LITERACY DEVELOPMENT IN DEAF STUDENTS: CASE STUDIES IN BILINGUAL TEACHING AND LEARNING

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The present article focuses on the literacy acquisition process of Deaf children who acquire American Sign Language (ASL) as a first language and written English as a second language. In the article, I define literacy broadly to include the context and culture in which reading and writing occur. The view of literacy that goes beyond the basic tasks of textual decoding and encoding outlines the strong connection among language learning, the individual, and the community. This framework emphasizes the importance of literacy acquisition for all individuals and the problems that can occur when literacy in this broad sense is impaired.

The application of a bilingual model to the education of deaf students evolved from the observation that deaf children with Deaf parents consistently scored higher on tests of English reading than their deaf peers with hearing parents (Trybus & Jensema, 1978). Deaf children with Deaf parents were fully immersed in ASL as their first language. Written English was therefore learned as if it were a second language, and these Deaf children became essentially bilingual (Hoffmeister & Wilbur, 1980). These observations established the premise that deaf children should learn ASL as a first language, with English introduced as a second language, and that deaf education should be a form of bilingual education. Specific methods of implementing ASL-English bilingualism, however, continue to be debated.

An understanding of bilingual education of deaf students builds on the general study of bilingualism. Cummins's (1984) theoretical framework, in which the two separate lan-
guage systems are linked to a common conceptual core, plays a significant role in bilingual educational programs because it suggests a common underlying proficiency. It also implies that experience with either language can promote the proficiency underlying both languages. It is important to understand that the common proficiency does not exist at the surface level (pronunciation, grammar, vocabulary) of the first and second languages, but at the deeper, conceptual level (Cummins, 1984). The common proficiency facilitates the transfer of cognitive/academic or literacy-related skills across languages. These skills include conceptual knowledge, subject-matter knowledge, higher-order thinking skills, reading strategies, and writing composition skills. In a French-English bilingual program, for example, French instruction that develops first-language reading skills does not just develop skills in French, but also a deeper proficiency in the development of written literacy and general academic skills. Similar benefits are possible in an ASL-English bilingual program, though one must take into account the differences between oral bilingualism (e.g., French-English) and Deaf bilingualism (ASL-English).

Bilingual programs with deaf students differ from other bilingual programs in three significant ways: (a) language modality (signed vs. spoken/written); (b) the absence of a written form of the first language, ASL; and (c) the inconsistent exposure of deaf children to the first language.

The issue of language modality does not present a significant barrier, because studies examining the linguistic features and neurological processing of ASL show that ASL functions in the same way as spoken language (Baker & Battison, 1980; Klima & Bellugi, 1979). It allows people to request, command, argue, and persuade, as well as to express feelings, tell jokes, and create poetry. Further evidence that ASL is a bona fide language exists in the study of its acquisition by children, both Deaf and hearing, with Deaf parents. In these children, language acquisition parallels that of children learning spoken languages; children of Deaf parents, for example, experience periods of over- and undergeneralization of ASL rules, just like children who are learning English (Meier, 1991).

Another significant difference between bilingualism with deaf students and spoken bilingual programs is that the first language of the Deaf, ASL, does not have a written form. Some have argued that this feature reduces the transfer of proficiency from ASL to English (Mayer & Wells, 1996; Ritter-Brinton, 1996). The argument assumes, however, that literacy consists only of the reading and writing components of language. A broader definition of literacy, one that includes the context of language use, changes the prediction somewhat. When literacy is defined broadly, it is clear that it requires a range of abilities, from formal, decontextualized language to more conversational language. Literacy becomes the ability to use language forms appropriate to the social context. Schley (1992) studied the ability of Deaf children to modify their ASL use in contextualized and decontextualized language situations and found that the children did produce different types of language appropriate to both kinds of the situations. Their literacy-related and metalinguistic skills were part of the deeper structures of ASL, and knowledge of these skills transferred across languages in bilingual children.

Bilingualism with deaf students differs from both bilingual education in heritage languages and bilingual education in second-language immersion programs in that the family language background of deaf children is not consistent. Among children born deaf, less than 10% come from families with even one Deaf parent or older Deaf relative (Meadow, 1972; Trybus & Jensema, 1978). In most cases, the family is adjusting to the traumatic event of having a deaf child, so they struggle with communication, and the child enters kindergarten without a sophisticated competence in any language, signed or spoken (Johnson, Liddell, & Erting, 1989). Bilingual programming for these children, therefore, requires that they first develop proficiency in ASL before efforts are made to facilitate their acquisition of English as a second language.

