Faculty of Education  
Thesis abstract

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Title
"Hearing" the Signs: Influence of Sign Language in an Inclusive Classroom

Major subject  
education

Type of thesis  
Master’s thesis

Year  
2017

Number of pages  
85

Abstract
Finding new methods to achieve the goals of Education For All is a constant worry for primary school teachers. Multisensory methods have been proved to be efficient in the past decades. Sign Language, being a visual and kinesthetic language, could become a future educational tool to fulfill the needs of a growing diversity of learners. This ethnographic study describes how Sign Language exposure in inclusive classroom affects hearing children. The comprehensive literature review discusses well-known educational theories such as The theory of Multiple Intelligence by Howard Gardner. The theoretical background presents major studies related to the use of Sign Language with hearing children while identifying how existing literature is lacking in terms of studies made on hearing students exposed to Sign Language in inclusive setting.

The empirical research focuses on an inclusive classroom in Canada which features hearing and deaf students as well as American Sign Language interpreters. The five weeks observations of the classroom interactions and the interviews of twelve hearing students brings an overall understanding of this unusual learning environment. This research uses data driven content analysis and inductive category development to extract clear concepts resulting from the exposure to Sign Language.

The findings suggest that many of the hearing students have developed a certain level of interest towards Sign Language and are positively affected by the exposure to Sign Language. Apart from some minor distraction and the development of misconceptions about the Deaf world, hearing students show culturally sensitiveness, advance communication skills and great sense of responsibility. They also seem to take Sign Language at their advantage and get support for their learning.

Learning becomes greater when we include everyone in the same environment. The uniqueness of each classroom makes those findings closely linked to the specific setting of this research. Nevertheless educators working in a learning environment featuring Sign Language should reflect on the benefits it can create for hearing children. Teachers in mainstream classrooms who are interested in developing their methods can find in this research scientific foundations to justify the use of Sign Language with their pupils and motivation to try something new.

Keywords  
bilingualism, deaf, hearing, inclusion, inclusive classroom, kinesthetic, multisensory, sign language, visual
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Master’s Thesis in Education

FACULTY OF EDUCATION
Intercultural Teacher Education

2017
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1. INTRODUCTION

Since the beginning of the 21st century the trend in special education is to include special need pupils into traditional classroom (Torreno, 2012). The teacher is expected to differentiate and adapt teaching in order to meet diverse needs including the ones with disabilities. In the history of special needs education in different countries, the first trends often started by offering education to people suffering from sensory disabilities like to deaf and blinds children (Rotatory et al., 2011). Deaf children have been first rejected from any type of education, until the 16th century when the monk Pedro Ponce de Leon in Spain starts educating noble deaf children. For the following centuries Education for the Deaf emerged in other countries like in France in the 18th century and in United States in the 19th century but only into segregated schools for deaf and hard of hearing students (Moores, 1996). Since the development of inclusive education trend in the 1980’s, many programs like in United States and England for example have tried to include them in traditional classrooms providing Sign Language training to teacher, personal interpreters or advanced technologies to fulfill deaf pupils’ needs (Kreimeyer et al., 2000). The cochlear implant, an electronic device implanted directly in the head of the deaf person and connected to an external microphone, has influenced a lot the Education for Deaf since its first apparition in the 1950’s and its large democratization since the 1990’s (Niparko, 2000). It has created the possibility for deaf people to hear speech and to live less dependent Sign Language. Despite a large number of deaf children using the cochlear implant, Sign Language is still deeply imbedded in the deaf culture. Some families and some educational system might opt for inclusive classrooms providing a translation in Sign Language in several cases: for example if the cochlear implant is not sufficient for the child’s understanding of oral speech, if the child cannot medically beneficiaries from a cochlear implant or if the family chooses to communicate primarily through Sign Language versus the implantation of a cochlear implant. The purpose of this research is to study the consequences of exposing hearing children to a visual and kinesthetic language on a daily basis in an inclusive classroom.

In the specific case of inclusive classroom for deaf students, there is a real need for studies focusing exclusively on hearing children to give teachers a holistic understanding of the education. A lot of research have been done about the consequences of inclusion for deaf
children (Stinson & Antia, 1999; Stinson & Kluwin, 2003; Wauters & Knoors, 2007; Punch & Hyde, 2010). Often these studies are written by members or defenders of the deaf community who feel strongly that inclusion will lead to an isolation of the deaf child among the hearing culture. On the other hand, authors like Punch & Hyde (2010) encourage inclusion but denounce the current challenges and suggests solutions. Another major point of concern for including deaf children in hearing classrooms is the reduced use of Sign Language. These ethical challenges of inclusion for deaf children will be presented in the Ethics chapter 5.3. Whether there are grounds for worrying about the deaf child in a traditional classroom or not will not be the goal of this research. However I have found no references (EBSCOhost, Eric, Google scholar, Taylor & Francis Online, University of Oulu library) mentioning the effects that inclusion of a deaf child might have on his hearing classmates in terms of learning. Indeed Larson & Chang (2007) tell us that most of the studies about Sign Language focus on hearing children with disabilities and they claim that the lack of studies with hearing children of general development is real.

The main aspect of this research will focus on finding new methods to achieve the goals of Education For All (UNESCO, 2015). Being able to fulfill every learner’s social, academic and physical needs is a common concern for teachers who are determined to offer the best of the education for a growing diversity of learners. Professional teachers are perpetually in quest of new methods to reach a wider scope of learners. As multisensory methods have been proved to be efficient in the past decades (Jubran, 2012; Kamala, 2014; Stoffers, 2011), the result of this research will analyze the use of Sign Language as an educational tool (Shams & Seitz, 2008). Sign Language being a way of communicating with hands and body in a very visual way could be an alternative way of transmitting information. Besides being a very relevant research topic for many teachers in the near future who might face inclusion of deaf pupils in their classroom, this field of research is also a very exciting one for me. Indeed, my first experience with deaf children was in 2012 in Togo, Africa. I learned there, the basics of Togo Sign Language and taught to a class of only deaf pupils. Since this first contact with the deaf culture I have been personally interested of Sign Language and I have taken Finnish Sign Language courses. Moreover as a starting point for the idea of this research, I have been using Sign Language during a summer course as an active and fun way to teach French language to high school’s students. Later in 2015, I have had the chance to witness the practicalities of using Sign Language at
school when I was doing my teaching internship in Rochester, US. Indeed the school was encouraging Sign Language to ease student-teacher communication. This experience persuaded myself that the purpose of my study was relevant and of common interest. The main research question for this research is the following:

**How does Sign Language exposure affect hearing students in inclusive classroom?**
2. UNDERSTANDING THE CONTEXT

The first part of this thesis is a comprehensive literature review which is later on followed by an empirical research in the field. The purpose of a literature review is defined by Cronin, Ryan and Coughlan (2008) as “providing the reader with a comprehensive background for understanding current knowledge and highlighting the significance of new research”. The literature review’s aim will be to close areas of research already existing about the topic and discover areas where research is needed. Every reference has been critically analyzed by evaluating the research methods and ethics of the studies. (Webster & Watson, 2002)

After defining the main concepts of the research like “Deaf/Hearing”, “inclusive classroom” and “Sign Language”, I will base the literature review on well-known educational theories such as The theory of Multiple Intelligence by Howard Gardner and the theory of multisensory learning by Neil Fleming. The rest of the literature review focuses on major researches who deal with hearing people who are somehow in contact with Sign Language. I use the Meta-synthesis method to analyze the literature that I found. It means that I integrated, evaluated and interpreted different findings in order to extract key element in each study. The aim is “to transform individual findings into new conceptualizations and interpretations” (Cronin, Ryan & Coughlan, 2008).

To ensure the understanding of the following review, the researcher will first define the main concepts: hearing/deaf, inclusive classroom and Sign Language.

2.1. Hear or not to Hear”: Difference between Deaf and Hearing

According to the World Health Organization (WHO) (2015) there are several levels of hearing loss ranging from mild, moderate, severe to profound. They also mention that the term “Hard of hearing” applies to people who have mild to severe hearing loss. The term “Deaf” applies to people with profound hearing loss which means that they have no hearing at all. Regarding deaf children, the WHO (2015, para. 1) tells us that: “Disabling hearing loss refers to […] a hearing loss greater than 30dB in the better hearing ear in children.” By opposition, a hearing person is a person whose hearing is reaching the normal threshold of minimum 25 DB in both ears (WHO, 2015, para.3).
Historically deaf people were considered as “dumb”. Awareness has increased recently about deafness but still nowadays the deaf culture, representing 360 million of people worldwide, often suffers of its statue of minority. The public has hard time to accept deaf people and treat them as equals due to their ignorance of the gravity of the handicap but also the fact that deafness is usually an invisible disability (Stokoe, 2005).

In today’s literature there are two ways to define deaf people. Stoke (2005) defines the deaf as being a minority of people who cannot hear human speech properly and who therefore need to find a substitute way to be able to communicate. This definition comes from the perspective of a medical-audiological discourse: meaning that deafness is seen as a disability to be cured. Nevertheless there is in parallel another way to consider deafness. The socio cultural discourse about deafness defines being deaf as belonging to a community of Sign Language user (Broesterhuizen & Leuven, 2008). Deaf people are from this perspective a language minority. This ethical debate is treated in depth in the ethics part (chapter 5.3).

In this research I will use often the abbreviation DHH which stands for Deaf or Hard of Hearing. This abbreviation was the most common way to refer to the deaf or hard of hearing people in the school context where I collected my data for the empirical research.

**2.2. Inclusive classroom**

Inclusive education is defined by the United Nations as being the capacity for an education system to reach out to all learners. This relatively new term in the field of education does not only concern education for special needs children. “An inclusive school must offer possibilities and opportunities for a range of working methods and individual treatment to ensure that no child is excluded from companionship and participation in the school” (UNESCO, 2009, p.8).

Konza (2008) says that a classroom can be labeled democratic and socially inclusive at the condition that it welcomes all students as equally valued members of the school community. UNESCO views inclusion as “a dynamic approach of responding positively to pupil diversity and of seeing individual differences not as problems but as opportunities for enriching” (UNESCO, 2005, p. 12).
Several criteria in a school can reveal if the community is indeed inclusive or not.
According to the Policy Guidelines on Inclusion in Education (UNESCO, 2009), the first step towards an inclusive school is to care about the attitudes of the entire school community. Having a professional staff that is willing to accept and welcome diversity into their classroom is a key element to label a school “inclusive”. The second inclusion checklist from the United Nations concerns the curriculum. This checklist aims at making sure that the curriculum includes topics about diversity, human rights, sustainable development, health education and gender issues among others. It is also mentioned that the curriculum must be flexible to allow “variation in working methods” (UNESCO, 2009, p. 19). Tony Booth and Mel Ainscow (2002) have built an index for inclusion in order to improve schools’ inclusive values. This index relies on three dimensions: create inclusive culture, produce inclusive policies and evolve inclusive practices. Introducing the use of Sign Language as a way to offer different stimulation to the students in the classroom would therefore act in line with the philosophy of inclusion.

