Abstract

This article describes the key features of a bilingual program for deaf children in Montreal, the background of the program are outlined from a review of the literature available at the time of the study. The literature refers to the most recent articles read on the topic.

Note

This study was conducted in partial fulfillment of the requirements for the degree of Master of Education at the University of Saskatchewan in 1991. The dissertation was also Language and Culture in education: A study of preferences of the deaf community in the City of Quebec, Canada. The study of the deaf community in the City of Quebec, Canada, was directed by the author.

Résumé

Cet article décrit les caractéristiques principales du programme bilingue pour les enfants sourds à Montréal. Les fondements du programme sont dérivés à partir de la lecture de l'article de la littérature disponible à l'époque de la rédaction de cette dissertation. Les articles de la littérature se réfèrent aux plus récents articles lus sur le sujet.

Note

Cette étude a été menée en vue de remplir les exigences pour le diplôme de Master of Education à l'Université du Saskatchewan en 1991. La thèse a aussi pour but de faire l'étude de l'effet de la culture et du langage dans l'éducation: une étude des préférences des sourds dans la ville de Québec, Canada. L'étude de la communauté sourde dans la ville de Québec, Canada, a été dirigée par l'auteur.
The First Language of Deaf Children
As Pinker (1994) and Jackendoff (1994) argue, language is instinctive in the sense that the ability to acquire a natural language is a genetic attribute of the human species. Since the 1960s (Lenneberg, 1967) at least, we have known that language develops in the first years of life under a specific set of conditions, which are in essence the need to communicate and the presence of a language model. A child will not have a first language unless he or she has direct, total, and spontaneous access to an available language. A natural sign language is the true first language of deaf children for two reasons: it is the language that they acquire with the greatest ease and spontaneity; and it is inherently more easily mastered. It is also the language that they will use the most during the course of their lives, the language they identify with, and the language by which others identify them.

The Definition of Bilingualism Used in the Montreal Project
Among the many definitions of bilingualism, the one we use, which is both broad and subtle, was proposed by Mackey (1968). “Bilingualism is the alternating use of two (or more) languages” (p. 554). It does not imply equal mastery of two languages. One of the two languages may thus be used only in its oral or written form, for example, depending on the circumstances. The bilingualism we are aiming for has the following characteristics:

- It is bimodal (one visual-gestural language and one auditory-oral language).
- It is compound in nature, which means that two systems are used to encode the same reality, but the speaker’s first language predominates: Part of the linguistic processing is always dependent on linguistic knowledge in the first language, whereas second language knowledge is activated only at the superficial levels of production and comprehension (Desroches, 1994; Ervin & Osgood, 1959; Lanchec, 1976; and Weinreich, 1968).
- It is sequential in nature, the first language being used as a point of reference for learning the second language.

In this bilingual framework:
- the first language is the sign language; the second language is the oral language;
- each language is used in a particular set of contexts;
- the second language is essentially learned as a written language, being difficult or impossible to perceive directly in its oral form;
- in its oral form the second language is acquired as an extension of the written representation, using visual perceptive abilities (lipreading) and, depending on individual students’ abilities, oral (speech) production; and
• the sign language and the oral language are always kept distinct.

The theoretical basis for the instructional program adopted in the pilot project in Montreal is based essentially on the conclusions drawn from our review of the literature, in particular the model of bilingualism in which:
1. Acquisition of knowledge and learning of strategies are for the most part in the initial stages and carried on in the first language.
2. Learning of the second language (reading) is mediated by the first language.
3. The second language is relied on to a progressively greater degree over time as a medium for the acquisition of knowledge.

The Notion of Transfer
In this section we first present the concepts of transfer between L1 and L2 and the development of linguistic consciousness. Then we provide a detailed explanation of the theoretical basis of the interactive model of reading acquisition that we have adopted. Finally, we deal with the teaching and acquisition of knowledge in the context of the reading model. For these last two points we discuss several strategies that the pupils can be taught to use.

Transfer and Stimulation of Linguistic Awareness
According to Odlin (1989), also cited in an article by Ellis (1994), the term transfer refers to the influence resulting from the similarities and differences between a target language and a previously acquired language. Transfer is an important factor in the acquisition of a second language even if it explains only a small proportion of errors in the second language, according to Ellis. In a context where learning a second language is mediated by a first language, it is important to make use of this concept. In the initial stages, the idea is that teaching the second language will place the greatest possible emphasis on linguistic structures where transfer is possible. In subsequent stages, there will be a gradually increasing emphasis on structures for which transfer from the first language is less direct, accompanied by a stimulation of (meta-)linguistic consciousness in pupils by means of implicit rules.