The theories of bilingual and biliterate education can be applied to programs educating deaf students, but a shift from a deficit perspective to a cultural perspective on such students is needed. Several schools and programs for deaf children in Canada are making this change in perspective and have adopted a bilingual/bicultural philosophy (Israelite, Ewoldt, & Hoffmeister, 1992). However, a gap remains between the theoretical aspects of this philosophy and the practical aspects of its implementation. Teachers continue to question whether they can use their deaf students' knowledge of ASL to develop and promote the English literacy skills of these students. Overall, there is agreement that early exposure to ASL allows deaf children to establish an effective way to communicate and interact with the world around them (Paul & Quigley, 1987). Disagreements arise over how this exposure should be implemented in guiding these children toward reading and writing English. Hearing people have the advantage
that correspondences between the written pieces and the retrievable speech patterns follow the same linguistic structure. But additional translation steps are needed by the deaf learner. The exact nature of these steps and how to facilitate their development have yet to be defined. In the present study, I attempted to contribute to this definitional process. I examined how students’ knowledge of ASL influences their acquisition of English literacy within a bilingual/bicultural educational setting, and I identified teaching activities and strategies that contribute to literacy development.

Method
I used a case study design to focus on three Deaf students, their parents, and their teachers within a bilingual/bicultural education program. The case study format, together with a qualitative approach, ensured that the descriptions of teaching and learning strategies were detailed and contextualized. I used qualitative research methods that emphasize description, induction, grounded theory, and the study of people's understanding (Bogdan & Biklen, 1992). My approach was holistic in that I did not view people and their actions out of context, but rather within the systems of family, school, community, and society. I did not predetermine what to look for, but rather tried to see the whole picture and make meaning out of what I was given. A qualitative approach to research, in which participants are actively involved in guiding the study, can also minimize the effects of a power imbalance between the hearing researcher and Deaf participants. In many ways, whether intentional or not, research in the field of deaf education has contributed to the oppression of Deaf people, empha-

sizing the abilities they lack rather than those they possess (Erting, 1992; Lane, 1992).

Fieldwork was conducted at the Manitoba School for the Deaf (MSD), Winnipeg, Canada. I selected MSD as the research site because the school had adopted a bilingual/bicultural approach to educating its students in 1992 and, therefore, an environment where deaf children were presumed to be culturally different, not disabled. Under this approach, staff and students made a commitment to developing bilingualism and cross-cultural awareness. I expected that an environment that valued the role of ASL in facilitating English literacy would provide insight into the implementation of teaching strategies.

Three elementary school classrooms were targeted for data collection. These included the classrooms for grades 4–6. The three teachers were selected on the basis of three criteria: years of experience, bilingual proficiency in English and ASL, and willingness to participate in the study. Each had to have a minimum of 5 years’ teaching experience with Deaf students, to ensure that he or she was comfortable in the classroom and to reduce the possibility that observations would make the teacher anxious. A high level of proficiency in both ASL and English was required, to indicate the teachers’ commitment to the bilingual/bicultural philosophy and to ensure that teaching strategies were not limited due to a lack of skills. However, none of the three teachers were native ASL users. (There were no Deaf teachers in the elementary classrooms at MSD at the time of the study.) The teachers’ ASL proficiency was assessed by the school’s ASL specialist, using a 4-point system that rated performance in individual interviews, and by classroom observation. All three teachers received the highest rating. The final criterion, willingness to participate, was important to establishing rapport and to ensuring the completion and success of the project.

Once the three teachers had committed to the study, a student participant was selected from each of their classrooms. The selection criteria for the three students related to the cultural status of their parents (i.e., whether they were Deaf or hearing), age and grade level, and language proficiency. Two of the students had Deaf parents; one had hearing parents. The fourth-grade student had Deaf parents and an older Deaf sister; ASL was consistently used in the student’s home. The fifth-grade student had hearing parents and a younger hearing brother; a mixture of ASL and spoken English was used in the student’s home because the mother had good ASL fluency but the father and brother were still learning. The sixth-grade student had Deaf parents and an older hearing brother, but ASL was consistently used for communication at home. Although the three students—ages 9, 10, and 11 years—were beyond an emerging or initial literacy level, there was a range of reading and writing skills among them. All three used ASL as their first and primary language, and were learning English as a second language in written form. This criterion had been established so that the influence of ASL skills in facilitating English literacy could be explored. Individual language assessments were conducted at the outset of the study with each student to determine level of functioning in both languages (ASL and written English) and attitude toward reading and writing (see the Appendix for a description of the assessment measures used for this purpose).