This thesis analyzes an inclusive classroom for deaf and hard of hearing (DHH) students who are supported with a Sign Language interpreter. This particular setting exists in many schools due to the recent trend to close down segregated schools for the deaf and the common effort to include deaf students in the traditional classroom. Nevertheless, the development of technologies such as cochlear implant or FM system has also reduced the number of deaf students who benefit from a Sign Language interpreter in the classroom. In many cases, deaf or hard of hearing students rely on a hearing teacher and the use of those technologies. It is important for the reader to understand that for many deaf children, Sign Language is their mother tongue. Therefore a deaf child who has American Sign Language (ASL) as mother tongue and who is included in an English speaking classroom should be considered as an English Language Learner. In this case the interpreter does not only gives access to oral communication to the deaf child but he or she also translates from English to the child’s mother tongue. The presence of the interpreter in the classroom requires cooperation with the classroom teacher. Marylin Friend (2008) writes that for successful co teaching the schedule needs to leave time for co planning, the working relationships and classroom roles need to be discussed and administration needs to support their staff in the process. These guidelines apply also to interpreters and teachers in inclusive classroom for deaf and hearing students.
In the case of deaf pupils’ education, inclusive classroom has been a very controversial issue from the beginning of the inclusive trend (Adoyo, 2007; Jarvis, 2007). The idea of having every children going to their local neighborhood school would impend children to go to boarding schools and leave their families. Inclusive classroom also helps deaf children to take part in the society in their future life and get contact with hearing population (Most, 2007). However many educational professionals are worried about the isolating effect of putting a deaf child in the middle of a hearing community. Researches show that the deaf child might lack social relationships and communication opportunities in traditional schools (Cawthon, 2007; Stinson & Antia, 1999). Another concern is to see the cultural heritage of deaf society to diminish. This issue is further discussed in the Ethics chapter 5.3.

2.3. Sign Language

Sign Language is a complex language on its own using different ways than a traditional language to transmit an idea. Despite the fact that Sign Language has all the features to be considered an official language in itself, its recognition is still challenged in many parts of the world (Council of Europe, 2005).

**Definition:**

For the purpose of this research, I will use mainly the term Sign Language in a very general way. However in some studies mentioned in my thesis the researchers or the participants might have used different form of gestural communication or only isolated words from a specific Sign Language. I understand and respect the complexity of the different Sign Languages and do not intend to depreciate them. I find it important to define what the term “Sign Language” refers to in today’s world as many people might have misconception about Sign Languages. Moreover providing a clear definition of the term “Sign Language” will make it easier for the reader to understand and interpret the different research results depending if they used an actual official Sign Language or a another form of gestural communication to support learning.

Today about 70 million of deaf people in the world have Sign Language as their mother tongue. When speaking about the gestural language used by deaf people to communicate,
we generally mean the Sign Language of a certain country. Sign Language, despite what many people think, is not a universal language. There exist as many Sign Languages as there are spoken languages around the world (World Federation of the Deaf, 2016). Sign Languages are defined by Sandler & Lillo-Martin (2006) as «conventional communication systems that arise spontaneously in all deaf communities». The Council of Europe (2005) writes in a report about Sign Languages status in Europe that they are all natural rule based languages with grammatical structures as complex as spoken languages.

There are other forms of gestural languages used in different context which are not related to deafness. In the literature such terms like “Simple gesture” are used by Goodwin (2000) to define the use of individual signed words for toddlers. “The Makaton” system also uses symbols, signs and speech to enable people suffering from Down syndrome for example to communicate effectively (Mottley, 2012). In other sources, it is possible to encounter the term “Siglish” or “Signing Exact English” which is a system using American Sign Language vocabulary but English syntax patterns (Paling, 2007).

**History of legal recognition:**

Deaf people had to wait until the 18th century to see their language considered as a real language. Abbé Épée, sometimes called the father of the Deaf, was the first to claim the validity of Sign Language. He established the first public school for deaf in Paris in the 1760’s (Stokoe, 2005, p. 5). For the purpose of this research, it is legitimate to discuss the legal status of Sign Language historically and globally. Indeed more awareness is needed to understand and protect a language that is underestimated; this research has for side aim to promote Sign Language as an official language.

Linguistic research has since then shown how Sign Language is composed of the same structural properties than other human languages and that they have evolved independently from spoken languages (Liddell, 2003). Despite that, today all too few countries have been defending Sign Languages as languages of their own rights. In 2003, the European assembly has recognized Sign Languages as part of Europe’s cultural richness and as members of Europe’s linguistic heritage. Therefore the European Parliament has pushed each member state to officially recognize the Sign Languages used in their country and to make sure that the use of Sign Language is not hindered in any way (Council of Europe, 2005). Currently there are about thirty one countries in the world, mostly in the European Union, who
have recognized their Sign Languages into their laws about language rights. Only eleven countries worldwide have included their Sign Language at the constitutional level (De Meulder, 2015). Finland did so in 1995, which makes it one of the first countries to inscribe Sign Language into their constitution according to an international comparison (Council of Europe, 2005). Nevertheless the Finnish Association of the Deaf still thought that their linguistic rights were not fully guaranteed so they recently requested a new Sign Language Act which passed on March, 12th 2015. This Act acknowledges Sign Language as a linguistic and cultural group in Finland such as other minorities’ languages like Saami and Roma language (De Meulder, 2015).

**Particularity of Sign Language: a visual and kinesthetic language**

The difference between Sign Languages and spoken languages are in the senses stimulated during the conversation exchange. Number of references define Sign Language as being a visual-gestural, visual-kinetic (Bragg, 1997; De Gruyter, 2008; Prevatte, 2007) or visual-spatial (Bavelier et al., 2001). These terms are in opposition with auditory-vocal languages such as spoken languages. The first major characteristic of Sign Language is in the mode of transmission: “While spoken languages use articulatory organs located in the vocal tract in order to produce sounds, Sign Languages use a completely different set of articulators, namely the hands and the face”. Another major difference between signed and spoken languages is in the way to perceive the information given by the speaker. We use our ears to perceive spoken words pronounced by the speaker when deaf people use their eyes to perceive gestures of the signers (De Gruyter, 2008, p. 188).

The characteristics of Sign Language makes it more tangible for learning especially when combined with spoken language as the communication between teacher and pupil incorporates various transmission channels: kinesthetic, visual and auditory (Prevatte, 2007).

**Exposure to Sign Language**

In an inclusive classroom where a deaf child beneficiaries of a personal Sign Language interpreter or of a trained teacher in Sign Language, the hearing children of the classroom are automatically exposed to Sign Language in a regular basis. Exposure is defined by the Merriam Webster online dictionary as following: “the fact or condition of being affected by something or experiencing something”. As we know from researches on first language
acquisition, exposure is the main way for toddlers to learn their mother tongue. Studies have shown that exposure enhances language learning; whether it is a first, second or third language. It seems that more the learner is in contact with a language, more competent he/she becomes in the language in question (Kuppers, 2009; Becker, 2007). Nevertheless there can be several degrees of exposure. According to Jeffery Braden (1994, p. 27) the degree of exposure depends on two criteria: the duration and the frequency of language exposure. From the researcher’s point of view, “exposure” is an important factor to take into consideration when trying to evaluate the effects of Sign Language on hearing children. In the existing literature about Sign Language and hearing children, exposure varies from minimal to intense. The exposure can be minimal if the hearing children are exposed to Sign Language by default when an interpreter is there to translate for a DHH child for example. The exposure is more intense when Sign Language is directly targeted at the hearing children and used purposely to stimulate them.

In this thesis’ empirical research, the frequency of the exposure to Sign Language for the hearing pupils is high as a DHH student is included full time in the hearing class. The exposure is relatively intense as there is a, American Sign Language interpreter is all the time present in the classroom and positioned in the front of the class so in all the students’ field of vision.
3. WHAT CAN SIGN LANGUAGE BRING TO THE CLASS-ROOM?

The following review of the relevant literature on the topic offers confirmation that Sign Language present in a hearing classroom due to the presence of a deaf child would benefit all the children. By using a different mode of communication the teacher or the interpreter will create a more diverse learning environment. The literature lets us think that learners who prefer to learn visually and kinesthetically will be the ones benefiting most from Sign Language exposure. This chapter will first discuss theories and research on bilingualism and minority languages, then the ground educational theories related to multisensory teaching will be analyzed. The Multiple Intelligence Theory from Howard Gardner, the VARK (Visual Auditory Reading Kinesthetic) theory from Neil Fleming and the experiential Learning theory among others will be developed as such. Finally existing literature about Sign Language used with hearing people will be reviewed.

3.1. Bilingualism and minority languages

As mentioned earlier, Sign Language is to be considered as an official language. François Grosjean (2010) affirms that deaf children need to have Sign Language as their first language. He suggests that being proficient in Sign Language will support learning of the spoken language of the majority and allow the child to develop cognitively and socially. As about 90% of the deaf children are from hearing families, it is important that deaf children are exposed to Sign Language during their education. This research focuses on inclusive classroom featuring a Sign Language interpreter to accommodate a child who has a minority language as mother tongue. It is important to understand this kind of classroom as a bilingual setting.

The European Charter for Regional or Minority Languages, adopted in 1992 by the Council of Europe defines minority languages based on two criteria: a numerically smaller speaker population and a lack of official status. Sign Language fits both criteria. As a matter of fact only a small part of the population in each country speaks the Sign Language of the country and Sign Languages often lack official recognition. The Unesco gives as a guideline that All that all children should be taught in their mother tongue (All children
should be taught in a language their understand, 2013). This latest report encourages countries to care about the children of minority languages in the classroom. Deaf children are to be considered as minority language speakers. Therefore the school has the responsibility to provide bilingual education to deaf children who are included. Research (Francis et.al, 2006; Barnett et.al, 2007; Lindholm-Leary , 2014; Marian & Shook, 2012; Bialystok et. al, 2012) has shown that bilingual education brings benefits to children in various fields. The results of these studies (Francis et.al, 2006; Barnett et.al, 2007; Lindholm-Leary , 2014) show that US kindergarten and preschool children attending Spanish-English education score better in language, literacy and mathematics of both languages than children attending monolingual education in English.

