008) asserts that natural languages are those that can be learned without "formal intervention" or teaching (121). As a full language (Klima and Bellugi, as cited in Strong 1988: 116; Padden & Humphries 2005: 126; Tabak 2006: 21-42), it can be used as a foundation for further language learning, and so ASL abilities *can* be used to facilitate development of English.

This effort to incorporate English into deaf people's lives is not an attempt to abandon signed language or Deaf culture[2]. Signed language contributes to a deaf child's life as an English language learner, but also as a member of the Deaf community. In addition to acting as a foundation for second language learning, knowledge of ASL is useful in strengthening cultural identity. The goal of social and educational settings is to promote bilingualism and biculturalism, where both ASL and printed English are respected and seen as valuable. Pickersgill (1997) says of British children that British Sign Language (BSL) "should not be regarded as a last resort but as a right, a positive contributor to the child's development and of equal status to English" (15). This allows students to take pride in their language (Baker 1997), which all children should be able to do. Similarly, American children have a right to learn and use ASL. By strengthening their sense

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[2] The lowercase *deaf* relates only to audiological status, while the capitalized *Deaf* involves cultural and linguistic aspects of deafness (Kuntze 1998: 3, Sacks 1989: xi). It relates to identifying oneself with a cultural group and with using the language of the Deaf community, ASL.

of cultural pride, children can be more confident in the classroom, improving their chances of academic success.

Two issues come up in the context of the family when we think about early language acquisition: linguistic isolation and language deprivation. The focus here is on language deprivation, but first, a brief discussion of linguistic isolation. Before entering school, it is important that deaf children find some sort of community to take part in. For these children, their introduction to the Deaf community could be their first experience with a "completely accessible linguistic environment" (Kuntze 1998: 13) and with peers who share their language. This prior isolation can contribute to language difficulties, and can also negatively affect social development. Minorities have the right to maintain their cultural identity and sense of community, even when trying to learn the language of the majority. Shared experiences form strong connections within groups, and a language can easily play a role in a person's sense of culture and self-identity (Amanti 2005). Children should be exposed to a language community, so as not to be socially or linguistically isolated. In the case of deaf children, the fact that many of them do not have a language in common with their parents (Kuntze 1998) means that deaf learners do not have a guaranteed community the way that most minority language situations provide.

3. A. OBSTACLES IN LANGUAGE ACQUISITION—ASL. Over 90% of deaf children in the United States (Strong 1988; Goldin-Meadow and Mayberry 2001) are born into hearing families. While this situation provides them with reliable language models for English, the dominant language, they then lack exposure to a major component of any deaf child's education and development—ASL. Children who are trying to

learn a language need frequent exposure to comprehensible and grammatical input of the target language (Lightbown and Spada 1993; Baker 2006). Without adults who consistently model grammatical ASL, these students have no hope of acquiring signing skills at a young age.

Because a visual language is the only type of natural language that is fully accessible to all deaf people, it is highly likely that a deaf child who is not exposed to sign language will not become proficient in any language[3]. When a child is not exposed to language early on, they might miss the critical period for language learning (Yang 2006) and may never develop language capabilities. For these reasons, a disproportionately high number of deaf children acquire sign language so late, relative to their hearing peers' acquisition of spoken language, that they are considered language deprived (Prinz and Strong 1998: 50).

Language deprivation limits a child's ability to communicate and will further isolate children who already have the potential to be excluded from mainstream activities due to deafness. In cases of language deprivation,

> "[Children] have the ability to develop language along recognized milestones but do not do so as a result of the predominance of an inaccessible or impoverished language in their environment. The problem is not in the child but rather is due to an obstacle that exists in the environment. The obstacle is the lack of access to a language the child can readily appropriate." (Kuntze 1998: 3)

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[3] Though there may be some children who do well with speechreading or who have enough residual hearing to help them get along in an oral/aural environment, there are many who do not, and *these* children are our focus.