The students were observed primarily in their classrooms and at home.
As a result of these observations, other students and siblings also indirectly participated in the research. The parents of the three students also participated in the research.

The research for the present study involved in-depth interviews, formal and informal assessment measures, and participant observations within classrooms and homes. I began the study by interviewing the three teachers and the three sets of parents. Each interview took about 1 hour and probed the participants’ beliefs about deaf children's ability to read and write English, teaching and parenting philosophies and strategies, and attitudes toward ASL and Deaf culture. The teachers were interviewed again at the conclusion of data collection for the purpose of clarifying and discussing behaviors noted during the observations to ensure that my interpretation of these events was accurate.

Observations in each of the classrooms were conducted approximately once a week over a period of 9 weeks, for a total of 27 classroom observations. All observations occurred during language arts instruction and lasted about 2 hours each. The focus of the classroom observations was on how teachers, students, and the activities in which they participated linked ASL and written English to make it meaningful. Observations of the students interacting with their parents at home occurred three times for each household, at the beginning, middle, and end points of data collection. The focus of each observation was a “literacy activity,” including book reading, story retelling, cooking, and board or computer games.

All interviews and observations were videotaped and transcribed. When data are collected in ASL, translation is a linguistic and artistic challenge. Because the primary concern of the present study was not the grammatical structures and linguistic features of ASL, exact replication in the transcription and translation process was not required. An option that has been adopted by some researchers is to use a figurative writing style to convey the distinct visual and metaphoric richness of ASL (Foster, 1989; Preston, 1994). The present study employed this option, in which an understanding of the cultural context of language is considered.

Data analysis involved carefully review of all 611 pages of field notes, including transcriptions of the three parent interviews and six teacher interviews, notes for all 27 classroom observations and 8 home observations, and the three assessment reports. Through this process, key themes began to emerge. Once the data had been organized into five general themes, a more refined process of categorizing the information could begin. Within each of the major themes, several subthemes emerged. When evidence from the field notes suggested a particular pattern of behavior or beliefs, I reviewed these notes for evidence that would contradict or negate the finding. Relationships between themes and subthemes were also noted and explored. This organizing and structuring of the data facilitated interpretation of the information I had collected.

The process of data analysis was not static. The research findings were continually assessed against my conceptual framework. In this way, methods and concepts constantly interacted with observations and theory. The discovery, or search, was active and interactive. The process began with broadly defined working concepts, and gradually progressed to the final result of clearly defined and operational conclusions.

Findings

The primary purpose of the present study was to reduce the gap between theory and practice: between the theoretical understanding that Deaf students are learning written English as a second language, and how to actually facilitate that process. In such a study, findings that support a bilingual approach to teaching deaf students employed by teachers, parents, and students, as well as findings that uncover the limitations of the program, contribute to the goal of putting theory into practice.

Teaching Strategies

Supporting a Bilingual/Bicultural Approach

The teachers were supporting a bilingual approach to educating deaf students through the consistent use of ASL as the language of instruction, by providing conceptually accurate translations between the two languages, and by presenting language in a multimodal way—through signs, words, print, and pictures—in order to make it meaningful.

The teachers clearly expressed and demonstrated their respect for the role ASL played in Deaf culture and in their students' cognitive and linguistic development. They recognized ASL as a sophisticated language worthy of study and appropriate for daily communication and instruction. In their comparisons or translations between English and ASL, the languages were presented as equal but different. An essential element of a bilingual/bicultural program for deaf students is that the teachers value and believe in ASL as a bona fide language (Hanson & Mosquera, 1995). The teachers' use of spoken English, which was not accessible to all the students, was limited to one-to-one situations with individual students. In these situations,
spoken English was used to provide additional information, usually about print, rather than to develop students' auditory or oral skills. One of the teachers was observed to use his voice to call his students' names and get their attention in the larger group, but would then follow this with a signed message. If the oral students spoke to this teacher within a class discussion, he would respond in ASL as a way to encourage them to interact in this language and to model ASL as the language that was accessible to all in the classroom. This represented a shift from considering all oral (English) interactions as superior to giving equal value to languages and to consideration of context in deciding the most appropriate use of each.