In this connection we take as our inspiration the work of Fotos and Ellis (1991) and Fotos (1993), whose work in second-language acquisition is concerned with the nature of the relation between declarative, that is, explicit, knowledge, which is developed via formal instruction, and procedural or implicit knowledge, which develops in tandem with language use. The proponents of the communicative approach in second-language teaching, such as Krashen (1981), for example, claim that explicit knowledge is not necessary. However, many empirical studies argue strongly that explicit knowledge does indeed have a positive effect. It appears that explicit knowledge helps learners to become conscious of certain linguistic structures. Formal teaching is a means of bringing particular linguistic forms to the learner’s attention; it is only after this initial step that these structures enter the learner’s active linguistic repertoire.

Taking these notions into account, then, we plan to use an approach that will explicitly bring to pupils’ attention a number of structures in French that are never perfectly mastered by deaf writers. The choice of structures to be studied will be determined largely by the concept of transfer and based on a contrastive analysis of the two languages involved, that is, LSQ and French. Such an analysis makes it possible to predict that certain structures in the second language will be more difficult to learn than others simply because they do not exist as such in the source (i.e., first) language. This type of analysis can be useful in developing a program of second-language teaching. As a result, teaching materials used in the program should take into account the varying degrees of difficulty that are determined by a contrastive analysis of French and LSQ structures. Table 1 is an adaptation of a simplified version of the hierarchy of difficulty from Ellis (1994).

In Table 1 the cases of correspondence, absence, and novelty are simple. Fusion means that a certain rule applies on two different categories in LSQ (nouns and verbs), but on a single category (nouns) in French. Conversely, in divergence cases a rule regularly applies in LSQ (adjectives following nouns) but may have more than one application in French where certain adjectives generally follow nouns but sometimes precede them.

<table>
<thead>
<tr>
<th>Degree of Difficulty</th>
<th>Type of Difficulty</th>
<th>L1 → L2 (LSQ → French)</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Correspondence</td>
<td>x → x</td>
<td>LSQ signs derived from restructured fingerspelling correspond to French words</td>
<td></td>
</tr>
<tr>
<td>2 Fusion</td>
<td>x → x / y → x</td>
<td>Plural is marked on nouns in French; in LSQ it can appear on the noun or the verb, depending on the context</td>
<td></td>
</tr>
<tr>
<td>3 Absence</td>
<td>x → 0</td>
<td>LSQ classifiers have no direct French equivalent</td>
<td></td>
</tr>
<tr>
<td>4 Novelty</td>
<td>0 → x</td>
<td>The auxiliary in French has no LSQ equivalent</td>
<td></td>
</tr>
<tr>
<td>5 Divergence</td>
<td>x → x / x → y</td>
<td>The adjective, which follows the noun in LSQ, in certain contexts precedes the noun in French</td>
<td></td>
</tr>
</tbody>
</table>
The Reading Model

When a person reads a text, a range of different skills are brought into play. These skills can be divided into two levels. **Lower skills** help build up a mental representation of the text on the basis of the visual perception of the text, which is constructed out of printed letters and words (King & Quigley, 1985). **Higher-level skills** contribute to the mental representation of the text by drawing on the reader’s linguistic and general knowledge. These include cognitive skills (e.g., the ability to draw inferences, to anticipate new states of affairs, etc.) and metacognitive skills, for example, the ability to recognize and resolve errors (Brown, 1980; Goodman, 1988; King & Quigley, 1985). Table 2 summarizes the reading process in terms of the skills and types of knowledge that are involved.

The Place of Decoding

Numerous studies have shown that teaching hearing children decoding skills in the early stages of learning how to read favors word recognition skills (MacLean, 1988). In contrast, studies by Smith and Goodman (n.d.) have shown that adult readers do almost no decoding—they instantly recognize the words they encounter. It may seem paradoxical, then, to teach student readers a skill that they will hardly ever need as fluent readers (Giasson, 1990). Teaching decoding skills can be explained mainly for historical reasons, as reading was long equated with the decoding process. This skill can also be justified by the fact that even a fluent reader may sometimes require the strategy of decoding. For example, if the text is extremely familiar to the reader, the decoding strategy may be used to identify words that are known in their oral form but are not yet instantly recognized in their written form. This way of identifying words, useful to the beginning reader, is an intermediate step toward instantaneous and automatic recognition.