Sacks (1989) calls language deprivation "one of the most desperate of calamities" (8) that a person can undergo. Children who lack language skills or have very limited linguistic knowledge will be unable to communicate and are put at risk of having no mode of self-expression or of receiving information.[4]

When it comes to community, school is one of the first times that a lot of deaf students are exposed to consistent ASL. This situation can be a crucial part of a deaf child's language development, but in order to build the bilingual environment that we urge, there is an expectation that students are entering school with knowledge of ASL. In order to have the best possible outcomes with their bilingual educational experiences, children "should come to school with a language *already* in place" (Kuntze 1998: 4). Having language abilities aids in communication and can be used as a base to facilitate print literacy acquisition. Because ASL proficiency seems to be a predictor of success in reading, sign exposure can also be seen as an early step toward English literacy.

Deaf children with deaf parents tend to perform better on tests of ASL skill than do those who have hearing parents (Strong 1988: 117). Kuntze (1998) notes that "when deaf children are exposed to ASL early on they exhibit normal language development milestones" (2). As deaf parents are more likely to be native or fluent signers, they act as stronger language models for their deaf children. Children with deaf parents are likelier to have early access to ASL than children with hearing parents, and this may also account for their higher abilities. Deaf parents may give their children some advantages through

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[4] Children who have no models for signed language do tend to create homesign systems for communication purposes (Goldin-Meadow 2003), and so they are not necessarily entirely without communication skills. If these children come into contact with each other in school, their homesigns can facilitate communication, as the signers combine their respective systems, passing this new contact language on to the next generation of students (Kegl, Senghas and Coppola 1999), as shown in an emerging Nicaraguan sign language.

their attitudes and cultural knowledge, as well. In addition to modeling high-quality language and providing frequent linguistic input at the earliest possible age, deaf parents tend to be more prepared for a deaf child's needs and will likely already have a plan about educational goals and language environments (Goldin-Meadow and Mayberry 2001). Though many deaf children do not succeed in acquiring sign language early, their lack of exposure is a common reason.

To prevent language deprivation and guarantee that deaf children acquire age-appropriate skills in ASL, hearing parents must form connections in the Deaf community, making sure their children find language models who can help them develop the early stages of ASL. Ideally, the family will begin learning ASL as soon as they are aware of the child's deafness so that they are able to communicate with the child, but even if they do, they will not be able to provide the child with adequate sources of language input. Parents who are learning ASL quickly and for the purpose of communicating with an infant are language learners, and for that reason are not strong linguistic models for the child. If the child's only exposure to signed language is through his or her parents who are learning as they go, the child will not be receiving consistent grammatical language input, and is unlikely to develop strong language skills. Finding opportunities to interact with native signers is the best way to reach fluency.

3. B. OBSTACLES IN LANGUAGE ACQUISITION—ENGLISH. Once a child has gained proficiency in sign language, there are still significant obstacles associated with achieving print literacy. Deaf students learning to read are going through a process of second language acquisition, but it is an unusual case, when compared to the experi-

ence of a hearing child. In a situation with a hearing student who is aiming for bilingualism in two spoken languages, he or she will generally acquire aural and oral language skills before learning to read and write the first language, and then do the same thing in the second language.[5] This is not the case in a deaf scenario because ASL does not have a "commonly accepted written form" (Moores 2006: 41). Stokoe's sign notation system may seem to be a printed form of ASL, and Prinz & Strong do advocate using it as a bridge between languages, but it is not 'readable.' It is sometimes ineffective because it lacks sufficient descriptors to form all signs (Tabak 2006: 125). The notational system effectively encodes information for analysis (Sacks 1989: 78; Padden and Humphries 2005: 125), and like other print media, can be decoded, but it is not accessible to deaf readers in the same way that printed English is accessible to hearing readers. Stokoe did not mean it to act as a way to record literature or conversation, only to classify types of signs, and eventually to form a dictionary (Tabak 2006: 119). Stokoe's notation is in no way an equivalent to printed English.

