Introduction

Although a majority of deaf children are born to non-signing hearing parents, in many schools and classrooms worldwide sign languages are taught and used with deaf learners who use sign language as their first language (L1). Scholars understood that deaf children growing up with sign language as their L1 or primary language benefit from their access to a natural language early on since it contributes to their cognitive, communicative and social development. Their sign language knowledge provides the foundation for their literacy development and access to the scholastic curriculum.

The support for sign language learning and use by learners who are L1 users of sign language in classrooms is commonly associated with a bilingual/bicultural approach to deaf education. This approach also supports the learning and use of oral (spoken and written) language, which is considered as a requisite for full participation in the general society. In deaf education classrooms, sign languages are not only taught but are also used to teach scholastic subjects. The professionals who develop and implement teaching approaches in bilingual education programs deal with practical challenges in incorporating sign language in teaching strategies, materials, and assessments (Komesaroff, 2001; Morales-López, 2008; Pérez Martín et al., 2014; Plaza-Pust, 2016b). In addition, the provision of sign bilingual education, much like Deaf education in general, is in some places worldwide vulnerable to changing socio-political contexts and ideological controversies. Consequently, some of its key objectives, notably an early exposure to and acquisition of sign language, remain unfulfilled.

There are studies that examine whether sign language teaching and learning in bilingual education benefits deaf learners. However, variations in bilingual education practices across schools and classrooms call for caution against a generalized assessment of this type of education (Plaza-Pust, 2016b). Faced with an increasing heterogeneity of the deaf learner population, current sign language pedagogical practices in bilingual schools and classrooms are evolving toward more individualized and differentiated language planning with the deaf learners.
Theoretical perspectives

The theories regarding L1 sign language teaching revolve around the notion of sign language as the natural first language of deaf children, its contribution to the children’s development of oral language literacy, and its role in the children’s academic achievements in general. These chief theoretical percepts are discussed next.

Sign language as the natural L1 of deaf children

Despite the low to nonexistent use of sign language particularly in families of non-signing hearing parents and deaf children, sign language is viewed as the primary or most natural language of all deaf children because it is fully accessible to them (Günther, 1999; Vercaingne-Ménard, Parisot, & Dubuisson, 2005, among others). From a psycholinguistic perspective, scholars have remarked on the relevance of natural and fully accessible language input during the sensitive period for language acquisition. Studies on sign language acquisition by deaf children underscored the relevance of appropriate input conditions in terms of timing, quantity, and quality (Singleton et al., 1998). Mayberry and colleagues (see Mayberry, 2007, for a summary) showed that poor or a lack of access to language during the sensitive period for language acquisition affects deaf learners’ L1 sign language and L2/Ln oral language competences. Their findings are indicative of a fundamental sense in which “L1 and L2 acquisition are clearly interdependent” as “[d]elayed exposure to an accessible L1 in early life leads to incomplete acquisition of all subsequently learned languages” (Mayberry, 2007: 543).

Deaf learners who grew up in a non-signing environment at home tend to experience a delay in their acquisition of sign language. Their language socialization in the classrooms involves fewer one-to-one interactions than that of deaf children growing up in a native sign language caregiver-child context (Singleton & Morgan, 2006). The development of a “mutual and visually based system of engagement” by deaf children interacting with their deaf parents is assumed to play a key role in their cognitive, communicative and academic development (Singleton & Morgan, 2006: 352). Crucially, it is understood that children growing up with experiences of meaningful interaction at home develop a sense of “knowing how to learn” (Singleton & Morgan, 2006: 352), which will ease the transition from home to school with respect to learning and communicative practices. For instance, gaze plays an important role in visually oriented communication strategies, either to give a turn or to exclude from communicative interaction (Bagga-Gupta, 2000; Kuntze, Golos, & Enns, 2014; Leroy, 2010). The hearing non-signing parents, by contrast, need support to learn to use visually oriented engagement practices with their deaf children.