The teachers were generally consistent about keeping the languages separate and distinct in that they did not sign and talk at the same time. Some mixture of the languages occurred in the form of the word mouthing or whispering that sometimes accompanied signing. These behaviors tended to occur during activities in which the two languages were closely linked; for example, during discussions of a specific written sentence or passage, when the class was writing a composition as a group, or when the teacher needed to interpret information between a signing student and an oral student. The tendency to mix languages in these situations appeared to reflect the mental difficulty of talking about one language in another, rather than any disrespect toward the idea of keeping languages distinct. Although the use of mouthing or whispering in conjunction with signing did not appear to reduce overall comprehension and communication between students and teacher, this issue merits further investigation.

A true respect for ASL goes beyond simply developing competence in the language; it extends to an appreciation of its visual nature. The teachers were attuned to the visual needs and attention levels of their students. They used eye gaze to direct classroom interaction and to ensure a shared focus. In one of the classrooms, the teacher told her students that the telephone was ringing before she answered it, because there was no visual signal (the flashing light was broken) to indicate her response. In particular, the visual and linguistic emphasis on incorporating ASL as the language of instruction was reflected in all three teachers' ability to ignore irrelevant or inappropriate auditory information. This included students calling out their names or the answers, rather than signing or raising their hands. This resistance to the strong "auditory pull" that spoken language has on most hearing people reflected the teachers' competence in ASL and showed that they had truly learned to see (Erling, 1992).

Translation skills, or methods for comparing the languages of ASL and English, are necessary strategies in teaching deaf children within a bilingual/bicultural context (Hanson & Mosquera, 1995; Mahshie, 1995). One of the teachers stated it this way:

It's not like a French/English bilingual program where you can teach French through French. With deaf children you can't teach English through English, you have to teach it through ASL. This makes the constant translation and switching between the two languages an ongoing part of the school day.

All three teachers emphasized that translation skills were the key to successful reading and that it was their goal to teach those skills to their students. One teacher said, "Some kids read the English and just sign it back in ASL, no problem. Other students need to learn how to do that. If I can teach all children how to do that, then they will be successful."

It is important to distinguish between "literal" and "conceptual" translation. Literal translation involves establishing a one-to-one correspondence between words and signs. This is similar to the manual codes for English that were established to make spoken and written English visual (in the air). The problem with such codes is that in many instances they did not link the written or spoken words to signs that were meaningful to students. One code (manual) simply linked with another code (spoken/written), but neither was linked to the underlying concept. The purpose of linking print to signs is to mediate a link between the printed form and the concept. This is conceptual translation, and it is also something the three teachers were using in their classrooms. For instance, prior to reading a sentence in a story that described "the dirt floor," one teacher explained to the students that this did not mean "dirty floor," but that the floor was made of dirt—there was no wood, or tile, or anything, just mud. Another teacher indicated explicitly that signs and words did not always correspond by her comment, "There may be only one sign, for example 'wonderful,' but many different words that mean the same thing, like 'terrific' or 'great.'" In another instance, the teacher used a graphic representation of "steps" drawn on the whiteboard to show the rising intensity of a series of English words—"calls," "yells," "screams"—and their relationship to ASL signs.
Methods such as giving multiple translations of a word or phrase (either in print or in ASL) or explaining the importance of context were used effectively by the teachers to avoid a limited, one-to-one correspondence between signs and print. The ultimate goal was not to mediate through signs, but to have the print link directly with the readers' internal meaning. The translation strategies observed in the classrooms were focused on establishing the link between signs and print; therefore, the process of teaching translation so as to arrive at this ultimate goal warrants further examination.

The teachers effectively presented information to their students through multimodal methods. These included the use of pictures, print, spoken words, and signs to illustrate the same message or meaning. When one class was reading about "Schools of Long Ago," the teacher brought a variety of old school supplies, such as a bell, a slate, a fountain pen, and an ink bottle. She allowed the students to interact with the objects—look at them, touch them, and try to use them. The whiteboards in all three classrooms were often covered with drawings the teachers made while trying to explain a concept or define a word for the students. At times, students were also told, "If you can’t write about what the word means, you can draw a picture to show the meaning."

The presentation of multimodal information allowed the teachers to tap into whatever aspect of the information was helpful to each particular student. This ensured that students of varying language levels would find the information meaningful. It also provided many opportunities for students to explore and discover the relationships between the various languages and communication modes.

This process supported learning strategies that were meaning driven and gave the students an active role in their own learning.

**Inconsistencies Within a Bilingual/Bicultural Approach**

The observed teaching strategies of ASL use, conceptual translation, and multimodal presentation provide useful information regarding the implementation of a bilingual/bicultural program for deaf children. However, I also observed teaching strategies and classroom activities that did not appear to be consistent with a bilingual/bicultural approach.