If a language learner begins with ASL proficiency and then immediately jumps to English print literacy with no intermediate steps, that student would face a challenge that sounds nearly impossible. The child would be starting his or her education with an understanding of a natural language and then, as a next step in language development, trying to learn the coded system for a different natural language, without first learning the language itself. DeLuca and Napoli (2008) explain that this situation would be much like

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[5] It would be naive to claim that all hearing elementary-schoolers who are emerging bilinguals already know how to read and write in their L1, but in the ideal bilingual situation, giving them the best opportunities for success, they would have these skills as a foundation for learning. The point is that even in the ideal deaf bilingual situation, the transition from L1 to L2 cannot involve the same four steps in the same way.

an English-speaking child whose first experience with reading was an attempt to master Chinese characters (152). Hanson (1989) confirms that the deaf child's experience would be like the situation they describe if deaf children were unable to access phonological information related to English. Fortunately, there are methods that help this decoding process to be less mysterious, so that recognizing words is not just an issue of rote memorization.

4. CLASSROOM ENVIRONMENT AND GOALS. Before considering specific activities to carry out in a Deaf bilingual bicultural classroom, it is important to think about the environment in which children learn. A teacher's attitudes and language ideologies affect the climate of the classroom, which in turn affects the students' abilities to learn.

Students need encouragement in the classroom, and using a "success-based" model (Pickersgill 1997: 10) is an important component of building students up so that they are confident that they can succeed. Brown (2008) stresses the need to "show cultural sensitivity, value students' identities, and incorporate their experiences in order to engage [them] in the classroom," (9) as also shown by Amanti (2005). Deaf children commonly end up in "deficit models of education that submerge them in the language and culture of hearers" (Baker 2006: 371-2), and so we advocate an additive model of bilingualism instead, looking to Baker's enrichment model as a starting point. An enrichment model takes a student's first language into account and uses it in the classroom as a resource to help him or her learn a second language through it (Baker 1997; Evans 2004). As explained before, this can only work if students come from a strong language

background and have obtained a reasonable level of fluency by the time they arrive at school (Prinz and Strong 1998).

Deaf students can take more from a communicative instructional setting than they can from a structure-based instructional setting. Lightbown and Spada (2006) discuss these models, and show that second language learners tend to be more comfortable and more confident in a classroom where discussion and interaction are the bulk of the focus (113). Deaf students perform better in classrooms where discussion takes place in ASL because they do not struggle to understand. Even though English literacy is a goal, the first priority of the classroom is that students understand academic content. Similarly, assessment should occur "in the language in which [students] can most readily present evidence of learning" (Pickersgill 1997: 18) when trying to measure academic progress.

In order to base classroom activities around discussion, the language in use must be accessible and understandable. If teachers prioritized grammatical and accurate English over successful communication, it would come at the sacrifice of comprehension (Lou 1988; Brown 2008). As print literacy is a crucial skill, written English must be present in the classroom, but it cannot be used for most communication or instruction. Written English is too slow to be used in a discussion setting (Brown 2008), and so it cannot be used as the teaching language, just as it cannot be a child's first language.

Because signed language is more understandable for deaf students and any knowledge gained in ASL is applicable in print-based contexts as well, ASL should be the language of instruction. Evans (2004) agrees that these guidelines are worthwhile, and writes that deaf students should receive academic instruction in sign language. It

should be a teaching language, both for the sake of students understanding the material and to show ASL being used and valued in meaningful contexts.

5. LANGUAGE STRATEGIES IN THE CLASSROOM. This thesis has yet to address the best methods for tackling the challenge of reading. When it comes to reading, the deaf student is "at an immediate disadvantage in that he or she must read an orthography that was designed to represent the phonological structure" of English (Hanson 1989: 69), a structure that deaf children have limited access to. To help deaf students learn to read, then, educators must find a way to map language to print (Goldin-Meadow and Mayberry 2001; Luetke-Stahlman and Nielsen 2003). Despite the ways that the languages are different, there are shared features between them, and some of these help to act as a bridge (Prinz and Strong 1998) between the natural language—ASL—and the printed code of English. Coded sign systems, fingerspelling and an awareness of linguistic components of languages all contribute to this bridging process.

5. A. I. CODED SIGN SYSTEMS. A Deaf classroom requires both ASL and written English, but when it is time to discuss printed English in ASL, difficulties can arise. In these cases, it can be helpful to look at a third mode of communication, falling somewhere between the two, resulting in a communicative continuum (Pickersgill 1997: 15) that ranges from pure ASL to pure English. The third mode is English-based signing.