Bilingual education can be divided in two different categories. Bilingual education for majority language students refers for example to French immersion in Canada for English speaking children. Bilingual education for minority language students refers to programs for children who speak a minority language such as Spanish-speaking students in the US who go to a bilingual English Spanish school. An inclusive classroom with Sign Language could be considered as a bilingual classroom for minority language students. The hearing students would be exposed on a daily basis to a minority language. According to Paradis, Genesee and Crago (2011) bilingualism is defined by integrated approach to language instruction. Therefore an inclusive classroom for hearing and deaf students should share instruction of both the majority language and Sign Language to all the students. Paradis et.al, (2011) state that majority language students learn the L2 better in a bilingual setting than with traditional L2 teaching (which focuses primarily on language learning and is restricted to separate, limited periods of time). They also affirm that in bilingual programs student at risks for academic difficulties can develop same skills in L1 as at risk-students who follow traditional L1 programs and usually outperform them in the development of L2 speaking skills.

Inclusive classroom for deaf and hearing students would gain to be considered as bilingual classrooms. Jim Cummins theory on linguistic interdependence describes how developing L2 skills support L1 skills and vice versa (see figure 1). Therefore teaching Sign Language to hearing children would also support the development of their mother tongue. Both hearing and deaf stu-
udents would benefit from the bilingual exposure. Bilingualism field of research has gained from considering deaf people bilinguals (Bauman & Murray, 2014). Studying Sign Language and accepting it as an official Sign Language has challenged common assumptions about language. It has also helped developing different understanding of the human brain and language acquisition. Bilingual education has also benefited from the introduction of Sign Language in their research. Academics use the term of “Deaf Gain” in opposition to “hearing loss” to refer to deafness as an enrichment of human diversity. According to Bauman & Murray (2014), the hearing society has a lot to learn from the deaf community. The authors reframe Deaf Gain as linguistic gain, social gain, sensory gain and creativity gain. They demonstrate, for example, how deafness brings enhanced visual processing abilities and how the deaf people’s unique worldview brings new perspective in the field of design, literature and arts.

3.2. Multisensory teaching theories

The aim in this part is discuss well known theories showing that children can be various types of learners and use different kinds of intelligences to learn. As seen in the previous chapter, Sign Language stimulates more senses than just the auditory traditional method still mostly used in the classroom.

Howard Gardner back in the 1980’s writes the theory of Multiple Intelligence. He already tells us that intelligence is not only knowing how to read, write and count but a wider combination of different intellectual competences. Applying Gardner’s theory in the classroom means that teachers should stimulate all models of intelligences. Murray and Moore (2012) describe how using Multiple Intelligence-inspired lessons is the foundation of an inclusive classroom. In order to ensure that education is accessible for everyone, Sign Language can be used alongside other methods to diversify teaching.

In his work, Gardner explains that each strength has its own developmental history, which means that we all have the capacities in us but that they are more or less trained depending on our interests and learning style(1985, p. 59). It is difficult to create a list of those competences valid everywhere and for everybody because those competences depend on what is valued in different societies (p. 61). Howard Gardner realizes that there is no such a
thing as a universal list of human intelligences, nevertheless he creates his own view of what should be valued and praised in the diversity of human minds (p. 60). The following categories are the ones Gardner felt like forming a whole to describe the abilities of each of us: Linguistic, Musical, Logical/Mathematical, Spatial, Bodily kinesthetic, Interpersonal and Intrapersonal (Gardner, 1985). This set of intelligences has been later on associated to different learning styles of the pupils in the classroom setting. The learning styles movement from Dunn & Dunn (as cited in Baines, 2008, p. 21) categorizes students according to their preferred way of receiving and retelling information: auditory, visual, tactile and kinesthetic. The learning styles theory from Fleming and Baume (2006) describes learning styles as being a description of a preference. He classifies people’s abilities into four categories: visual, auditory, reading, and kinesthetic. People have preference for everything in life: colors, shoes, cars, food…etc. It sounds legitimate to think that they can also have a preference for learning according to their learning style (2006).

When looking at the description of each model of intelligence given by Howard Gardner and the others, we can easily understand how Sign Language might contribute to the development of certain skills.

**Spatial intelligence:**

The most obvious one: the spatial intelligence (Gardner, 1985) or the visual one (Fleming & Baume, 2006; Baines, 2008), is defined as being “the capacity to perceive the visual world accurately, but also know how to perform transformations and modifications upon one’s initial perceptions” (Gardner, 1985). Research (Baines, 2008) have found out that students tend to prefer visual stimuli than auditory or tactile. When learning to process and produce Sign Language, one needs to pay extra attention to the position, shape, orientation and movement of the hands (Timmermans, 2005). Being spatially gifted also means being able to recognize instances of the same elements (Gardner, 1985, p.176): this is a problem that a signer faces everyday by trying to identify a specific sign which can become tricky depending for example on the person signing, the amount of light or the view angle. People who have developed their spatial intelligence are often called visual learners. Some of the scientists known through time and fields, like Darwin for the evolution theory or Kekulé for the structure of the Benzin ring used their spatial visualization to formulate their innovations (Gardner, 1985, p.191).
Being literate in the twenty-first century does not mean only being able to communicate through reading and writing traditional printed text. With the expansion of technology, messages are now conveyed in multimodal ways. School needs to adapt to this new definition of literacy and include in its daily practices activities and practices that uses various way to communicate. Sanders & Albers (2010) write that “multimodal literacy instruction enables more children to enter into academic thinking and literacy than uni-dimensional forms of literacy instruction”. They bring the visual aspect of communication to the front stage and underline the fact that twenty first century students need to know how information can be transmitted other than by the auditory channel. They also state that multimodal literacy instruction reaches students who are usually marginalized because they do not fit with the traditional institutionalized academic learning style.

Using Sign Language in the classroom would not only boost the spatial abilities to all the children but would also give one way for the teacher to provide visual support for his/her students who are already advanced in that field and would enjoy stimulation in their preferred learning style.

* **Bodily kinesthetic intelligence:**

The second model of intelligence in relation with Sign Language is the bodily kinesthetic one. Gibson (as cited in Gardner, 1985) has claimed in his research that movement and touch were essential for the good development of the brain, especially in the early years. Jean Piaget (1964) also described movement and touch as important and named the first stage of development the “sensorimotor stage”. Our traditional classroom still requires the students to be sited for an extended period of time. Too often the work is to be done quietly sitting at the desk when pupils would need movement to keep them focused (Baines, 2008, p. 127). The benefits of using more bodily kinesthetic stimuli in teaching are that students feel like active learners literally holding their knowledge in their hands. Most of the time the desire to get involved is enough to become motivated especially in comparison of a teacher-centered learning environment where the child is expected to sit still and listen. Sign Language could recreate a balance between mind and body that our culture seems to have lost for a more academic orientated society. This way of thinking is one of the ground bases for experiential learning: an approach which has students actively engaged leading their own learning by connecting their heads and their bodies (Warren, 1995, p. 239). Bod-
ily kinesthetic intelligence is defined by Gardner as being “the ability to use one’s body in highly differentiated and skilled ways [...] involving fine motor movements of one’s fingers and hands but also gross motor movement of the body.” (1985, p. 206). Sign Language requires a good coordination of the fingers, hands, wrist and arms. Very often the whole body is involved as movement of the upper torso, heads and legs are combined with the signs for specific meanings or to set a context. The lack of interest towards the bodily kinesthetic intelligence has not always been a reality, as for example in Ancient Greece where people really valued the body as a mark for respect (Gardner, 1985, p. 208). Even if recently some methods advocate for more use of the tactile sense in the teaching (such as the Montessori exercise of touching letters with different surfaces or tracing in the sand) (Baines, 2008, p. 22), we need more tools to respond to the needs of our bodily kinesthetic learners.

*Inter and Intrapersonal Intelligence:*

The third aspect of human intelligence which connects strongly with Sign Language instruction is the Inter and Intrapersonal abilities. Gardner (1985, p. 237) defines it as being “the capacity of recognizing feelings and ability to label them”. The personal intelligence involves understanding of one’s own emotion but also other people’s emotions, mood and intentions.

As facial expression is a key element of mastering Sign Language communication (De Gruyter, 2008), one could think that being exposed to it on a daily basis would develop the personal intelligence of the signers and viewers. Indeed signers are not only moving their hands and body but are also transmitting information with the movement of their lips, the shape of their eyes and all the other muscles present in the face communication (De Gruyter, 2008). Think about a mime, like Charlie Chaplin in the mute movies for example, most of the emotions and messages go through the facial expression. Learning and following Sign Language might allow students to become more aware of their own feelings and the ones of others; how to interpret them and how to control them. This is what already many schools are doing with including social and emotional education to their curriculum (Elias et. al, 1997). With the rise of social and behavioral disorders among the children of our classroom, Emotional Intelligence is nowadays an essential skill for them to develop in order to be able to participate efficiently into our society. I believe it is the school’s duty to give the necessary inter and intra personal skills to children. By its emphasis on facial ex-
pression and body language, Sign Language is a way to train children on the importance and meaning of nonverbal communication.

Howard Gardner (1985, p. 385) claims: “Individuals are not all alike in their cognitive potentials and their intellectual styles. Education can be more properly carried out if it is tailored to the abilities and the needs of the particular individuals involved”. It is true that in our modern secular education settings, a major emphasis is put on logical mathematical knowledge and linguistic competences. Rare are the curriculum which are praising and promoting the development of all the other kinds of intelligences (1985, p. 337). Often the remaining intellectual capacities are only dealt during after-school activities (1985, p. 351).

In the action research from Marjorie Haley (2004), 23 languages teachers got familiar with Multiple Intelligence theory and practices. Then the teachers taught multiple intelligence-inspired lessons to an experimental group and traditional lessons to a control group. After 9 weeks of teaching, researchers noticed that the abilities of the experimental group outperformed the one of the control group both in oral and in written exercises. Moreover the experimental group’s children demonstrated more satisfaction and a better attitude towards language learning than the others. This research shows how developing Multiple Intelligence friendly environment can be life changing for teachers and students.

Multisensory rooms have been created to stimulate a wider range of intelligences than traditional rooms. According to Hope (2004) and Pagliano (1999) those rooms are beneficial for disabled or emotional disturbed. Why aren’t those methods stimulating all the senses used with all the children? Still nowadays, the use of Sign Language in the Education setting is rare with hearing children. By using Sign Language in the classroom, students would get visual support by having the instruction provided in both an auditory and gestural mode of communication. The kinesthetic characteristics of Sign Language can stimulate children whose body kinesthetic intelligence is strong. And finally, those who need more help on behaving with friends and fitting into a social situation would have another mean of expressing themselves which might suit better their personalities.
3.3. Related studies: Sign Language used with hearing people

Little is to be found in the literature on the experience of hearing children who are in inclusive classroom with DHH students and Sign Language interpreters. To cope with the lack of research in an inclusive setting as it is the focus of my research question, I have extended the literature review to any kind of gestural communication used with hearing people. The most common way for the general hearing public to use Sign Language with children is teaching it to babies before they are able to produce oral speech. This is why I find important to define and discuss Baby Sign Language. This chapter will later on present studies which feature the use of Sign Language in a classroom setting with school age children (but not in inclusive setting). Both studies focusing on academic skills and on non-cognitive skills of students will be addressed. At last this literature review will focus on how the use of Sign Language can help the teacher to keep a good working atmosphere in the classroom, hence affect the social well-being of the students. Happy and relaxed students are more likely to succeed academically (Lyubomirsky, King & Diener, 2005).