The observed strategies that were inconsistent with a bilingual/bicultural approach to educating deaf students included emphases on explicit teaching methods and word-based rather than discourse-based language structures, small class sizes, and inconsistent incorporation of culture in the classroom.

Language learning typically occurs in meaningful contexts, through natural interactions and experiences with other speakers of the language. Although this kind of naturalistic teaching did occur through exposure to books and story rewriting, the language arts instruction in the three classrooms primarily involved explicit teaching of grammatical structures and rules. It may be that more explicit teaching methods are necessary when instructing students who are learning English as a second language or who have had limited exposure to language (Kelly, 1998). One teacher commented, "You can’t just expose them to it and because they have a first language they’ll pick that up. You have to teach it."

When children do not learn language, or other concepts, from natural exposure and stimulation, there is a tendency among educators to teach it more explicitly (Rhodes & Dudley-Marling, 1988; Stires, 1991). The teachers in the present study frequently drew charts on the board with the headings "past," "present," and "future" to illustrate and compare different verb tenses and forms. At times, the explicit teaching was not related to a specific grammatical structure but to sentence construction, for example, reminding the students, "First write 'who' or 'what,' then the action or 'what they are doing.'" The process of explicitly teaching language involves imposing structures, incorporating drill and practice, and breaking down the information into smaller, and possibly less meaningful, chunks. Is it possible that through this process teachers take away precisely what students need to help them complete the task? This quandary was illustrated in a situation in which the teacher wrote a short, simple story on the board, controlling for vocabulary and grammatical structures to keep it at an appropriate level for the students. I must admit that I found the story confusing and had to read it several times before I understood the situation. The vocabulary and grammar were controlled and structured, but as a result the language was not natural. The story referred to the woman as "Mom" in order to label her with a word the students could read, even though the woman was not the mother of the girl who was the other character in the story. The girl was running into a store because she was afraid of a dog, but none of the verbs used in the story (no adverbs or adjectives were included) conveyed a feeling of fear or anxiety.

The more explicit the teaching, the less actively involved the student becomes in the learning process (Wells, 1996). Even if the students have not been able to figure out the grammatical rules through natural exposure, teaching must continue to keep them
involved in trying to figure out these rules. This could involve altering the exposure and stimulation provided to the students, rather than telling them the rules directly. For instance, at MSD, in one lesson the teacher was referring to a structure she had taught during the last lesson, but the students did not remember it at all. I noticed that one class discussed the parts of sentences—subject, verb, object, etc.—numerous times, and each time it appeared to be new information for the students. Given that the students were not always retaining what was taught explicitly, the effectiveness of using this method so extensively must be questioned.

Explicit teaching does have a place in any classroom, and particularly a classroom where students enter with a wide range of language levels and experiences. The problem with explicitly teaching language and grammar is that it reduces the students' active involvement in their own learning. Students must be allowed to participate in deciphering the "code" of learning a language. They must form their own hypotheses about how the structures relate, try them out, and make modifications to these hypotheses depending on the feedback they get. In this way, the knowledge becomes internalized. If the students are simply told what the rules are, their understanding may be limited to a superficial level. A compromise can be reached between explicit teaching and natural exposure. Teachers can provide guided instruction so that students know what to look for within the language they are exposed to; however, they continue to be actively involved in forming and evaluating their own hypotheses about the rules (Livingston, 1997). In the three classrooms in the present study, it appeared that the primary emphasis continued to be on explicit methods, when possibly more of a balance between both explicit and naturalistic teaching was needed.

Observations of the parents interacting with their children provided excellent examples of natural exposure to language structures. One of the fathers said, "I find that a real benefit comes from captioning on TV. For example, if we are watching TV, then during the commercials I might ask the kids, 'What's going on? Do you know what's happening?' And we discuss that." The importance of reading for comprehension, meaning-guided rather than task- or achievement-guided literacy activities, providing context, and being motivated by a need to communicate was emphasized. This was evident in a situation in which a mother and daughter were playing a computer game. Although it was an educational activity, the mother did not try to make the daughter figure out the words and language she did not understand. Rather, the mother let her work through the messages, but readily explained, or even translated, anything she was not clear about. The emphasis in the classrooms tended to be that reading for deaf children was always a language-learning activity. Yet when parents and children read together, the focus was much more on meaning.