A few studies have documented developmental delays in learners without a sign language background at home, based on a comparison of their MLU (mean length of utterance) values with those of children who are native in the language (cf. Klatter-Folmer et al., 2016 for Sign Language of the Netherlands (NGT) and Dutch deaf learners). Some scholars have remarked on difficulties some learners have in producing specific sign language constructions such as classifier constructions and reference maintenance in discourse (cf. Tuller, Blondel, & Niederberger, 2007 for LSF/French) and cohesion in narrative discourses with referential loci, reference forms, and spatial relations (Plaza-Pust, 2016a; Schick, 2006). Several scholars have drawn attention to the lack of appropriate tests and assessment procedures that are needed to identify potential developmental delays in a group of learners who are vulnerable to the effects of language deprivation (e.g., Rosen, 2017).
A critical issue raised in the literature on the use of sign language as a language of instruction in bilingual programs is whether sign language skills help deaf children develop their written literacy skills. Several scholars conducted research studies to determine the impact of sign language skills on written language skills of the deaf children. They found that sign language proficiencies positively correlate with L2 written language proficiencies (cf. Hoffmeister, 2000; Padden & Ramsey, 2000; Strong & Prinz, 2000 for ASL/English; Dubuisson, Parisot, & Vercaingne-Ménard, 2008 for LSQ/French; Niederberger, 2008 for LSF/French). In addition, compared to other factors such as home language or age at enrollment at schools, sign language proficiency was found to be the best predictor of high literacy skills in reading comprehension and spoken language use (cf. Singleton et al., 1998; DeLana, Gentry & Andrews, 2007), and mathematics (Hrastinski & Wilbur, 2016). Padden and Ramsey (2000) observed that high reading skills positively correlated with high skills in fingerspelling and translating signs into written English. A longitudinal study of a Quebec bilingual program revealed positive correlations between Quebec Sign Language (LSQ) narrative discourse skills and high reading comprehension skills in French (Dubuisson, Parisot, & Vercaingne-Ménard, 2008). Vocabulary scores for sign language and written language were found to correlate positively, and vocabulary knowledge, not parental hearing status, has been identified as one of the strongest predictors of reading skills (Hrastinski & Wilbur, 2016). For example, Hermans, et al. (2008) observed that deaf children with large vocabularies in NGT also have large vocabularies in written Dutch. They also found that the deaf children who were dominant in sign language “interpret the meaning of new reading vocabulary within the existing language and conceptual systems” (Hermans et al., 2008: 525).

Cummins’ Interdependence Hypothesis

From an educational linguistics perspective, the use of L1 sign language in classrooms with signing deaf children has been widely advocated on the basis of Cummins’ (1991) Interdependence Hypothesis. This hypothesis distinguishes between conversation and academic language proficiency (also referred to as contextualized and decontextualized language use). Crucially, it is assumed that academic skills in L1 and L2/Ln, unlike conversational skills, develop interdependently and make up what is referred to as the “Common Underlying Proficiency” (CUP). Linguistic minority children who do not develop academic skills in their L1 at home may benefit from compensatory measures in school. For Cummins, teaching in the minority language (L1) fosters the children’s mastery of literacy related tasks in the majority language (L2/Ln) as they benefit from a transfer of the skills developed first in their L1.

Cummins’ work has guided the development of the bilingual approach in deaf education using sign language (Kuntze, 1998; Strong & Prinz, 2000). Cummins’ model also serves as the basis for the hypothesis of the transfer and facilitation of sign language skills on literacy skill development (Niederberger, 2008; Strong & Prinz, 2000). However, critics have argued that sign languages have no facilitating effect on oral language literacy because sign languages have no written form that could be used in literacy related activities. As Mayer and Leigh (2010) argued, “there are no specific text-based proficiencies to transfer from a signed L1 to a spoken L2” (ibid.: 181). Against the backdrop of the ongoing debate, Cummins (2006) warned against losing sight of the core argument in favor of L1 sign language support, which is that L1 sign languages provide “a potent tool for thinking and problem-solving” (ibid.: 2). He further explained that the transfer of L1 to L2, such as from L1 American Sign Language (ASL) to L2 written English, represented “an additional bonus rather than the primary rationale for developing learners’ ASL conceptual and academic proficiency” (ibid.: 2).
Pedagogical practices