**Decoding and deafness.** Decoding a written message—in other words, establishing correspondences between graphemes and phonemes—presupposes that the decoder has an automatic internal representation of the phonemes themselves. In the case of severely or profoundly deaf children, this representation does not exist, so they are prevented from using decoding as defined above. An alternative decoding strategy would have to rely on their experience in articulating sounds or on their visual perception of speech. But speaking is extremely difficult for someone who cannot hear. If a hearing person can understand the speech of a deaf person, it does not follow that the deaf person has a hearing-like representation of the sounds of the language in his or her head (Conrad 1979). It has been suggested, for example, by Alegría, Laybaert, Charlier, and Hage (1992), that the regularities that permit a deaf person to build a phonological representation of the language they cannot hear may be due to a representation based on lipreading. However, this hypothesis may be weakened because in lipreading only 30% of the visible signal is unambiguous outside the context in which it is uttered.

**A backup solution: global word-access.** Decoding based on grapheme-phoneme correspondence is not the only way to approach the task of reading in alphabatically based written languages. It is also possible to develop direct recognition by teaching words as whole symbols. However, it seems that this teaching strategy is limited because whole-word learning seems to slow down and level off after a certain number of words are learned (Giasson 1990). Nevertheless, it has been shown that one can be a good reader without making use of phonological aspects of linguistic structure, which leads Campbell and Butterworth (1984) to question the necessity of phonological decoding in reading. These authors describe a skilled reader who shows unusual difficulties in reading and spelling pseudowords. Although she is able to discriminate phonemes in spoken words, she performs poorly in tests requiring knowledge of phonemic structures (tests such as judging rhyming words or matching homophones). She is also unable to segment words she hears phonetically. Various tests, including those of short-term memory, indicate that she is unable to use normal phonological encoding. It seems that she relies on her orthographic and visual memory, both of which are normal, to compensate for her disabilities.

The petering-out effect that limits the success of global word-image learning has unfortunately been little documented elsewhere (Giasson, 1990). It should not be overlooked that the more word-images an individual knows, the less likely it is that he or she will encounter unknown words in a text. This is what happens for skilled readers who do not have to use decoding to a great extent and who do not seem to experience a petering-out effect.

**Developing competence.** Because phonologically based encoding strategies are essentially unavailable to deaf children, other cognitive and metacognitive skills have to be called into action. A bilingual approach to

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**Table 2**

Skills and Knowledge Relevant to the Reading Process

<table>
<thead>
<tr>
<th>Skills and Knowledge Relevant to the Reading Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Decoding skills (using grapheme-phoneme correspondences)</td>
</tr>
<tr>
<td>• Global word-recognition skills</td>
</tr>
<tr>
<td>• Knowledge of vocabulary and grammatical structure</td>
</tr>
<tr>
<td>• Knowledge of formal text structure</td>
</tr>
<tr>
<td>• Knowledge of the world</td>
</tr>
<tr>
<td>• Skills and strategies for synthesis and evaluation</td>
</tr>
<tr>
<td>• Metacognitive knowledge and self-monitoring of skills</td>
</tr>
</tbody>
</table>
reading must make use of the young reader’s knowledge of the world. During the first years the context of a reading exercise (illustrations in particular) needs to be used to the maximum in order to favor meaning-based anticipation strategies. In addition, to compensate for children’s inability to verify their hypotheses by recourse to decoding, self-monitoring becomes imperative. They must be taught to monitor themselves while reading for comprehension, to recognize when comprehension is blocked, and to be able to take the necessary steps finally to understand the text.

**Teaching and Learning Knowledge**

*Mental models* or *cognitive imagery*. For a number of well-known reasons, knowledge of the world for many deaf children is limited (Erickson, 1987), and their expressive sign vocabulary is also poor. The limited sign vocabulary of deaf children is reflected in their repertoire in the written language, and this overall restricted vocabulary inhibits their progress in learning to read. After all, how can one understand the meaning of a written word if its oral counterpart is not perceived and its semantic equivalent in sign language is unknown?