3.3.1. Sign Language used with babies

More and more hearing parents of hearing children decide to use Sign Language or gestures code with their infants before they are able to produce coherent oral language. Recently parents in different context (often educated adults) are curious of trying the “baby signs” technique with their young beloved before they can speak. “Baby signing” is mostly used between 8 months and 2 years old, it is defined by Pizer et al. (2007): “Baby signing is the use of visual-gestural signs between hearing parents and their young hearing children with the goal of earlier and clearer communication, often guided by parenting books, videos, and workshops that are available in the United States and other countries around the world.” (Pizer et al., 2007). Despite being sometimes based on a real Sign Language used by deaf people, it is not always the case of baby signs. They can also be a set of simple gestures provided by books, instructors or videos dedicated to the use with babies. In some cases, the parents themselves come up with signs that are relevant for their daily life and create their own code of gestures to communicate.
Baby sign language has been researched as a possible way to support infant language development. Goodwin, Acredolo and Brown (2000) have studied 103 hearing toddlers who were between 11 and 36 months old. They divided them in three groups: one was trained with symbolic gestures and the two others were not taught any kind of signs. At various stage of development the children were tested for their receptive expressive verbal language development and the parents were interviewed. The results revealed that the experimental group which was taught signs had better expressive language skills than the other. Nevertheless two articles (Johnston, Durieux-Smith & Bloom, 2005; Paling, 2007) regret the lack of studies to confirm these results and accuse Goodwin, Acredolo and Brown’s research of methodological weaknesses.

Even if we can have doubts on the benefits of Sign Language for increasing language abilities of children, other studies showed the positive social effects that signing can have when use with young children. Baby Sign Language supports adult-child communication by reducing frustration, increasing interaction and eye contacts (Acredolo et al., 2009). Toddlers who learned how to sign are more likely to be able to communicate their feelings and express their emotions (Valloton, 2008). Finally parents who choose to teach Sign Language to their loved ones gain more awareness towards deaf culture and Sign Language as an official language (Pizer et al., 2007). Although Pizer mentions that the deaf community has expressed their concerns about the use of signs for toddlers. They fear a misunderstanding of the complexity of their communication system because hearing people see it as a simple body language that is easier than spoken language for somebody to acquire, including babies.

All in all, introducing a gestural mode of communication with children under 3 years old seems to make many parents happy for various reasons depending on their values. Increased interaction time, bounding, eye contact, joint attention, emotion intelligence, early spoken language abilities are all mentioned in the above studies. Knowing the benefits of early bilingualism (Marian & Shook, 2012; Bialystok et. al, 2012) we can easily imagine that exposing children in their first year of life to a foreign language can only be beneficial (Pizer et al., 2007). Many parents and children drop the signs once the child is enough efficient and comfortable with using only spoken words, though Claire Valloton (2008) tells us that continuing using the signs with children who are talking is not harmful later on in kindergarten and preschool as it aids them in their literacy development.
3.3.2. Developing different skills of students with Sign Language

Despite the lack of research done in an inclusive setting of hearing and deaf children working in the same environment, there have been researches done about school age exclusively hearing children who were taught with some sort of gestural method. Most of the quantititative researches (McCullough & Emmorey, 1997; Melvin, 2013; Cattani et.al, 2014; Brown, 2007; Larson & Chang, 2007; Daniels, 2010) done in that field are focusing on cognitive skills of the children exposed to a gestural form of instruction. Those researchers tried to figure out if the use of such method with hearing children could somehow enhance their cognitive abilities such as reading, writing, spelling but also memory and visual spatial cognition. Often the studies are designed around two groups of children in a similar environment taught the same content: one experimental group using ASL (American Sign Language) or other kinds of gestures and the control group being taught traditionally.

In the following chapter I have categorized the different studies available in that context according to their focus on different cognitive abilities. We will see how children at school using Sign Language could develop those different cognitive abilities more efficiently thanks to the signs. First I will discuss studies done about visual spatial cognitive skills, then about literacy skills, then vocabulary skills and last music skills.

**Visual Spatial cognition**

Young children mostly rely on their visual intelligence for the six first years of their life (Daniels, 2010), which means that Sign Language for them is just a way to continue to develop their visual abilities. The use of some sort of body language is rather natural for children (2010). When ASL (or other gestural code) and spoken English are used at the same time to teach something to children, the message is presented into various communication modes: visual, aural and physical. Therefore both sides of the hemisphere are stimulated: the left one for processing language and the right one for the visual-spatial abilities. This double stimulation of the brain allows children to later retrieve information from both memories as spoken and visual stimuli are stored in different places (Rush, 2011; Daniels, 1994).

As deaf people in general seem to be better at visual and spatial tasks (Hauthal et.al, 2013), several studies aimed to find out if the deafness itself or instead the use of Sign Language
is responsible for those extraordinary visual and spatial abilities. Most studies in that field concluded that deafness is not the deciding factor in the enhancement of their visual spatial skills but rather the fact of practicing a spatial language on a daily basis such as ASL for example (Flaherty, 2003; bosworth & Dobkins, 2002; McCullough & Emmorey, 1997). For instance, one study compared deaf non signing children with hearing children as control group. All the children proceeded to five tests measuring visual spatial skills. The results were that deaf and hearing did not differ in their performances suggesting that being deaf only does not enhance this kind of abilities particularly (Parasnis et al., 1996). Moreover another study found out that both hearing and deaf subjects were equally good at facial recognition when they were both users of Sign Language at a similar advanced level (McCullough & Emmorey, 1997) which shows that an individual does not need to be deaf to learn visual abilities from using Sign Language.

Other studies designed exclusively for hearing students focused on the visual spatial cognition of ASL learners. Twenty six college students who were taking ASL courses as beginners were compared to students who chose to start learning another foreign language. Students were tested about their spatial memory and mental rotation skills for example in the very beginning of the courses and then at different points of progression during their learning process. This research showed that longer the ASL exposure was and more it was increasing the hearing students’ spatial cognitive skills (Melvin, 2013). A similar study has been conducted by Cattani, Rossini and Volterra (1998) in Italy. A group of 28 hearing children in first and second grade were followed during two years: half of the children, the experimental group, were taking Italian Sign Language (LIS) as a second language. The other half, the control group, was not taking any Sign Language course. Despite a similar starting level in the beginning of the two years on the Raven PM 47 test (a test that measures visual perception and level of mental development), the LIS group’s performance on the same test after the two years were significantly higher than the controlled group.

Learning Sign Language as second language for hearing people shows an increase of visual spatial cognitive skills such as mental rotation, mirror reversal detection and facial recognition (Vercellotti, 2007). The studies mentioned above prove that the visual stimulation offered by Sign Language leads to beneficial effects on the related cognitive abilities of the learner.
**Alphabet knowledge and memory**

Learning to recognize alphabets is a major task for young children. Janice Wood and Bronwyn McLemore (2001) confirm that letter knowledge is a strong predictor of literacy success at school. The teachers are constantly in search of different ways to make the connection happen between the sounds and the visual representation of the alphabets, words and logos. The alphabet song is a very used tool around the world to teach children name and alphabetic order of the letter (Worden & Boettcher, 1990). Other strategies such as the Montessori Method use the tactile sense to transmit the information to children: as for example with the “draw letter in the sand” exercise or the “touch letters made out of sand paper” activity. Sign Language finger spelling can also be used to teach the letter names and written form, especially because at least in ASL some of the letters signs are iconic, which means the hand shape is close to the letter shape (Wood & McLemore, 2001. p 6). The use of finger spelling could become a mnemonic technique for children to remember letters as the correspondence between sounds and visual features of the alphabets is very abstract concept. One study by Brown (2007) has tried to compare a group of preschoolers learning alphabets letters only with sounds and cardboard cues with another group which was learning with the addition of Sign Language. No significant difference was found but the researcher is convinced that we should not abandon this idea, as once the limiting factors are removed, the difference might be more relevant.

Other researchers have been done in the field of memory and American Sign Language, such as the study conducted by Larson and Chang (2007). They read the same story to two groups of hearing children (33 in totals) for four months. In the experimental group American Sign Language was used to illustrate the story but not in the control group. A very small difference was noticed in favor of the ASL group about the children’s ability to understand and recall the story. Though this difference has not been considered enough significant to conclude anything, the researchers still think that a bigger sample size and engaging the students to model the signs themselves during the storytelling would show a more important difference in the data analysis.

In the studies found about alphabet knowledge and memory, there has been no mention on negative effects of ASL use with children. Those studies should serve as a starting point for more investigation in the use of gestural language for the development of alphabet
knowledge and memory. As a conclusion I would say that as long as it does not do any harms to children, teachers should consider using gestural communication as a method to support student’s memory skills.

**Literacy development**

Literacy is a central goal of early education worldwide. The first contact of children with reading and writing usually starts with storytelling. Storytelling quality relies on the use of different semiotic modes like combining speech and gestures or using objects in the settings but also on the range of ways to use those modes like displaying different kinds of voices or accents (Poveda et.al, 2008).

In a Spanish study focusing on storytelling events in local libraries of Madrid for both hearing and deaf children, the presence of Sign Language is shown as having enhancing effects on the literacy experience of the hearing children (Poveda et.al, 2008). In this study two story telling events are being analyzed. During those two events, both an oral narrator and a Sign Language interpreter cooperate to read a story to a mixed group of hearing and deaf children under 10 years old. This special setting allows a complex narrative event in which features oral language, gesture, Sign Language and other semiotic resources. The researchers affirm that several elements of the signed version rely on the iconic resources of Sign Language which makes the interpreter’s speech legible at some level by hearing children. Sign Language translation of the interpreter may require adopting different perspectives in order to describe what happens in the scene. For example during the story, the interpreter takes a royal stance sitting on a throne when the king is speaking and imitate the little chick by moving her arms as walking legs when she enters the room.

The way the interpreter contextualizes the events and narrates the actions is compatible and even supports the oral narration of the story. Poveda et.al (2008) see in the presence of a Sign Language interpreter in the storytelling event as intensifying the multimodal experience of hearing children and giving them extra information for the understanding of the story.