Another observation, which is related to the emphasis on explicit teaching, was the emphasis on teaching word-based skills, such as spelling and vocabulary. Traditionally, programs for teaching deaf students have emphasized the mechanistic features of language because they are easier to teach (Livingston, 1997). In some ways, they are also easier for deaf students to learn because of these students' visual sensitivity to the analysis of orthography and morphology in written English (Hirsch-Pasek & Freyd, 1984).

Typically, deaf students' spelling skills far surpass their reading comprehension skills (Grushkin, 1998). This difference can be partially explained by the visual nature of spelling, but it may also relate to how deaf students are taught. The reasons for continuing to emphasize the mechanistic features of English, rather than more global, discourse structures, need to be examined. Do teachers consider these skills as basic building blocks, such that until students master them they cannot move beyond the letter, word, or sentence level? As one teacher in the present study suggested, "They don't get that natural exposure to English because they don't get it until they can read. So you have to, I feel...present it in a very structured fashion."

The type of instruction students receive may also be determined by their overall level of language. Students with limited language skills were not considered by the teachers to be able to work beyond the level of spelling, vocabulary, and simple sentences. This judgment seemed to be reflected in the fact that the students in the sixth-grade class did more work at the discourse level than the fourth- or fifth-graders. An emphasis on basic structures may also reflect the teacher's philosophy that learning to read is a bottom-up rather than a top-down process. The three teachers in the present study believed that literacy development was speech- or sound-based. As one said, "I believe that if they do not have some kind of inner voice when they are reading that they will not ever get past that [fourth-grade reading level]." This mind-set was surprising given that the teachers used so many visual strategies, such as fingerspelling, to link signs, rather than sounds, to print, but was probably influenced by the teachers' preparation programs that did not have an ASL/English emphasis. It
was expected that the implementation of a bilingual/bicultural approach would allow teachers to free themselves of the traditional methods of educating deaf students and to employ more alternative approaches incorporating a balance of mechanistic and discourse-based strategies at all grade levels.

Another inconsistency observed in applying a bilingual/bicultural approach was the small number of students in each class. Of the three classrooms I observed, two had five students each and one had six students. (The latter class also had a teaching assistant to work closely with one child.) Although the small class size allowed for more individualized teaching, it again emphasized that teacher-directed instruction was what was most beneficial to the students. Observations indicated that the small class sizes limited interaction among peers, which, in turn, prevented the integration of students of diverse language levels within the learning activities.

Teachers in Sweden and Denmark, where implementation of a bilingual/bicultural approach has been ongoing for almost 2 decades, believe that large classes are an essential component of their program (Mahshie, 1995). Larger classes allow students to be placed in different working groups based on learning styles or skills in different subject areas, rather than static groupings based on their speech or reading skills, as typically occurred in the past. Larger classes also allow students to learn from each other rather than depend on the teacher for all information and control; this also fosters their problem-solving skills. Teachers can get a better sense of what each student's needs are, academically and socially, because there are more students to serve as a norm.

Despite these advantages, teachers of the deaf in North America have been resistant to increasing class size because of the varying competence in ASL among students, and possibly teachers as well. A solution to this issue was suggested by Johnson et al. (1989): combining two classes but keeping both teachers. This solution also emphasized the values of a bilingual/bicultural approach by suggesting that one teacher be hearing and one teacher be Deaf. This would provide the students with native language models in both ASL and English. Given the advantages of larger classes, and the benefits of hearing and Deaf teachers working as a team, it is surprising that this model has not been incorporated more extensively. One key issue is the availability of Deaf teachers. At the time of the present study, none of the teachers from kindergarten to grade 6 at MSD were Deaf, which indicates that there is a need for training and development in this area.

The lack of Deaf teachers also influenced the inconsistent incorporation of culture within the classroom. The elements of Deaf culture that were consistently represented in all three classrooms were the more technical or materialistic features. These features are easier to implement because they are the things one can see, such as TTY (teletypewriting) devices for the deaf, a television communication system connecting every room in the school, captions, flashing lights, tapping, and the use of ASL. It is more difficult to incorporate Deaf cultural values and beliefs. The question arises, however, of whether it is appropriate for hearing teachers to be teaching or modeling these values and beliefs if they are not their own. The appropriate behavior for them to model would be as allies and supporters of Deaf people. Indirectly, the teachers did this; they were respectful toward their Deaf students and colleagues and discussed cultural influences as they arose. The issue of hearing teachers also raises the question of the relationship and interactions the hearing teachers had with the adult Deaf community and how these teachers were acquiring cultural information. Are the cultural values of the Deaf community adequately represented among the school personnel? I expected that because the hearing teachers were aware that they were not native language and cultural role models for the students, they would try to include such role models in their classrooms in some way. This could be accomplished by inviting community members or parents to participate, or by using more ASL videotapes of Deaf signers and storytellers.