The two languages already discussed should both be used in the classroom, but they are not connected to each other (Marschark 1997: 53; Sutton-Spence & Woll 1999: 22; Tabak 2006: 117). Because they are not structurally or historically related, it can be

hard to find a connection between them. Still, Pickersgill's (1997) continuum connects the two languages. It is formed by contact signing systems made of ASL-English pidgins. All of these sign systems fall under the category of manually coded English (MCE). Though there are many names that have been applied to different varieties of MCE (Pidgin Sign English, Signing Exact English, Signed English, Cued Speech), it is hard to classify their respective features, as they often overlap. Depending on who uses them and for what purpose, they can vary greatly in form. MCE systems combine linguistic features of ASL and English (Stewart 2006: 214), usually using English grammar and morphology, but always represented manually. The manual representations use many ASL signs, but there is not a one-to-one correspondence between the lexicons, which makes it so that sign-like gestures must be created for the sake of encoding English in a manual form.

Manual coding exists because it was designed for use in classrooms (Stewart 2006: 213; Wilbur 2008: 121). Unlike natural languages that can be acquired without specific instruction, MCE systems are artificial (Marschark 1997). Because they are not full languages, teachers must exercise caution when using them in the classroom. They cannot be used to fully communicate. In some cases, hearing adults have taught children MCE as a communication system instead of exposing them to ASL, believing that it would give them better access to English syntax, but it was relatively unsuccessful. Children who are taught an artificial sign system as a first language have the tendency to creolize the system (Kuntze 1998: 14, Singleton et al. 1998: 22), making it more language-like and producing signs that are more ASL-like (Sacks 1989: 111) than the signs they were originally exposed to. Coded systems are not sufficient languages for a deaf

child's needs. They are tools to help bridge the gap between two natural languages, and should never replace the languages that are necessary in the classroom.

Using these artificial systems in the place of ASL could have the problematic effect of marginalizing sign language (Kuntze 1998: 4-5). It would downplay the cultural importance of ASL and would also give the mistaken impression that ASL users are limited in what concepts they are able to communicate. To devalue ASL is in direct opposition to goals of bilingual education.

With these concerns, it may seem as though teachers would do best to altogether eliminate signing systems in the classroom. But Stewart (2006) and Moores (2006) both advocate using English-based signing to aid in acquiring print literacy. To avoid contact languages would be unwise, because deaf students are "expected to develop a repertoire of language competencies" (Pickersgill 1997: 17) covering the whole continuum. Partly because deaf people have such great variation in their language experiences, these varieties may all be necessary at some point when communicating with other deaf individuals. Additionally, signing systems that more closely resemble English word order could be helpful in trying to interact with hearing people, an inevitable and often frustrating encounter. Contact signing can be seen as "an important source of language variation used by deaf children and adults" (Pickersgill 1997: 54). While manual English is not a natural language, it can still be useful for teaching purposes.

In order to keep these language varieties useful, instead of letting them degenerate into marginalizing forces against ASL, teachers instructing in a bilingual classroom must seriously consider the role of each language tool being used. They need to make responsible and informed choices regarding language use. The purpose of the activity affects

the language variety used (Prinz and Strong 1998), and the intended outcome of the conversation plays into choosing what communication techniques should be used at any given moment. The language used depends on who is in the room, what their communicative needs are, and what the goals of the conversation or activity are (Brown 2008: 8). Ideally, the structure of interactions can be determined on an individual basis, as students will all have different needs and different levels of residual hearing. In order to reach all students simultaneously, a teacher must consider the needs of students who are most severely deaf. Though this may not always happen in the classroom, as educators may teach at a level designed for the students with the most access to phonetic cues, we aim to include suggestions for all deaf students, and so will consider those who are profoundly deaf, as their audiological status requires the greatest accommodations or alterations.