Later on learning how to read can also be supported by the use of gestures. The Borel Maisony French literacy method for example links each sound of the French language with a specific sign. Children are for example encouraged to put their index finger on their
throat when pronouncing the sound “rrrrrr” which correspond to the visual representation R. When the child knows enough sounds and gestures, he/she can break down the word saying sound after sound while producing each gesture accordingly.

**Vocabulary development**

Sign Language is not usually a one to one sign-written word correspondence but it is possible to isolate signs for specific words. Therefore it is possible for a teacher to emphasize some words by using the sign simultaneously with speech. Marylin Daniels (2001) encounters in her study preschool teachers who are using both Sign Language and speech. Unfortunately the study does not precise if the teacher is fully interpreting in Sign Language or only signing isolated words. The results showed that preschoolers taught with both signs and speech had a bigger spoken vocabulary collection toward the ends of the school year than the others. In fact, Marylin Daniels (2010) claims that in nine months of using Sign Language with the children, they reached the equivalent of two full years of normal vocabulary acquisition.

American researchers Goodrich &Hudson Kam, established the relationship between iconic gestures and verb meaning making. In their study (Goodrich & Hudson Kam, 2009), they discovered that both adults and young children can guess the meaning of an unknown verb by relying on an iconic gesture when no other source of information is available about the meaning of the verb. The participants were first told that Sam likes to “new verb”. Then the participants were asked to choose between two different toys: only one of the two represented the action of the new verb. With the experimental group, the researcher said the verb accompanied by a gesture that could be used to infer the meaning of the verb. With the controlled group, the researcher did not produce any gestures. The results clearly showed that adults and children were able to make sense of a word only by relying on the non verbal cues available in the gesture of the researcher.

As we mentioned in the chapter about Sign Language, some of the signs can be iconic. Therefore children in the classroom could in the same way guess the meaning of a word by looking at the corresponding sign. This inner capacity of the brain to rely on visual cues to make sense of things around us could be a great support for mother tongue learning or foreign language learning.
Nevertheless vocabulary acquisition related to Sign Language instruction still needs to be researched as other researchers who attempt to associate signs and new vocabulary words did not find any specific difference between the experimental and control groups (Zdrojewski & Kay, 1998).

**Music and singing skills reinforcement**

Music education seems to also benefit from a multimodal way of instruction. Indeed a study in Taiwan by LIAO (2008) describes how young children’s singing skills can be improved by the use of gestures. In her study 80 children were asked to sing six different set of notes. Half of them used pre learned gestures to accompany the singing (for example opening hands to the side gradually) and the other half did not use any gestures when singing. The results show that that children tended to sing more accurately with gestures. The conclusion was that gestures have a positive immediate effect for children in singing tonal patterns.

When searching a method to teach singing in the elementary school, one popular choice is the Kodály method. Developed by Hungarian composer and music educator, Zoltán Kodály (1882-1967), this method combines the use of a series of hand signs with singing the different notes. This method uses hand signs developed by John Curwen (1816-1880) to reinforce intervallic relationships among pitches. In the figure 2 is an example of the hand sign for the note RE. Cousins & Persellin (1999) studied the effect of using Curwen hand signs on the vocal accuracy of 47 first graders from Texas. Despite the fact that they did not find relevant differences between the experimental group taught with hand signs and the controlled group taught without signs, the researchers suggest that the learning style preference of the student matters in terms of the efficiency of the Kodaly method. Visual and kinesthetic stimuli may help visual and kinesthetic learners to make the experience of singing more concrete. Mc Clung (2008) comes to the same conclusion when interviewing High school Choristers with Extensive Training in Curwen Hand Signs. He advocates exposing students to the potential benefits of Curwen hand signs.

![Curwen hand sign](image)
Despite the inconstancy in some studies’ result regarding cognitive effects of Sign Language on school age children, studies mentioned above have not shown the use of gestural communication as a dangerous or hindering method for children’s learning. Studies mentioned above which used some kind of a gestural method to enhance cognitive skills of hearing children generally showed successful results. Even though these studies did not always deal with the use of a real Sign Language, the bi stimulation of the brain created by the act of making gestures and speaking can only be understood as a boost for children’s neurological development.

3.3.3. Developing school environment with Sign Language

Many of the researchers in the previous chapter who were initially focusing on cognitive skills of hearing students using gestural communication ended up looking at the non cognitive effects. They acknowledge that Sign Language seems to increase pupil’s motivation, focus, pleasure to learn and ability to listen instruction (Daniels, 2003). I have myself noticed during my teaching practice in USA that the use of the sign for “toilet” for example was especially useful when the teacher does not want to be interrupted during his/her teaching for such request from a child. As a teacher, I could nod my head while making eye contact with the child who was signing the letter T for toilet without stopping my verbal explanation of a lesson. Signs can also be used by pupils to answer simple questions or give feedbacks. Indeed using signs is a quieter and faster strategy than using a paper and a pencil or than discussing with peers. This is only one example, the following chapter will feature more examples of using Sign Language in the classroom.

*Embracing Learning styles*

In relation to the Multiple Intelligence theory of Howard Gardner mentioned earlier, we know that one way to explain the positive attitude fostered by the use of Sign Language with students is the versatility of the communication between teacher and students when signs are used. While Gardner is not directly discussing the use of Sign Language, I would like to cite a couple of researches in that paragraph which show that teachers who use two modes of communication – with both their mouths and their hands – in the classroom can help their students learn and retain information better. Susan Cook and her colleagues
(2008) confirm the theory of multiple intelligence of Howard Gardner (1985) when showing that using gestures while explaining a lesson helps the students who have a more developed spatial intelligence to learn and to retain the new information. According to Prevattte (2007), the addition of a visual stimulus to the traditional aural input allows a teacher to reach every single child in the classroom. In that case Sign Language is not used with the goal of teaching Sign Language but as a tool for satisfying and supporting more learning styles in the teaching.

Supporting special needs children

Sign Language or gestural languages have been used successfully by children with Down syndrome as alternative communication system (Clibbens, 2001). With the development of Education For All, teachers are now expected to reach a larger variety of learners in the classroom. Sign Language might be used as a support for Autistic or ADHD children for example. Autistic students learn both receptive and expressive vocabulary better with signs. Signs, and more specifically finger spelling, help kids who struggle with reading and spelling (Valloton, 2008). ADHD kids learn better when the information is presented visually and kinesthetically. The use of signs gives them a sense of grasping the concepts in a more concrete way. Moreover the fact of moving the arms and the hands helps the ADHD child to handle their need to move (Orfano, 2012).

Fostering intercultural education

Similarly to parents using baby signs becoming more aware about deaf culture, the same phenomenon occurs with school age children. In his study Brereton (2009) noticed that teaching Sign Language to preschool students helps them to realize that there is other ways of communication in the world than their own mother tongue. Using Sign Language in the classroom allows teachers to open up topics about deaf culture and children with disabilities who need to use Sign Language to communicate. Claire Valloton (n.d) adds that hearing children show more compassion towards somebody who differs from them when they have been exposed to Sign Language. As a result children are more culturally aware and able to celebrate diversity.
Developing Emotional Intelligence

Emotional Intelligence has been defined by Salovey and Mayer (1993) as “a type of social intelligence that involves the ability to monitor one's own and others' emotions, to discriminate among them, and to use this information to guide one's thinking and actions. This includes the verbal and non-verbal appraisal and expression of emotion, the regulation of emotion in the self and others, and the utilization of emotional content in problem-solving». Being emotionally intelligent requires being aware and being able to manage ones own emotions and the ones of others (Emotional Intelligence, 2015). The non verbal feature of Sign Language can allow students to show their feelings in a safer way. Brereton (2008) analyzes how a hearing child used Sign Language to move from disruptive child to classroom expert. This case study displays a preschool child named Alana. In the beginning of the study she was showing disruptive behavior as she often reacted violently with her classmates. She also had trouble sitting still and quietly for an extended period of time. Her teachers were concerned about her developing a negative self-image of herself due to the constant reprimand that she was getting during the day. Sign Language helped her in several ways; it provided her with an effective communication tool to solve conflicts. She found easier to use signs to communicate with her peers especially in situation where she was angry and upset. Becoming a real expert in Sign Language also allowed her to be praised and seen as a positive image by her teachers and classmates. And last, using gestures with her hands during circle time enabled her to stay focused and still for the whole instruction time as Sign Language was an acceptable mean of movement. This research shows how useful a tool Sign Language can be for teachers and students. This active and additional way of communication can help some of our students to handle their emotions, to excel in one certain area and to keep their attention high.

Improving classroom atmosphere

Classroom environment is crucial when discussing pupils’ learning. Space design, light, temperature, colors, noise are all environmental factors that can influence learning. From this list, noise is the one that Sign Language can greatly affect. In several studies the noise level of the classroom reveals to be decisive to the pupils’ well being in the class and therefore to their ability to focus. Research shows that students in high noise level perform worse than pupils in lower noise level (Spencer & Blades, 2005; Dockrell & Shield, 2006).
Moreover using fun and engaging methods to learn makes pupils feel happier and more relaxed. The well-being and the motivation of students are essential for successful and lifelong learning. (Wolk, 2008)

In the study from Mottley (2012) a teacher trainee has introduced Makaton signs into the daily routine with her 30 second graders during her placement. She, for example, taught the children the signs for “toilets”, “wash hands”, “line up”, “sit down”… The children were interviewed before the introduction of signs and after. Most of them described the classroom as being less noisy and more fun with the use of the signs. They also mention that it is easier to understand what the teacher wants and that children are more focused because they need to constantly look at the teacher. The researcher also discovered as a result of her observations that children needed less time to respond to some instructions (such as sit down, line up…) when the signs were used than only with aural instruction.
4. THE EMPIRICAL STUDY

In the first part of my thesis, I have discussed different studies involving hearing children and Sign Language in order to build a theoretical understanding of the phenomenon. But none of the previously mentioned studies dealt specifically with hearing children exposed to Sign Language in inclusive classrooms. This is the reason why, as a researcher, I felt necessary to study this very specific setting and collect data in the field in hope to further more explore the possibilities and the consequences of using Sign Language with hearing pupils.

This empirical study analyzes the context and describes the participants’ experiences in an inclusive classroom welcoming one hard of hearing student supported full time by a Sign Language interpreter.

Before going to the classroom I assumed Sign Language could be somehow beneficial for hearing student’s learning. I expected to see different situations where the pupils seemed to pay more attention to Sign Language and therefore be more focused on the ongoing task. I also assumed Sign Language exposure could somehow modify the social behavior of certain students and bring a whole new motivation for students to be in the classroom.

4.1. Methods

4.1.1. Aim and research Question

The aim of this research is to study the consequences of exposing hearing students to Sign Language in an inclusive classroom through the students’ experiences and the researcher’s observations. This empirical study focuses on the effects of Sign Language from the students’ perspective.