Although a Deaf studies curriculum had been established at the school, the teachers did not formally implement it, as they felt that academic subjects took precedence in the classroom. The teachers felt that the students received exposure to Deaf culture within the school environment, through informal interactions with Deaf peers and staff in the hallways and lunchroom, and on the playground. Perhaps this is all that is needed, or perhaps learning culture within these natural settings is more effective. The role of a Deaf studies curriculum, and the questions of by whom, where, and how Deaf culture is most effectively taught, continues to require further investigation and discussion.

**Reasons for Supportive Strategies**

I have been summarized the strategies that support a bilingual/bicultural approach, as well as those that are inconsistent with such an approach. The reasons for each of these strategies must also be considered.
The reasons for implementing teaching strategies that support a bilingual/bicultural approach with deaf students all relate to one significant factor: the consistent and effective use of ASL as the language of instruction. First, ASL in the classroom makes information accessible to the students, which is the first step in learning. Second, when students and teachers share the same language, it allows them to truly converse and be active participants in learning. Traditionally, teachers of deaf students followed rigid lesson plans to control the language within the teaching interaction, in order to accommodate their students’ limited English skills and their own limited signing skills (Erting, 1992; Livingston, 1997). The ability to communicate comfortably allows teachers to take advantage of teachable moments, pick up on students’ interests, and incorporate students’ comments. Third, language has an influence on culture. The impact of learning another language goes beyond simply the technical aspects of that language, such as grammar and vocabulary. When you learn another language, it is impossible to avoid developing an understanding of the culture and the community whose language you are learning. This understanding helps effect a change in attitude as well. It allows you to see the world from a different perspective, which can develop into an appreciation and respect for values and beliefs that are different from your own. By being bilingual and bicultural themselves, teachers bring bilingual and bicultural elements into the classroom (Grosjean, 1992). They cannot separate themselves or their teaching methods from the languages they speak or the cultural values they possess.

Reasons for Inconsistencies
The reasons for the limitations in applying a bilingual/bicultural approach to deaf education are essentially the same reasons that maintain deafness as a disability, not a cultural identity. Deaf children are viewed from a deficit perspective because their acquisition of ASL as a first language is frequently inconsistent, the transmission of their culture occurs through peers and community rather than through parents, and they may have other disabilities besides a hearing loss. These reasons are presented as arguments for why a bilingual/bicultural approach to educating deaf students should not be implemented. The argument maintains that a bilingual/bicultural approach is like other methods for teaching deaf children proposed in the past: They make sense in theory, but are not feasible in reality. A comparison could be made to manually coded English systems, which theoretically were intended to provide English input in an accessible mode, but physiologically and psychologically were impossible to produce and perceive (Johnson, et al., 1989). But there is a crucial difference: The obstacles to implementing a bilingual/bicultural approach are neither physical, psychological, nor technological; nor are they inherent in the approach and impossible to overcome. Rather, they are external obstacles imposed by political and educational systems, which are difficult, but not impossible, to change.

Here again, examples from Sweden and Denmark provide ways to meet the challenge of implementing a bilingual/bicultural approach to teaching deaf students. Swedish and Danish educators acknowledge that the one prerequisite to the effective implementation of a bilingual/bicultural approach is a strong first language in a natural sign language (Mahshie, 1995). Rather than focus on the fact that this is not present in most deaf children because they have hearing parents or live in remote communities, the Swedes and Danes make it a priority to install this attribute. Professionals and members of community and parent organizations work together to link the families with other families with deaf children, and to provide opportunities for children and parents to interact with Deaf people using sign language. Achieving this situation required a widespread restructuring of the early intervention system and reeducation of professionals in the fields of medicine, social work, and preschool. This implies a huge investment of energy and resources; however, it is considered well worth it because no amount of excellent teaching later can make up for losing the crucial learning that occurs between children and parents during the early childhood years (Mahshie, 1995).

Conclusion
The present study examines literacy learning in three deaf students within the context of home and school. It provides descriptions of teaching and learning strategies that support a bilingual/bicultural program with deaf students, as well as the limitations and inconsistencies involved in implementing such a program. Through these descriptions many questions have been answered; however, many continue to require further investigation. In particular, these include finding the most effective balance between explicit and naturalistic teaching methods; examining the process of teaching translation skills to determine how print can link directly to internal concepts; studying the practice of Deaf and hearing teachers working in teams with larger classes; determining the role, place, and teachers of Deaf studies curricula and Deaf culture in general; and challeng-
ing the process of transition from a deficit model to a cultural model in deaf education: “Change the system, not the children” (Mahshie, 1995, p. 179).