Here, we would like to note a coding system that seems to be disregarded throughout much of ASL literature. Discussions of coding systems focus on manually coded English, which uses English syntax and morphology, encoding it so that it can be expressed through the hands. This may be the most common type of coding system that comes up in the literature because it is a form that is intended to make English more accessible for Deaf children. This disregards a coding system that we see as its complement, though. We will call this system *textually coded signing*—TCS. This is the reverse of MCE, in a way. By coding ASL into text, educators maintain ASL syntax and sign structure, and then write English words that are the closest equivalents to the signs used. It may seem as though this is more useful for hearing people trying to learn ASL, but it is actually a tool that teachers of Deaf children could use with great success.

5. A. II. APPLICATION OF CODING SYSTEMS—COMPARISONS AND GLOSSING. In bilingual classrooms, there should always be an effort to distinguish between the two languages being used. They should be kept separate in some ways, so that children understand which language is useful in which contexts in their lives. Learning a language is not limited to vocabulary and word order, but also includes pragmatics.

An ASL-English bilingual classroom can especially benefit from being explicit about the distinction between languages. The lines may get blurred for young students, especially because daily communication can involve many signed forms that connect the two seemingly unrelated languages. A child could easily get confused about differences between invented signed systems and natural signed language.

A comparison of ASL and English is a very useful activity that teachers can use to help this. In her classroom, Allen (2008) devotes a section of instruction to comparing and contrasting the two languages (146). In this way, the students can keep the languages distinct and can focus on the unique characteristics of each language and what the two have in common. They are able to discuss the pragmatics of each language. Teachers can ask the students whether they would use English or ASL in a particular situation, but they can also use both languages to explain these distinctions, putting theory into practice as they make these lists or perform these tasks. This enrichment model of language (Baker 1997: 7) also allows students to understand the boundaries between the languages, so that they are better able to communicate with both of them. This can improve skills in both languages, and it lets children use their natural language as a resource (Baker 1997) rather than viewing it as a hurdle to overcome.

When moving from one language to another, it may be unclear how the communicative continuum is helpful in the classroom. Though MCE systems are useful as well, the example here will deal with TCS, because it is easier to discuss a text-based system in print. One of the best ways to show the advantages to using TCS is through glossing (Singleton et al. 1998). In this activity, students begin by producing a signed story in ASL, and the final product will be a written story in English. Teachers videotape the children's own ASL narratives. In the next meeting for the class, students are provided with a sign-by-sign gloss of what they signed. Each sign is recorded on paper as an English word or as several English words that give a similar impression as the sign. For example, if the story involved two characters, Debbie and Charlie, and the child signed that Debbie had kicked Charlie, the gloss would include the words DEBBIE,[6] CHARLIE and KICK, also indicating through specified notation that Debbie was the *kicker* and Charlie was the *kicked*. It may also include information about the directional move of the sign. The gloss would not be "Debbie kicked Charlie." This is the target English sentence, and so to give the student that sentence would only facilitate him or her copying a sentence that someone else wrote. In glossing situations, students need to negotiate which word corresponds to the subject and which corresponds to the object, how to change the tense of the verb, what word order is appropriate for English, and how to put the sentence together, given the pieces that the student originally provided. This exercise is often helpful because it reduces the number of challenges a deaf student faces at one time, as it eliminates the complication of spelling.

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[6] It is standard glossing practice that the English words representing ASL signs are written in all capital letters (Prinz & Strong 1998: 56).

5. B. I. FINGERSPELLING. Fingerspelling ends up being a positive contributor to language use for deaf students. It aids in acquisition of print literacy (Erting et al. 2000), because it can be used as a "phonological link" (Haptonstall-Nykaza and Schick 2007: 181) to print. In order to use fingerspelling to help with learning to read, it is best to first link fingerspelling to ASL and then to connect it to English.