Therefore the following questions will be in the center of the data analysis:
How does Sign Language exposure affect hearing students in inclusive classroom?

➢ In which situation are the hearing students receptive to Sign Language?
➢ What are the benefits of having Sign Language in the classroom?
➢ What are the disadvantages of having Sign Language in the classroom?

4.1.2. Methodology

In the following section I will present my methodological foundations that lie in ethnographic field. Fetterman (1989) defines ethnography very simply as being “the art and science of describing a group or culture”. While traditionally ethnography was used to understand a particular culture, such as an exotic tribe or the population of a certain country, it is now acknowledged that a culture can be found in any social group regardless of its size, localization or language. It is therefore possible to ethnographically study a classroom culture in the educational context like it is the case in my research (Fetterman, 1989).

Some researchers felt a need to rethink traditional ethnography. It is the case of Sarah Pink (2009), who is at the origin of the term “sensory ethnography”. Several researchers interested in a more multisensory approach to research (Pink, 2009; Ingold, 2000; Grasseni, 2007), have criticized the way our modern western societies see visual sense as a dominant way to experience our environment. Sign Language involves relying on vision. In order to avoid focusing on one sense and forget the other way to experience the environment, I decided to do sensory ethnography. This way I forced myself to be aware of all the way the teacher, the interpreter and the pupils are using communication.

The main aspect of ethnography consists of detailed observations of the subjects and their environment (Gobo, 2008). Being 6 weeks present in the field on a daily basis has allowed me to understand the classroom and school culture as well as get to know the participants. I used a paradigm which is situated both in Post Positivism and Constructivism for my research acknowledging that despite a will for objectivity I pertinently know that exterior factors such as my own experience and human mechanisms might have influenced the findings of my research (Guba&Lincoln, p 110. 1994).
4.1.3. Field access

Finding and getting access to the field was particularly challenging due to the specific criteria for my research setting and other administrative challenges. For the purpose of my research, I needed to observe and interview hearing students exposed on a daily basis to Sign Language preferably in an elementary level classroom. Therefore I needed to find an inclusive classroom welcoming at least one deaf or hard of hearing student and make sure that this student was supported with a Sign Language interpreter.

I focused my research of inclusive classroom to Canada because their national educational philosophy leans towards full inclusion of students with special needs. Canada is also an English speaking country which was important as I wanted to interview the students in English to avoid challenges and misinterpretations due to translation work.

I sent emails to the Board of Education of each province presenting my research plan and requesting contacts to suitable inclusive schools. Few sources led me to a primary school that was striving for the integration of deaf students into the traditional hearing classrooms. After getting the necessary ethical committee approvals from the Oulu University, the Canadian province Board of Education and from the school Principal, I gained access to a grade 5/6 inclusive classroom in the school mentioned above for a period of six weeks between April and May 2016.

4.1.4. Context and Participants

The elementary school was located in Canada. The school had a DHH program. At the time of data collection (2016), the staff included one deaf teacher, one hearing teacher for the deaf and two deaf assistants as well as few ASL interpreters on top of the hearing staff. There were two semi integrated classes for DHH students which joined the hearing students for PE, math, art, break time, lunch time and general assemblies. The school also had three DHH students who were fully included into a hearing class of their grade level, of whom one had a cochlear implant (therefore relied on technology and perhaps lip reading to follow instructions) and two were supported full time by American Sign Language interpreters.

The grade 5/6 class under study comprised 25 students in total between the age of ten and eleven years old. 24 of the students were fully hearing and one was hard of hearing (see
There were 10 girls and 15 boys. The students came from the neighborhood which was described by the principal as being a heterogeneous middle and high socio economical background community. Among the class students, five of them had special needs: one was severely autistic, two were diagnosed with ADHD, one with learning disability and one was hard of hearing.

The hard of hearing student in the class was not profoundly deaf but considered as “hard of hearing”. He was able to hear part of the speech and he was able to produce almost perfect speech in English to communicate with his teacher and peers. The student had been granted a Sign Language interpreter because his both parents and his siblings were deaf which meant that his mother tongue was not English but American Sign Language. The student had also been equipped with hearing aid and the teacher with a FM microphone which uses radio waves to send speech and other signals to hearing aids but the DHH student refused to use this technology. The presence of the Sign Language interpreter for him had been challenged many times among the school staff. The principal justified the interpreter support by explaining that he already faced difficulties in his education due to his low level of hearing and that depriving him from his mother tongue would be creating more barriers for his future success.

There were two other 5/6 grade classroom in the school and the student were sometimes in mixed groups during math and physical education. I always followed the group that included the hard of hearing student.

The other significant participants of my research were the class teacher, who was an experienced teacher who had been teaching in this school already for a few years and three American Sign Language interpreters who were alternately supporting the deaf and hard of hearing students present during my observations (see table 1).
4.1.5. Data collection

Table 1: Summary of data

<table>
<thead>
<tr>
<th></th>
<th>Observations</th>
<th>Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of participants</strong></td>
<td>24 hearing students (10-11 y)</td>
<td>15 hearing students (10-11 y)</td>
</tr>
<tr>
<td></td>
<td>1 hard of hearing student</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 teacher</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 ASL interpreters</td>
<td></td>
</tr>
<tr>
<td><strong>Methods</strong></td>
<td>Full participant</td>
<td>Semi structured</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>Entire school day for 5 weeks</td>
<td>7 min/student (average)</td>
</tr>
</tbody>
</table>

Following an ethnographic approach, it was important for me to be present in the field for an extended period of time in order to be able to understand the school culture and the environment around the students. Those 5 weeks of presence in the field allowed me to collect two different kinds of data: observations of the hearing students’ interaction with Sign Language during the daily school activities and interviews with hearing students. Those two methods are typical of ethnographic works (Reeves et al., 2008) and allow a holistic approach to the phenomenon under study.

**Observation methods**

Gobo (2008) suggests that there are two main ways to do observations in an ethnographic research. For the purpose of my study I will use the participant observations (opposed to non-participant observation) which involves participating in the lives of the people under study while keeping a professional distance in order to ensure quality observations and comprehensive data collection (Reeves et al., 2008). Keeping distance and not getting too involved in the research participants and context is essential in order to be able to recognize what are the natural behaviors and actions of the subjects. The main goal of the ethnography should be to study what the people in the context take for granted (Williams, 2007).

I have been present in the field for 5 weeks and my role has been the one of a teacher assistant as well as teacher for few lessons. The children of the class had been informed of my
presence as a teacher student who was interested in getting to know their specific learning environment due to the presence of Sign Language. I also explained to them that I was going to write a paper about my experience in their classroom for my own university. The teacher of the classroom, the interpreters and the parents were fully aware of my research project and of the objectives of my observations.

Being a full member of the classroom was for me crucial as I wanted to be accepted by the students in order to become closer to them and their environment. According to Gobo (2008), participant observations require five major characteristics: establishing a relationship with the social actors, staying in their natural environment, observing and describing the behaviors of the subjects, interacting with them and participating in their everyday ceremonials and rituals, learning their code to understand the meaning of their actions. I therefore interacted with the students for 5 weeks in and outside the classroom in order to create a relationship based on trust and respect, understand their environment and observe them with minimum disturbances to their usual routine.

**Observation process**

I observed the 24 hearing students of my grade 5/6 class. I focused on the interactions between the hearing pupils and the interpreter or the hard of hearing student. The pupils’ desks were organized in two semi circles. The teacher’s, interpreters’ and researcher’s position is described below in the figure 3.

![Figure 3: classroom arrangement](image-url)
While in ethnography the participant observations should aim to only describe objectively what has been seen, heard, touched, smelled, tasted; it is important as an ethnographer to recognize writing field notes automatically leads to a certain representation and construction of the knowledge present in the reality (Emerson et.al, 2001). Therefore I wish to precise that despite my constant effort for objective observations, the decisions I made in the classroom during the notes writing process have been to some extent influenced by my previous experiences and my personal understanding of the context. Following the instructions in the data field guide written by Mack et. al. (2005), every time I noticed any interaction between the hearing pupils and the interpreter or the DHH pupil, I wrote a few keywords or short sentences on my notebook describing what happened. In order to select what event was worthy of being recorded in my notebook, I used my own assumptions, my study question as well as the different categories that had emerged from the literature review. These categories were related to visual spatial cognition, memory, vocabulary, learning styles, special needs, intercultural competence, emotional intelligence and classroom atmosphere.

On a daily basis (usually at lunch time or during the same evening) I wrote in the computer a descriptive narrative paragraph by expanding my shorthand notes from the day. As advised by Kawulich (2005), each entry in my digital observation journal was dated and I carefully recorded which school subject was going on when observing specific events. Anonymity of the participants was respected during the whole observation process as I did not use any names in my notes. The anonymity process will be described in more details in a later chapter (6.3. ethics). When my notes expressed my own reflection or personal feelings, I colored the text in blue to differentiate from the facts.

Interviews

My second type of data was interviews with the hearing pupils of the class. Ethnography emphasizes understanding the researched topic together with the participants, from their perspective (Gobo, 1989). Interviews purpose should be the understanding the experience of other people and the meaning they make of that experience (Seidman,1991). The goal of the interview was to determine the similarities and the differences in the way pupils of the class were experiencing exposure to Sign Language.
The Interviews were semi structured and considered as a multisensory encounter in regards to the sensory ethnographic methodology. Interviews were not just be a conversation but seen as way for communicating in many ways (Pink, 2009). Most of the questions were open ended questions (see appendix 3).

To sample the participants for my interviews, I used the big net approach very popular among ethnographers (Gobo, 1989). This approach consists on first mixing and mingling with everyone, then the researcher narrows down the selection to only part of the population. I observed all the hearing students during the first 4 weeks in the field and then selected the 15 pupils who appeared in my observation journal. I added to the list two coded students of the classroom because I was interested in opinions coming from different kinds of learners. After discussion with the school principal and the classroom teacher the autistic child was removed from the list of the possible interviewees in order to avoid unnecessary stress for the student.

By the fourth week of the field study, I had selected 16 students (9 boys and 7 girls) to participate in the interview. The consent forms were given to the pupils and asked to be transmitted to the parents. The students were reminded to return the form filled up on a daily basis during the whole week. Two consent forms were never delivered to the parents as the pupils selected (Tyler and Billy) were absent regularly during the last two weeks of my field study. 12 parents returned the consent forms allowing their child to participate in the interview and 2 did not return the form (Siler and Lily). I ended up interviewing 6 girls and 6 boys. Parents had the opportunity to make an appointment with me through the consent form if they wanted more information. Two of the pupils’ parents took this opportunity. A summary of the selected pupils for interviews is presented in the table 2.