For this reason it is important to emphasize the teaching of LSQ vocabulary in class periods devoted to LSQ. This can be done, for example, in thematic activities such as discussions and role-playing sessions where learning is situation-based, or in class periods where the content of readings is used for other purposes.

Keeping this in mind, it should be mentioned that certain researchers believe that the size of the vocabulary depends on the way general knowledge is structured or integrated and consists of sets of interrelated concepts rather than lists of isolated and unrelated notions (Paul, 1996). For these researchers understanding a new piece of information depends on the old information that is available and how that information is structured. In this model, it is only by having an extensive and in-depth knowledge of a word and its different meanings that a learner can make progress in reading comprehension. It is not only the individual meanings of words that are important, but the overall conceptual framework into which they fit.

In the early years, then, deaf children develop their vocabulary essentially by appropriating notions expressed in the form of signs. These signs permit them to access the meaning of word-images in French, which in turn contribute to their understanding of text. Over time their overall understanding of French texts allows them to assimilate new notions that are represented by word-images that are then translated via LSQ signs. In this way reading contributes to the progressive growth of their vocabulary.

Just as spoken language interaction is an important source of vocabulary enrichment for hearing children, interactions in LSQ are without doubt just as important as a means of enriching the vocabulary of deaf children. Reading also has an important contribution to make in vocabulary development. In order to understand new words, the reader must always be able to rely on semantic, syntactic, and morphological clues that are provided by the context. One can only gain by reinforcing this type of skill with in-class discussions of new words, their meanings in the texts that are used, their other possible meanings, and the concepts to which they are linked. Paul (1989) and Paul and Gustafson (1991) suggest that teachers should avoid traditional methods that consist of presenting new words before reading, havin the children practice them orally or in signs as well as receptively via lipreading, and of explaining their meaning and having the children reuse them in sentences. It has been shown that relying on a single sense alone does not allow the student to appropriate a new word fully. Conway (1990) emphasizes that it is important for deaf children to learn new signs or words in semantically rich contexts such that the context serves as a bridge from old information to new and as a foundation for developing (new) conceptual relations.

**Setting the Project in Motion**

On the basis of the theoretical framework described above, the bilingual project in Montreal began in September 1998 with a grade 1 class. It was clear to everyone from the outset that the bilingual class must be taught by hearing and deaf teachers. The deaf teacher hired for the project is from a deaf family, holds a BA in linguistics, and is currently enrolled in the MA education program at the university. His role is to take charge of teaching LSQ and to assist the hearing teachers in all other subjects where the children’s understanding would probably be facilitated by the use of LSQ. In French classes, having both hearing and deaf teachers present helps the students distinguish the two languages, even if all the teachers are bilingual, because they model the two modes for the students.

Besides the teachers, others are involved in the project: a resource person, some members of the UQAM research team, and two speech therapists. The resource person ensures the coordination of the project. She also collaborates with the UQAM team in compiling teaching materials and in planning activities. The UQAM team collaborates with the Gadbois school on all questions that have to do with adapting teaching to the bilingual approach. The team also aids the deaf teacher with the content and structure of teaching in LSQ and in putting together tests and other evaluations in LSQ. The speech therapists are responsible for encouraging the linguistic development of the children in line with the educational objectives of the program.
Conclusion
The success of an LSQ/French bilingual approach to education cannot be properly evaluated on the basis of a single school year, even if the results of the first year are extremely encouraging. We can, however, say that the students' progress has been satisfactory. A comparison with the results of students enrolled at Gadbois in 1996 and 1997 makes it clear that the children in the bilingual project have made more rapid progress than those in preceding years. The teachers have worked out an effective set of strategies, and the cooperation between the school and the university is going well. We have identified certain problems, having to do mainly with reading materials, but also with the approach that was originally tailored for French-speaking hearing children. Clearly many solutions remain to be found, just as we need to agree on an optimal way to collaborate with parents to help them improve communication with their deaf child. In short it will not be easy to implement the bilingual approach to education without devoting a great deal of effort and reflection to the task and continually reevaluating what is otherwise taken for granted. The task before us requires a great deal of imagination, as well as novel approaches and the resources that are necessary to bring them to fruition.

Note
1. Two hearing teachers were hired because of the collective agreement standards. Because of the same standards, the deaf person could not be hired as a full teacher.

References