The ultimate goal in a bilingual/bicultural approach to educating deaf students is to maximize the student’s potential to participate in both the Deaf community and society as a whole. The pursuit of this goal can be viewed from different perspectives: Deaf people emphasize the need to develop fluency in ASL and an awareness of Deaf cultural values so that students know their identity within the community. Hearing people emphasize the need for competence in reading and writing English in order to be successful in the world. Both views are valid and important, and gradually, through the implementation of bilingual teaching strategies, we are moving closer to finding the common ground.

**Note**

Throughout the present article, which describes an educational program that views deaf children and their language from a cultural perspective rather than the usual disability perspective, conventions are applied in labeling deaf children that tend to differ from standard Canadian and U.S. usage. Following the convention proposed by Woodward (1972), I use the lowercase deaf when referring to the audiologic condition of not hearing, and the upper-case Deaf when referring to deaf children and adults who share a language—American Sign Language (ASL)—and a culture. This practice is similar to the Canadian convention of capitalizing the names of linguistic minority groups, such as Filipino, Cree, or Ojibway. In addition, deaf is also used inclusively to refer to all children with hearing losses, including those who may eventually become Deaf children or adults.

**References**


**Appendix**

**Description of Assessment Measures**

In the present study, the Test of ASL and English Literacy (Prinz & Strong, 1996) was used to formally assess American Sign Language skills through a set of six subtests, as well as to assess proficiency in written English, through a separate set of four subtests. This test was selected because it provides the most extensive assessment of ASL skills available, and although it has not been standardized, it was piloted in a bilingual/bicultural education program for deaf students.

ASL production was evaluated with the “Classifier Production Test” and a “Sign Narrative.” In the Classifier Production Test, each student watched a 5-minute cartoon movie.
The movie was then presented again in 10 segments, and the student was required to sign in ASL the actions from each segment in turn. This procedure minimized the effects of memory. Responses were videotaped. These responses were then scored for the presence of different size, shape, and movement markers known as classifiers. The Sign Narrative was elicited by showing the student a children’s storybook that had no text, and then asking the student to sign the story in ASL. Stories were videotaped, and later scored, using a checklist of ASL grammatical and narrative structures.

ASL comprehension was assessed with “Story Comprehension,” the “Classifier Comprehension Test,” the “Time Marker Test,” and the “Map Marker Test.” Story Comprehension involved watching a videotaped story told in ASL by a Deaf native ASL signer. Ten questions about the events in the story were interlaced throughout the videotape. Students signed responses to the questions as they appeared, and their responses were videotaped. In this way, memory requirements were reduced to a minimum. In the Classifier Comprehension Test, the students were shown pictures of objects with a variety of features. They watched a native ASL signer describe each object in five different ways. Using an answer sheet that contained printed video freeze frames of each description, students were required to mark the one that provided the best ASL description of the picture. In the Time Marker Test, students were shown, on video, six representations of specific times or periods of time. Using an answer sheet containing calendars, the students were required to find the corresponding dates. Similarly, in the Map Marker Test, students were shown, on video, eight descriptions of the way objects are located in a given environment, such as vehicles at a crossroads or furniture in a bedroom. For each description, students chose the correct representation from a selection of photographs in an answer booklet.

English vocabulary comprehension was tested using a modification of the Peabody Picture Vocabulary Test, or PPVT (Lloyd M. Dunn & Leota M. Dunn, 1997). The test was presented in written rather than verbal form. Students were required to read a word and then select, from a set of four pictures, the one that best matched the word’s meaning. Productive English vocabulary was assessed with the “Antonyms and Synonyms” subtest of the Woodcock-Johnson Psycho-Educational Test Battery–Revised, or WJ-R (Woodcock & Johnson, 1989). Written stimulus words were presented, and the students had to write another word that either meant the same or opposite of the stimulus word. English syntax skills were assessed using the “Sentence Writing” subtest of the Test of Written Language, or TOWL (Hamill & Larsen, 1996). This test involves a “cloze” task in which the student fills in the missing words to demonstrate knowledge of grammatical structures when completing sentences. A written narrative was elicited from a children’s storybook without text (the same stimulus used in the Sign Narrative subtest).