The interviews took place in a conference room under the supervision of the school secretary sitting in the office next door. The interviews happened during the fifth week of the field study (at lunch time) so the students knew me well and were relatively comfortable talking to me. The students were allowed to take their lunch with them to the interview so that they wouldn’t miss recess time afterwards or skip eating lunch because of the time spend answering my questions. The interviews lasted anywhere between 5:25 and 8:21 minutes and were in average 7 minutes. Time of interviews for each child is presented in table 2.
The interview started by a brief introduction of my research purpose and information to each child regarding their participation to the interview and its implications. Each child was assured of the anonymity of their answers and given the possibility to withdraw from the research at anytime. After they gave me their oral consent to record them, I started to record with a headset's microphone which was either set on the table in front of the pupil or placed around the neck of the pupil. I asked all of the students the same set of questions changing the formulation a little bit depending on their understanding and their previous answers (see appendix 3).

4.1.6. Analysis methods

The set of data consisted of about 1,5h of audio recorded interviews of the pupils and 11 pages of observations field notes. Following the collection of the data, I gave myself some time before to start the analysis process in order to get some distance from the material.

After transcribing the interviews, I drew a preliminary mind map to extract and attempt to organize all the answers from the pupils. Tesch (1990) describes this first step of the analysis as being a necessary ritual for the researcher in order to immerse with the data and have an overall picture of the information given by respondents. I chose data driven content
analysis as my method which by Kohlbacher’s definition (2006) refers to “extracting the relevant information from the text by the means of using a category system”.

In order to design the categories present in the data, I used an inductive category development. In the inductive category development, the main idea is to set a criterion based on the research question that will guide the researcher to extract relevant information throughout the data (Mayring, 2000). Table 3 presents the analysis process from the original expression to the final main categories.

Table 3: analysis process from original expressions to main categories

<table>
<thead>
<tr>
<th>ORIGINAL EXPRESSION (ex)</th>
<th>CODES (ex)</th>
<th>SUBCATEGORIES</th>
<th>MAIN CATEGORIES</th>
</tr>
</thead>
</table>
| “It’s a language. It's just another language in this world really.” | - SL kinesthetic language  
- SL a legitimate language | Legitimacy of Sign Language | Develop Intercultural competence |
| “like how it's not just one type of students” | - Acknowledgement of Thomas’ needs  
- Appreciation for diversity  
- Respect for DHH | Support for diversity | Equality |
| “it just seems GOOD that everybody gets to know what they do” | - Fairness of inclusion  
- Equality  
- Appreciation of inclusion | | |

The original expressions are extracted from the interviews transcript they somehow referred to the influence that Sign Language had in the classroom. I then rephrased each of them in order to reduce them in a more simple expression called “codes”. After sorting out all codes into clusters based on similarities and differences between the different concepts, I named those clusters as subcategories. Mayring (2006) then advices to revise those categories within a feedback loop to eventually reduce them to main categories. I organized the 19 subcategories to finally become six main categories. The codes written in blue come from my observation field notes when the rest comes from the interviews’ transcriptions. A full version of the table is presented in the chapter 5. Results.
5. RESULTS

The results reveal five main key elements that seem to be closely linked to the learning environment of an inclusive environment featuring Sign Language (see figure 4). Those five themes give an overall picture of the influence that Sign Language exposure has on the hearing pupils of this class.

![Diagram](https://via.placeholder.com/150)

**Figure 4: Summary of results**

5.1. Feelings and downsides related to exposure to Sign language

When reviewing the available literature about the use of Sign Language with hearing children, I did not find any research stating that Sign Language (SL) could have a negative effect in any way. Nevertheless none of those researches were dealing specifically with an inclusive classroom setting featuring a Sign Language interpreter. In the classroom context of my research it is legitimate to wonder whether the presence of the Sign Language interpreter can create challenges for the hearing pupils.

The table below shows the process from the data to the category.
Table 4: Category 1, Feelings and downsides related to Sign Language Exposure

<table>
<thead>
<tr>
<th>Original expressions (examples)</th>
<th>Codes (examples)</th>
<th>Subcategories</th>
<th>Main category</th>
</tr>
</thead>
</table>
| “it doesn't really affect me much” | - Unconcern  
- Normal situation | Undisturbing |  |
| “when I’m supposed to be looking at the screen and then I look at the interpreter” | - Feeling of awkwardness  
- Distraction from the task | Distressing feeling |  |
| “if people their ears don't work properly so they have to wear the hearing aid “  
“they can still say a word they just don't remember it for longer” | - Deafness as a Physical disability  
- Deaf = mute  
- Deafness = lack of memory  
- SL only language for the deaf  
- SL is learned only at school | misconceptions about Deaf world |  |

**Undisturbing**

During the interviews, a majority of the students expressed no concern towards the fact to be exposed to Sign Language. I asked all of the students first in which situation they thought Sign Language in the classroom is helpful for them, and then in which situation Sign Language is annoying or disturbing for them (See interview question in appendix). To the latest question, eight out of twelve students expressed no concern with being exposed to Sign Language. Their answers show clearly that they did not see anything negative in having Sign Language in their classroom. Students for example replied:

“I don't really mind it” (Ella, interview)

“It doesn't really make a difference to me. It’s still the same classroom, just somebody else is up there” (Adrian, interview)

“There is no time I think that it's annoying. It's never really annoying to have the interpreter there” (Kelly, interview)

“I don't find it annoying or disturbing at all” (Oona, interview)
In the beginning of the interview, I asked them how they felt being in a classroom with Sign Language and how different was it from a regular class. Five students spontaneously told me in that Sign Language was part of the classroom routine and that they were used to it. Ella for example says:

“I’ve gotten used to it; it's kind of like just second nature now” (Ella, interview)

The general feeling of the situation being ordinary might come from the fact that hearing students can easily choose to ignore the Sign Language interpreter if they wish to. In a Spanish study (Poveda et.al, 2008) mentioned in chapter 3.2.2: Developing different skills of students with Sign Language, the researchers had come to the same conclusion stating that during a story telling event in a library translated in Sign Language the hearing children did not have to rely on the interpreter, therefore they could choose to ignore it.

The following statement from my observation journal also shows that the teacher did not believe Sign Language had any influence in her classroom:

“19.04.2016:I also had a short discussion with *teacher* about my research and she said that she didn’t think any of her hearing kids were paying attention to the interpreter.”

**Distressing feelings**

A few students though brought to my attention a couple of challenges due to the presence of Sign Language in their classroom. Four students mentioned a feeling of awkwardness being in such a classroom. Reasons for this feeling were not always clearly stated but it seems that not being able to understand the signs was bothering Sam for example:

“It feels a bit strange because I don’t understand any of the hand signals” (Sam, interview)

Kelly mentioned that she had never seen Sign Language before to justify her feelings. I am not aware of the way teachers and school staffs have introduced the concept of inclusive classroom and Sign Language interpreter to the hearing pupils but it is possible to think that some children might see their classroom as unusual compared to what they believe is a “normal” classroom.
Distraction also comes up as a challenge for three boys of the classroom. All three state that seeing the interpreter moving her hands takes their attention away from the task or from the board. John seems to think that his case is an exception because he has ADHD, he says:

“It is pretty distracting at least for me. It's probably just me. But that makes sense as I have ADHD. I easily get distracted.” (John, interview)

Ryan shares with me that the interpreter is often “in the way” and keeps him from seeing the smart board. This complaint is probably due to the position of his desk on the far edge of the front row and the usual position of the interpreter. In such inclusive setting, teachers and interpreters should pay even more attention to the classroom arrangement.

Misconceptions about Deaf world

Some students saw deafness primarily as a physical disability. They considered Sign Language as being a way for the deaf people to reach our (hearing community) level of communication and cope with the impossibility to produce oral speech. Those students did not refer to Sign Language as being the mother tongue of the deaf enabling them to communicate with each other. Sam for example shows several times a weak understanding towards deafness, his statements are a bit simplistic and don’t necessarily reflect the reality:

“Sign Language is for people who can't hear then they can” (Sam, interview)

Sam considers that using Sign Language allows deaf people to hear which is a bit contradictory since a deaf person by definition cannot “hear”.

“If people their ears don't work properly so they have to wear the hearing aid” (Sam, interview)

Some deaf people choose not to wear the hearing aid because they feel comfortable with using only Sign Language to communicate. The same student links the inability for deaf people to speak orally with their inability to use their memory properly:

“They can still say a word they just don't remember it for longer” (Sam, interview)
A statement from Leo shows again how narrow understanding pupils can have about deaf people. He doesn’t seem to think that Sign Language can be the mother tongue of somebody and therefore learned from birth like any other language.

“They have to learn the signs in class and they have to know what the letters are and the alphabet.” (Leo, interview)

This confusion can come from the fact that many DHH students in the school came from hearing families and therefore learned Sign Language only at school.

The analysis will show later on that only a minority of the students interviewed showed strong misconceptions towards deaf people.

5.2. Improves feeling of going to school

<table>
<thead>
<tr>
<th>Original expressions (examples)</th>
<th>Codes (examples)</th>
<th>Subcategories</th>
<th>Main category</th>
</tr>
</thead>
</table>
| “I usually sign with my friend Tiina (hearing).” | - Pleasure of using SL between hearing  
- Communication between hearing  
- Specific word of interest | Intrinsic motivation | Improving motivation of going to school |
| “if I kind of get kind of bored I look at the interpreter and see what they do with their hands” | - Avoid boredom  
- Entertaining | Improves enjoyment of school | Skills for future |
| “if there is someone at work someone that's deaf or hard of hearing you can talk to them with SL” | - Getting ready for future school  
- Skills for future working life  
- Skills for adulthood in the society | Skills for future | |

When analyzing the data, Sign Language seemed to bring a whole new dimension to the way pupils experience school. Indeed being exposed to Sign Language on a daily basis opened up new possibilities and new feelings for the students in class. Their feeling of going to school appeared to improve due to the presence of Sign Language in their learning environment. Sign Language gave the opportunity for some students to become intrinsical-
ly motivated about going to school. Pupils seemed to find their own personal gain in Sign Language exposure.