A history of pedagogical practices

The history of sign language in deaf education needs to be understood in relation to general society’s changing views on deafness, language, and speech (see Plaza-Pust, 2016b, for a detailed discussion of the early history of deaf education). The 18th and 19th centuries witnessed the establishment of schools for deaf children and the use of sign language as the language of instruction, which was termed the “manual method” in several countries worldwide. This method first came into use in the late eighteenth century in France, where the first public school for deaf learners, the French National Institute for Deaf-Mutes in Paris, was founded. The founder of the Paris school, de l’Epee, recognized sign language as the natural language of deaf individuals. He developed a signed system that he called “methodical signs” to teach deaf learners written language (Leroy, 2010). This system contained the signs used by deaf individuals in Paris and additional invented signs to convey the grammatical properties of French. The impact of his teaching method went well beyond Paris as several schools in other countries such as Italy and Brazil adopted his method. One of the Paris teachers, Clerc, established the American Asylum for the Deaf in Hartford (Connecticut) in 1817 with Gallaudet. Teachers trained in the method at the Hartford school later established other schools for the deaf throughout the US.

The nineteenth century not only witnessed an increasing number of institutions and professionals that were dedicated to the teaching of deaf learners but also an increased diversity in teaching methods. The influence of advocates of an education exclusively oriented toward the use of speech and hearing as the communication means used in schools for the deaf, referred to as the “oral method,” grew significantly at the time. They led the movement that culminated at the International Congress on the Education of the Deaf in Milan in 1880. At the Congress, delegates voted in favor of banning the manual method from educational institutions with deaf learners. Consequently, many schools for the deaf worldwide adopted the oral method and banned sign language from their classrooms. However, schools for the deaf remained important sites for the acquisition and use of sign language, not only because, particularly in the US, they continued to use the manual method but also because many deaf children continued using sign language outside the classroom in those schools that employed the oral method.

Sign language was reintroduced as a language of instruction in several deaf education programs worldwide a century after the Milan Congress. The impetus to the re-inclusion of sign language in deaf education in the late twentieth century was created by a convergence of several factors. They are research studies that documented low academic achievements of orally educated deaf learners and higher academic achievements of signing deaf children of deaf parents, an increasing critique of the oral approach and other approaches that incorporated speech used in combination with signs such as Total Communication, and parents’ dissatisfaction with the available educational options and demand for sign bilingual education. These developments led to the implementation of first experimental sign bilingual classes in many countries worldwide, including Germany (Günther, 1999), France (Leroy, 2010), Italy (Teruggi, 2003), Australia (Komesaroff, 2001), Spain (Morales-López, 2008), The Netherlands (Schermer, 2012), and Sweden and Denmark (Mahshie, 1995).

Current pedagogical practices

Bilingual education currently represents one educational option among others for deaf children in many countries. With regard to the status attributed to sign language, the educational options
available are on a continuum that ranges from the exclusion of sign language in strictly monolingual and oralist classrooms to its inclusion as a language of instruction and as an academic subject in sign bilingual classrooms.

Sign bilingual education: key components and variables
There are four essential components of sign bilingual education. They are:

(1) The promotion of sign language as the primary language of deaf learners and its use as a medium of instruction (the key defining component);
(2) The promotion of the acquisition of the oral language as a second language;
(3) The aim to enhance deaf learners’ metalinguistic awareness about the properties of the two languages they acquire and about their bilinguality; and
(4) The promotion of deaf learners’ development of diverse cultural affiliations in deaf and hearing communities to enhance their social, emotional, and identity development.

The manner in which these components are implemented is affected by several factors. Over the last decades, deaf education has migrated from special schools to regular education schools. The inclusion of sign language in regular education schools has been executed in different ways, including the use of sign language interpreters in classrooms, co-enrollment of deaf and hearing learners in classrooms, separate classrooms of deaf learners that are taught by specialist staff, and the engagement of special staff competent in sign language such as tutors, speech therapists, and support teachers. The first programs in co-enrollment were established in the US in the early 1980s (Antia & Metz, 2014) and in other countries such as Austria, Hong Kong, Italy, The Netherlands, and Spain in the early twenty-first century (Antia & Metz, 2014; Krausneker, 2008; Tang, Lam, & Yiu, 2014). In these programs, deaf and hearing learners are co-taught by regular education teachers and teachers for the deaf, many of whom are deaf.

Sign language as the primary language of deaf learners
The support of sign language as the primary language of deaf learners requires a holistic language planning approach. The approach includes the necessary measures to ensure an early exposure to and acquisition of the language by deaf children, as well as offering sign language as an academic subject and its use as a language of instruction of scholastic subjects in classrooms. However, there is a discrepancy between theory and practice when it comes to sign language teaching and use with the deaf children who are enrolled in sign bilingual education programs.