Fingerspelling is necessary for ASL fluency (Haptonstall-Nykaza and Schick 2007), and so there are clear ways to show its connection to sign language. ASL uses fingerspelling much more than most other sign languages, (Padden 2006: 190) and it is an important part of the language. Consider the difference between lexicalized fingerspelling (sometimes referred to as *loan signs*) and neutral fingerspelling. Lexicalized signs are those strings of handshapes that have evolved into units, such that people recognize general changes in the word's movement, rather than the individual handshapes that represent letters of the spelled word (Padden 2006: 192). These words are not seen as coded English words, but are taken in as whole signs. They are not split into separable parts; the contour (Padden 2006: 192) allows the signer to identify the spelled word. This contrasts with neutral fingerspelling (Haptonstall-Nykaza and Schick 2007) in which the individual handshapes are more clearly articulated or are directly indicating a connection to English letters. With neutral fingerspelling, a person reading the word is more likely to process each handshape or group of handshapes, then form a word from the associated letters. Unlike these neutral fingerspelling occurrences, though, some signs that are fingerspelled are a part of ASL's lexicon and are used by deaf people of all ages, whether they are literate in printed English or not, and even when they are not communicating

with hearing people. The presence of lexicalized fingerspelling is an indication that it is a part of the language, and not just an example of borrowing from English.

Padden (2006) argues that there are two different ways to learn fingerspelling, and that both are necessary for full language competency. The first is to recognize these chunks of handshapes, seeing lexicalized units as complete signs (189). This acknowledges the role that fingerspelling plays in ASL, and deaf students with experience with lexicalized fingerspelling tend to be better at printed word recognition and at producing written words (Haptonstall-Nykaza and Schick 2007). The second skill set Padden discusses in developing fingerspelling abilities involves recognizing a link between fingerspelling and English, which happens most clearly when looking at neutral fingerspelling. When students are able to recognize fingerspelling as individual movements that can be combined to make one larger sign, they are more likely to see the connection between the manual alphabet and the printed alphabet, which will allow them to use their knowledge of fingerspelling to assist in their English spelling. The connection between ASL handshapes and the English alphabet allows teachers to use fingerspelling as an intermediate step between the languages. Padden considers the ability to recognize handshapes as individual signs that correspond to letters in the English alphabet a necessary skill in learning to fingerspell.

5. B. II. APPLICATION OF FINGERSPELLING—CHAINING. In the classroom, teachers can use a *chaining* technique to create a visual connection between ASL and English. It is a useful tool for mapping ASL onto English print, because it calls attention to a connection between the two representations (Goldin-Meadow and Mayberry

2001). Erting et al. (2000) write about *sandwiching*, which is essentially the same tech-
nique (44). Adults will use an ASL sign for something, fingerspell the English word that
most closely corresponds to the sign, and then sign it in ASL again. Students can see that
the two expressions refer to the same thing, even if they are visually very different. Deaf
children can begin to associate the two representations of the same concept, mentally
connecting the sign to the English word, or at least to the fingerspelled word. Because of
its demonstrable relation to both ASL and English through the use of fingerspelling,
chaining helps bridge the gap between signed language and printed language.

  5. C. LINGUISTIC AWARENESS—PHONOLOGY. Deaf students have differ-
ent language experiences than hearing students trying to learn to read. These differences
may influence how easily the children acquire certain skills, but it does not change which
skills they need to acquire (Hanson 1989). Just as hearing students must master inflec-
tional, morphological, phonological and phonemic awareness (Luetke-Stahlman and
Nielsen 2003), so must deaf students. In addition to these crucial factors and a strong vo-
cabulary, language learners need to learn how the second language functions socially,
how it differs from their first language, and how it can be used appropriately or in what
contexts. Of the formal components of language learning, phonology provides the great-
est obstacle for deaf students.

  Young readers, both hearing and deaf, make use of phonological awareness in or-
der to acquire print literacy. Sterne and Goswami (2000) write that deaf students can de-
velop awareness of English phonology, but that they develop it through different methods
than hearing children do. This awareness can be useful in learning to read (DeLuca and

Napoli 2008), and Hanson (1989) asserts that "successful deaf readers do appreciate the phonological structure of words" (69). For hearing students, delays in phonological awareness tend to result in difficulties in literacy development (Luetke-Stahlman and Nielsen 2003), and so it seems reasonable that deaf students, who have limited access to phonology would struggle with reading for this reason. However, that does not take into account the many ways that deaf students *do* have access to English phonology.