The early support of sign language in education is challenged on several fronts. Major hindrances include the medical professionals who exclusively support speech and hearing habilitation, the predominantly oralist orientation of early intervention programs, the late transfer of deaf learners from oralist programs to sign bilingual programs, and an insufficient number of available sign bilingual programs worldwide (Plaza-Pust, 2016b). Because of these hindrances, many deaf children who are enrolled at bilingual programs have little or no sign language competence (Leroy, 2010). In addition, the increase in the number of young deaf infants with a cochlear implantation (CI), such as in the Netherlands where 98% of the infants are implanted by age 1 (Hermans et al., 2014), needs to be considered. The increased cochlear implantation of deaf children has affected deaf children’s opportunities to acquire and use sign language in their classrooms. It has also affected the provision of sign bilingual education for deaf children (Rinaldi, et al., 2014). For instance, in some bilingual early intervention programs such as the state-wide Colorado Home Intervention Programme in the US, children with a CI are provided not only with auditory–oral therapy, but also with sign language instruction by a deaf adult once
a week (Yoshinaga-Itano, Baca, & Sedey, 2010). Many deaf education programs do not include sign language in classrooms, and the Colorado program is an exception rather than the norm.

Deaf peers frequently play a prominent role as language partners of the children at the schools that include sign language in classrooms (Singleton & Morgan, 2006). According to Humphries (2013), the engagement of learners as a part of the learning community represents a paradigm shift in deaf education from a teacher-centered instruction to decentralized learning opportunities so that learners may benefit from “negotiating meaning and sharing knowledge with each other” (ibid.: 19). Hence, the teaching and learning of sign language in bilingual classrooms is characterized as a mixture of instructional strategies and peer-to-peer interactions as it has been described for the co-enrollment program in Madrid (Pérez Martín et al., 2014). While young infants’ attainment of the language is enhanced through an early “language bath,” later language development is promoted through “language immersion” (Nussbaum et al., 2012).

Unfortunately, there are insufficient studies on the sign language competences that are attained by the deaf learners in bilingual education programs. There is a lack of standardized assessment instruments for many sign languages that could be used to assess deaf children’s development. The information on deaf children’s sign language development is frequently drawn from informal descriptions of their sign language competences. The lack of standardized assessment instruments, coupled with an overreliance on informal assessments, created limited data based strategies in sign language instruction (Beal-Alvarez, 2016) and the establishment of “appropriate pedagogical objectives for deaf children” (Power & Leigh, 2011: 38). In addition, there are insufficient developmental studies that document the development of the language in children who are born to native signers. Developmental data obtained in such longitudinal studies would aid in the identification of stages and processes in sign language acquisition. These insights would allow for a comparison of developmental trajectories in different acquisition scenarios.

Sign language as an academic subject

Sign language is offered as an academic subject in some deaf education programs. Unfortunately, information on the inclusion of sign language as an academic subject, the number of hours dedicated to, and materials used for its teaching and learning is scarce. Although sign language curricula were reported to be available in 22 of the 39 European countries surveyed by Becker et al. (2017), the curricula were often available only at a regional level and in few educational institutions. Different schools employ different teaching methods (Pérez Martín et al., 2014). Where special education curricula are offered, sign language is taught as an academic subject. Where they are not, teachers need to find creative solutions compatible with the ordinary curriculum (Leroy, 2010). For deaf learners who are educated in a bilingual program, the formal teaching of sign language tends to cover the contrastive properties of sign language and written language, and is scheduled at a time when the metalinguistic competence of the properties of a language is particularly relevant, such as when the teaching of a written language becomes an issue (cf. Leroy, 2010). However, there is paucity in curricula and teaching materials for the teaching of sign language in mainstreamed classrooms with deaf children who are native users of sign language.

Sign language as a language of instruction

One crucial variable in bilingual education pertains to the choice of the main language(s) of instruction. Several scenarios are reported, although the exclusive use of sign language as the language of instruction is rare. In the Nordic countries (Sweden, Norway, and Denmark) sign language is a language of instruction in special education curricula (Swanwick et al., 2014). In other countries, such as the US or France, there is variation in the use of sign language and
spoken language within and across bilingual education programs (cf. LaSasso & Lollis, 2003; Leroy, 2010). However, little is known of the materials available for the teaching of content matter where sign language is used as a language of instruction. Commonly, resources have been oriented toward the creation of materials used for the teaching of sign language (Becker et al., 2017), rather than the use of sign language to teach scholastic subjects. This volume includes chapters that provide materials for the use of sign language to teach scholastic subjects, and the reader is referred to them.

In addition, there is the issue of the use of sign language in the bilingual classroom. In some programs, such as the co-enrollment program in Madrid (Pérez Martín et al., 2014) and the bilingual program in the Kendall Demonstration Elementary School (KDES) in the US (Nussbaum et al., 2012), sign language use in the classroom is determined by topic, person, time, and activity. Sign language use is also influenced by the diversity of the deaf learner population and their language skills since it requires teachers to consider their different learning needs and language competencies on an individual basis (Power & Leigh, 2011). In some programs, children are grouped together in classrooms according to their language skills and preferences. However, the benefits attributed to such clustering practices have been called into question. Hermans et al. (2014) observed such practices in some bilingual settings in the Netherlands and concluded that the benefits of such clustering practices are insufficiently known because the number of learners grouped together was generally small, and the groups included children of different ages.

Another critical issue concerns teachers’ sign language competence. Several surveys on bilingual education programs showed that not all teachers and other professionals were fluent in sign language (LaSasso & Lollis, 2003; Komesaroff, 2001). The European survey conducted by Becker et al. (2017) revealed that teacher preparation in sign language is only available in a few countries. Hence, professionals not native in the language are confronted with the task of learning the language outside of their teacher preparation programs. Teacher qualifications not only bear on the quality of the educational program. Grimes, Thoutenhoofd, and Byrne’s (2007) survey on deaf education in Scotland revealed how teachers’ sign language abilities shaped their teaching approach with the signing deaf children. The teachers who are skilled in sign language tended to follow the bilingual approach, and teachers with no or poor sign language skills tended to use simultaneous communication (that is, talk and sign) in classrooms (Grimes et al., 2007).

**Instructional strategies**

The instructional strategies that are adopted in bilingual programs involve the use of sign language, written language, and visual media. Bilingual education recognizes deaf children’s need to learn visually and be able to access both sign and written languages. Learners’ active participation in learning is essential. Teaching and learning in the bilingual classroom are “joint construction(s) of knowledge” (Singleton & Morgan 2006: 355). For the knowledge construction to be successful, it is essential to consider the relevance of visual communication strategies for the deaf children. However, little is known about “what is (co)occurring and (co)constructed in instructional interactions” (Bagga-Gupta, 2000: 97). Several scholars found that the use of visual media facilitated the teaching and learning of sign language and content matter in bilingual classrooms (Bagga-Gupta, 2000; Gárate, 2012; Power & Leigh, 2011; Singleton & Morgan, 2006; Kuntze, Golos, & Enns, 2014).

Several studies documented differences in deaf and hearing teachers’ visual and linguistic strategies in their teaching of signing deaf children (see Singleton & Morgan, 2006 for a review). Different teachers draw on their individual repertoires, skills, and beliefs about using sign, spoken, and written languages. Smith and Ramsey (2004) studied the discourse practices of a native signing deaf teacher, and found that the teacher used visual media; covered complex
language structures; elicited more learner responses, thoughts and statements; employed eye gazes for attention and comprehension; and permitted peer discussions. Such teaching strategies are not only a result of the hearing status of teachers, but also of differences in language proficiency.

“Teacher talk” has been found to vary not only in relation to teachers’ individual habits, language and cultural knowledge but also the type of school setting (Humphries & MacDougall, 1999). Hermans, et al. (2014) found variation in bilingual classroom teaching strategies across school settings in the Netherlands. They observed that teachers engage less in whole class teaching and more in working with individual learners in special school classrooms, and teach the whole class to a greater extent than working with individual learners in the mainstreamed and co-enrollment classrooms.

Spoken language and written language as L2

Sign bilingual education programs differ in the status accorded to the written language and the spoken language. Many programs, particularly in Sweden, Quebec, France, and Germany (cf. Vercaingne-Ménard, Parisot, & Dubuisson, 2005; Leroy, 2010; Günther & Hennies, 2011) give prominence to written language over spoken language because of the full visual accessibility of print. The teaching and learning of the written language in bilingual programs is guided by the need to support deaf children’s literacy development and not their speech development.