Though it relates to sound for oral languages, phonology is not simply an acoustic or auditory phenomenon. Phonology is about smaller parts that, when combined, make up a meaningful whole (Hanson 1989: 73). It relates to the structure of language more than it relates to sound, but because the term has historically been used in analysis of oral language, it is generally associated only with acoustic components of language. Moores (2006) uses a definition that clarifies this slightly. He claims that *phonological awareness* is "sensitivity to the sound patterns of a spoken language" (50). If this is the case, then "deafness does not preclude phonological access" (Hanson 1989: 83). One does not need to be able to hear in order to recognize and understand the patterns that a language contains.

Even without phonemic access to spoken English, deaf children can still be familiar with the phonology of their L1, and so they can easily understand some of the general principles that make up phonology in their L2. Additionally, because many rhymes are represented visually through orthography, pattern and rhyme (Sterne and Goswami 2000: 609) can be understood at least partially through print as well. There are many ways for students to learn about the units that make up meaningful parts of English words.

6. AN ADDITIONAL ACTIVITY—BUILDING VOCABULARY. In observing a third grade classroom at a Deaf school in Philadelphia, the author has observed other teaching techniques, one in particular that will be included here (Also included in Brown 2008).

In an activity that is part of an ASL class, the teacher, R, found ways to connect students' knowledge of ASL signs to English words. Without concerns about phonological awareness, morphology, fingerspelling, coding systems or any of the previously mentioned links between the languages, he increased English vocabulary, even when conducting a class on ASL literature.

The students watched a video with an ASL narrative, and as they watched, captions scrolled across the bottom of the screen. Though most students paid little attention to the English words, R would periodically pause the film to read through the story with them in manually coded English. When the children found a word that they did not recognize, they could often guess what it meant, as they had just seen an ASL sentence with the same meaning.

Important words were then recorded for future reference. In a hearing classroom, if a student has full fluency in his or her first language, upon learning a new vocabulary word, that child can write down the definition, assuming that he or she can think of a corresponding word in the first language. This is not the case with Deaf children, because there is no written form of ASL. The best that they could do would be to write down the English word, but in looking at it later, it would probably hold no meaning.

Recognizing this difficulty, R adapted standard hearing bilingual strategies for deafness. Bilingual classrooms often contain a word wall (Coelho 2004) that has lists of

important academic content words in English tacked up next to a translation in the students' first languages. The words tend to be organized either by content and their relation to each other, or alphabetically. ASL's modality may seem to make the word wall an implausible concept, but R made it a reality in his classroom. Students would perform the signs in question, and he would take a picture of them. The photographs were put on the wall next to the English words, and they were organized by the signs' handshapes. The end result was a lesson that combined Deaf culture (storytelling and ASL literature) and hearing language (written words and English vocabulary) into one activity.

The effectiveness of the activity comes from the teacher's willingness to think creatively. His innovative use of resources was crucial, but most important was his knowledge of ASL. Being involved in Deaf culture, he understood the complications that would arise in trying to create a word wall or something like it. Knowing the challenges that the students face and recognizing what would be useful for young children in the classroom, he was able to design an activity that could benefit them.

7. CONCLUSION. In aiming to give deaf children the best opportunities for success later in life, there are many requirements parents and teachers must fulfill, starting at an early age. The most important cognitive need is a fully developed, linguistically accessible language with which the child consistently comes into contact. We advocate ASL for deaf children in the United States. In addition to this first language, we urge that bilingualism be a goal. Bilingualism will help children have entrance into hearing society if they want it, and this bilingualism is mostly based on the natural signed language of ASL and the printed code of written English.

Deafness presents children with many obstacles that are not present for hearing children learning to read. Despite these difficulties, deaf children are able to acquire print literacy, and therefore bilingualism. Kuntze (1998) reminds us that "deafness is not the absence of sound; it is the presence of visual-based meaning" (11), and as such, should be considered a unique language situation that simply requires different teaching and learning techniques than a hearing situation does. These individual language needs create challenges for students, parents and educators, but ones that can be overcome with proper attention to detail and the right attitudes and resources.

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