Communication practices in bilingual classrooms

Research on communication practices in the classroom showed that teachers and learners use their knowledge of sign language and oral language in creative ways to foster deaf children’s bilingual language development and their metalinguistic awareness about the contrastive properties of the two languages (Günther & Hennies, 2011). Advocates of a translanguaging approach argue that language mixing should be the norm in sign bilingual education. The translanguaging approach requires that language users draw on “a unitary linguistic repertoire to make meaning and to negotiate particular communicative contexts” (cf. Vogel & García, 2017: 1). However, critics of this unitary translanguaging approach argued that learners in sign bilingual classrooms do not profit from a constant simultaneous use of both languages but profit from their alternate use (Millet & Mugnier, 2004; Pérez Martín, Valmaseda Balanzategui, & Morgan, 2014).

In bilingual classrooms, teachers and learners make language choices and switch between languages based on individual and situational factors (Günther & Hennies, 2011; Krausneker, 2008; Vercaingne-Ménard, Parisot, & Dubuisson, 2005). Gárate (2012) described the following uses of the two languages in the classroom:

(a) Focus on content and use of codeswitching to emphasize a concept, introduce vocabulary, and support the connection between the languages;
(b) Preview-view-review with both languages to access the content (the order in the use of languages may vary);
(c) Translation and comparison of the characteristics of each language are used purposefully to enhance the learners’ understanding of both meaning and form; and
(d) Translanguaging by alternating between the two languages in input and output to the learners.
The instructional techniques that are used to connect sign language and written language involve the alternate use of writing, fingerspelling, signing, and speaking (Padden & Ramsey, 2000). Example (1) from Humphries and MacDougall (2000: 90) illustrates the technique for chaining or sandwiching sign, written, and spoken languages in a lesson.

(1) (VOLCANO) (V-O-L-C-A-N-O) (“volcano”) (point) (V-O-L-C-A-N-O)

initialized sign + fingerspelling + printed word + pointing to word + fingerspelling

During text production and comprehension activities, teachers and learners move between the languages. In text comprehension activities, learners code-switch between sign and spoken languages as a strategy in their retelling of a written story (referred to as storysigning) or engage in a sentence-by-sentence translation of a written story into sign language (referred to as storyreading). In text production activities, the learners plan the writing process first in sign language, and then translate into written language (Krausneker, 2008).

Millet and Mugnier (2004) observed different reactions by the deaf and hearing teachers to the learners’ responses in French Sign Language (LSF) and written French during text comprehension activities. Deaf teachers are found to validate the children’s responses in either language, reflect on the differences between both languages, and tap on the learners’ metalinguistic awareness of the different features of each language. Hearing teachers tended to only confirm the correctness of the learners’ French production.

**Bilingual learners’ pooling of resources**

Frequently in deaf education classrooms, communication occurs not only in sign language or spoken language, but also in mixed systems such as manually coded sign language and simultaneous communication (SimCom). Scholars have been concerned about the impact of language mixing on deaf learners’ bilingual development.

Several scholars examined bilingual learners’ mixed productions of sign and spoken languages in terms of vocabulary size and syntactic complexity (Swanwick, 2016; Rinaldi et al., 2014). Klatter-Folmer et al. (2006) studied Dutch bilingual deaf learners’ production of mixed NGT/Dutch utterances and found increases in MLU over time. They did not observe an increase in MLU in utterances with only NGT or spoken Dutch. Klatter-Folmer et al. (2006) concluded that “mixing is a crucial communicative instrument for the deaf children” (ibid.: 245) Rinaldi (2008) pointed out that in bilingual classrooms the one person-one language principle is seldom adopted in practice. A flexible use of the different languages is encouraged for the purpose of communicative efficacy in the classroom.

Language mixing has been observed as a developmentally constrained phenomenon in longitudinal studies of German Sign Language (DGS)/German bilingual deaf learners. Studies by Günther et al. (2004) and Plaza-Pust (2016a) found that DGS borrowings in written productions are subject to individual variation. The DGS borrowings were found to decrease with the learners’ attainment of L2 written German. Plaza-Pust (2016a) observed that some of the errors produced by bilingual deaf learners in their written German were also found in the written productions of hearing monolingual and child L2 learners of German. For example, DGS, unlike German, has no copula verbs. In the acquisition of German, copula verb drop has been found to occur in the bilingual deaf learners’ written German and in hearing learners of spoken German. This observation suggests that copula verb drop is a developmentally constrained phenomenon, particularly during the early stages of language acquisition, and not the result of interference of L1 sign language.
Deaf learners’ diverse cultural affiliations

Among its many objectives, sign bilingual education seeks to provide a culturally responsive environment at the programmatic level with the primary objective of preparing signing deaf learners “for life in two cultural and language communities” (Power & Leigh 2011: 39). Sign language is regarded as the unifying element of the Deaf community and a marker of deaf individuals’ identity (Holcomb 2013). Deaf culture is a set of beliefs, behaviors, and traditions of deaf people, and it is intimately linked to the learning and use of sign language and to the “seeing way of life” (Hoffmeister 2007: 2). Signing deaf professionals play a key role in promoting Deaf culture in education as they work with deaf learners and instill in them an awareness of “what it means to be Deaf” (Singleton & Morgan, 2006: 359). The inclusion of Deaf culture and history as scholastic subjects on the sign bilingual curriculum is commonly advocated as a means to “promote a sense of pride, reinforce identity, and strengthen socio-psychological development of Deaf children” (Smith, 2013: 4).

In practice, the notion of biculturalism in the education of deaf learners remains controversial (Mugnier, 2006). Changes in educational placements have affected the main patterns of transmission of Deaf culture. The mainstreaming of deaf children in regular schools has reduced the opportunities for deaf children to meet and interact with signing adult deaf role models. In fact, many children might not ever meet a deaf adult or socialize with deaf peers (Kuntze, Golos, & Enns, 2014). In addition, the controversy about the promotion of biculturalism in deaf education is reflected in the different views about the role and place of sign language in deaf education. One view holds that sign bilingualism is the intended outcome of the inclusion of sign language in classrooms with signing deaf learners. Another view holds that sign language is an “educational tool,” in which case sign bilingualism is considered as a transitory phenomenon. This dilemma has also been observed in the education of other linguistic minority groups (Plaza-Pust, 2016a).

Future trends

Sign language use in early intervention programs and for all scholastic subjects, and the development of scholastic skills using sign language, are the areas that deserve further attention in future research studies and pedagogical applications.

Future research studies

Language used for academic purposes does not constitute a monolithic skill but rather involves the choice of particular syntactic structures, discursive means, and registers. Studies are needed to examine how bilingual deaf learners differentiate registers and styles in L1 sign language and L2 written language. In addition, the recent call for a revision (rethinking) of sign bilingual education, its status as an option in deaf education, and its objectives needs to be understood as a response to changing opportunities of deaf children to acquire and use spoken language (Knoors & Marschark, 2012; Swanwick, 2016). These changes have revived the debate over the most useful approaches to account for the abilities and needs of an increasingly heterogeneous deaf learner population. There is a consensus, however, that there is no “one-size-fits-all” education approach that would do justice to the abilities and needs of all deaf children (Knoors & Marschark, 2012; Günther & Hennies, 2011). Future research studies are needed to ascertain the fitness and effectiveness of differentiated bilingual programs and their educational offer to a diverse body of L1 sign language users in classrooms.
Future pedagogical applications

Confronted with an increasing heterogeneity of the deaf learner population, L1 sign language pedagogies need to be adjusted for children with diverse linguistic profiles and learning strategies in classrooms. As learners’ profiles are neither uniform nor static, managing the dynamics of linguistic resources in the classroom becomes a core issue for teachers. Teacher training programs would need to offer coursework, projects, and practical experiences in the teaching of L1 and L2 sign language and L2/Ln written (and spoken) language to the heterogeneous learner body. Crucially, deaf children’s different but changing needs and abilities throughout their school lives need to be monitored. Evaluation and diagnostic tools would need to be created to assess the diversity in learners’ development and competences in the different languages.

Coordination of research, policy, and practice is needed to provide support for sign language in the education domain. Such coordination is necessary for advocating L1 sign language teaching within a multilingual framework of the education of a linguistically diverse deaf L1 sign language learner population.

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L1 sign language teaching approaches