**Intrinsic motivation**

Finding their own reasons to go to school can considerably help students go through their day in the classroom and improve their motivation to learn. A couple of students used Sign Language in a way that was meaningful for them. Some students looked at the interpreter specifically when a word that was interesting for them was pronounced by somebody. The following journal entry gives evidence of such event:

“Science: Helena watched the interpreter right after Adrian said Electron. Adrian was answering a question and only pronounced an isolated word. Helena had time to turn her head towards the interpreter and see the sign for electrons.” (field journal)

A statement from Sam also describes how he finds his own way to take advantage of the Sign Language interpreter according to his interest:

“maybe sometimes if like our teacher said like a really neat word I look at her (the interpreter).” (Sam, interview)

Another way for the hearing students to use Sign Language for their own enjoyment was to use it as a “secret language” between hearing peers. Kelly says:

“I usually sign with my friend Tina (hearing). We both are learning Sign Language and I learn at home too.” (Kelly, interview)

In my observation journal I describe a discussion in Sign Language between Kelly and Tina during a math lesson:

“Math: The teacher is explaining the lesson. Tina is sitting on the floor near the round table and chatting with Kelly who is sitting on the armchair a few meters away. They are using Sign Language.” (field journal)

These two hearing students found in Sign Language a new way to communicate that allow them to talk in a non disruptive way during the class. They also seemed to enjoy the fact that not everybody would understand what they were saying to each other.
Skills for their future

Pupils were able to see how being exposed to Sign Language would help them in the long term. They linked the skills that they were currently learning at school with their future life. When asked about how being in this school would affect their life later on, five students mentioned that they would have an advantage in High school, at University, in the adult society or in the working place.

“Maybe like when we will be in high school or Junior high. There might be some interpreters there. It's kindda like you get used to it.” (Ryan, interview)

“So that I am used to that because it's not just in school when I get older there's gonna be people like in public that are deaf or hard of hearing.” (Ilona, interview)

“When I go to University or I get a job there may be someone who I work with who is deaf and you might like by watching them you can kindda understand some of the signs.” (Clara, interview)

All five were able to concretely connect what they were learning at school with the outside world. Those students are more likely to understand the point of going to school and how what they learn can be useful for their future, which help them keep a positive attitude in class.

Sense of joy

Additionally Sign Language contributed to a sense of joy in the classroom. A couple of students revealed watching the interpreter signing to cope with the occasional boredom of the instruction. John and Adrian declare:

“If like the teacher gets boring I'm like... okay (turning slightly his eyes to the side like if he was watching the interpreter)” (John, interview)

“If I kind of get kind of bored I look at the interpreter and see what they do with their hands.” (Adrian, interview)

Adrian also told me that he finds Sign Language “funny” (Adrian, interview). The enjoyment coming from watching Sign Language seemed to be shared by other students as I found several time the
word “smile” in my field journal when referring to a student watching the interpreter.

“I saw he (Leo) was really paying attention because he had big eyes in direction of the interpreter and a smile on his face, he seemed enjoying a lot watching Sign Language.” (field journal)

“John also looked at the interpreter during the story telling, he had a smile on his face every time the interpreter made some funny facial expression while signing.” (field journal)

To sum up having Sign Language in the classroom generally brings good feelings to students. They find joy and meaning in watching the interpreter signing which clearly improves the school atmosphere.
5.3. Supporting Learning

Table 5: supporting learning category

<table>
<thead>
<tr>
<th>Original expressions (examples)</th>
<th>Codes (examples)</th>
<th>Subcategories</th>
<th>Main category</th>
</tr>
</thead>
</table>
| “because sometimes it's really loud and if I know the signs that they are doing I can think of it and know what the teacher is saying” | - Cope with personal issue  
- Cope with loudness of the classroom  
- Cope with quiet student’s voice  
- Visual support for classroom management | Coping with challenges of classroom | | |
| “they can speak in a different way” | - Different mean of communication  
- Visual support for learning concepts  
- Visually support learning  
- Different way of thinking  
- Support different learning styles  
- Story reading case | multimodal communication | Supporting learning | |
| “Sometimes you understand it more in a way just like watching their signing” | | | |
| “if I listen carefully I know what some of them mean” | - Increased level of attention  
- Slowness and clarity of instruction  
- Listening comprehension  
- Focused attention and body stillness | Support focusing skills of students | | |
| “It's like having two teachers” | - Extra adult support  
- Extra adult presence | Extra Caring adult | | |

**Extra caring adult**

Students’ learning is positively affected by the daily exposure to Sign Language and the presence of the interpreter. In the setting I observed Sign Language was available for the hearing pupils via an interpreter. Therefore more than half of the students reported that compare to a traditional classroom they felt like having two teachers. Having an extra caring adult in the classroom besides the teacher made the pupil feel like they could get help more easily and quicker if they needed it. Clara says for example:
“I find it better almost because they can also help you with your learning like if you have a small question. It's like having a second teacher almost” (Clara, interview)

Clara mentions that she feels like she can ask the interpreter for a SMALL question. This is because the role of the interpreter is not supposed to be the one of a teacher. Both the interpreter and the students of the class were aware of that. Nevertheless Beanie who was the main interpreter for this class seemed to enjoy helping the students and taking a role of assistant time to time when her interpreting skills were not needed. This did not seem to bother the classroom teacher and students seemed to find it convenient as they didn’t need to wait always for the teacher to get help. Leo tells me:

“The interpreter do help if like our teacher is not talking” (Leo, interview)

Coping with daily classroom challenges

Students also took advantage of Sign Language exposure to cope with different little challenges of everyday classroom life. When the students had difficulties to hear in the classroom, they mentioned how they could use Sign Language. Leo who often sat in the round back table mentions that he doesn’t always hear what the teacher is saying because the environment is too loud. Thanks to Sign Language he was able to cope with an issue that can be quite recurrent in the classroom.

“Because sometimes it's really loud and if I know the signs that they are doing I can think of it and know. [...] But some/when I'm not talking I usually can't hear the teacher so I look at the interpreter.” (Leo, interview)

Similarly Kelly chooses to rely on Sign Language when one of her classmate speaks too quietly for her to hear what she says.

“I like watching the interpreter when Oona is speaking because she talks really soft and I can't hear her at all so whenever Oona is speaking I think it's nice.”(Kelly, interview)

By having the possibility to watch the interpreter signing, both of these students gain access to the information when if they would be in a traditional classroom they would be missing part of the classroom interactions. Sign Language allows them to fully participate
in the classroom even when the environmental conditions tend to hinder their access to learning.

The presence of the Sign Language interpreter also reinforced the teacher’s classroom management. In my observation journal, I recorded two times when the interpreter translated in Sign Language the request of silence of the teacher. Therefore the children heard and saw what was expected from them:

“When the teacher was saying “shhhhh” to request the silence, the interpreter was signing it by putting her index finger in front of her lips.” (observation journal)

Another example happened in music class when the teacher asked the children to stop playing the instruments:

“The teacher asked the students to stop playing the chimes from the back of the room. The interpreter signed by shaking her hands like to say “wait” and then “stop “or “don’t”.” (observation journal)

The teacher could also use Sign Language to make learning more interactive. In math the teacher asked the students to use the letters A B C or D in American Sign Language alphabet to answer a question. In this way all the students had the opportunity to answer at the same time, and the teacher could in one glance see all the students’ answers.

“T. suggested to use a, b, c or d in ASL since the answer on the board were presented with letters. Most of the used the letter signs to answer. Most of them seem to be familiar with the alphabet in ASL. Some were asking to show letters again because they didn’t remember B” (observation journal)

**Supporting focusing skills**

A major impact of Sign Language on students learning is the way it helps them to focus. I recorded several situations in my field journal where I observed hearing students intensively focusing on the interpreter. Since the interpreter is translating the teacher’s instructions, we can assume that pupils are actively following the teaching while watching the interpreter. Some students confirm this assumption in the interview:

“I can listen to Miss T. talking and watch the interpreter at the same time if I want to” (Clara, interview)
Watching the interpreter encourages them to keep a high level of attention on what is happening in the class. A couple of students refer to moments during the class where they increase their focus due to watching Sign Language:

“You learn a little bit of Sign Language sometimes if you are really paying attention.” (Oona, interview)

“If I listen carefully I know what some of them mean.” (Sam, interview)

During my observations I noticed a correlation between the student watching the Sign Language interpreter and him/her staying still. When students watch the interpreter they are not being distracted by their surroundings or disturbing others around them. They sit quietly and their entire body stays still. Their eyes are focused on the interpreter for an extensive period of time. The following statements from my observation journal describe how three different students showed focusing skills when they were watching the signs and a distracted attitude when they were not watching the signs.

“Adrian did not follow on the book and was really distracted (moving on his chair...etc). I noticed that when he looked at the signs he seemed to be more focused for a minute and stopped moving. Once he looked somewhere else than at the interpreter he started moving again.” (Field journal)

“ When Lily is watching the interpreter, her eyes are not moving, and her whole body is still with her head facing the interpreter for usually around 10 seconds before she gets distracted by something else and turn around to talk or to look to a classmate for example.” (Field journal)

The location of the student in the classroom can also have an effect on the student’s ability to focus depending on the distance between the pupil and the Sign Language interpreter. Leo who usually sat in the back round table far away from the interpreter, he did not really pay attention to the signs and rarely showed interest to what was going on in the class. But one day when he was sitting next to the DHH student, I observed him being captivated by the Sign Language:

“Leo was sitting in the front row, next to Thomas (DHH) so right in front of the interpreter. [...] I observed Leo intensively watching the interpreter when the teacher was reading a story.” (Field journal)
Leo seemed to be affected positively by Sign Language as it was giving him the motivation to stay focused on the instruction.

**Providing multimodal communication**

As established earlier in this thesis, intelligence can be very diverse. Our preferred learning style depends on how much we have developed one or the other of our intelligence. In order to reach a wider scope of students, teachers are expected to use different types of teaching methods and learning tools. With Sign Language in the classroom the communication is multimodal. Children are not only stimulated auditorily but also visually and even kinaesthetically when they produce signs themselves.

In my observation journal, I was able to describe a few situations where Sign Language was visually supporting learning. In a math lesson about angles for example, I realize that Sign Language was visually illustrating the key concepts that the teacher was introducing. In that lesson signs describing the different kinds of angles were iconic; this means that the sign itself visually corresponded with its meaning.

“During instructions of the teacher about the different concepts of angles, I noticed that a lot of the signs were self explanatory. Acute, straight, line, obtuse. Because Sign Language was using the spatial representation of an angle to name it and also finger spelling. The interpreter was creating the angles with her two hands joining her palms together and spreading her fingers more or less far from each other to create a wider or smaller angle”. (Field journal)

Signs also guided the students visually during music lesson. This example from my observation journal shows how some students used the interpreter as a support to help them with rhythm when playing the chimes.

“The main task was to play the chime for 4 beats and then be silent for 4 beats. [...] The teacher had to show the example and lead the instruction turning her back to the class so that her left hand would be on the same side as the kid’s left hand. This means that it was difficult for the kids to see what the teacher was doing with the instrument and when she was starting the movement. The interpreter in the opposite was facing the children because she was signing for Thomas. The signs she used was number signs for the beats (1,2,3,4) and her hand on her chest for the
resting time. It was really interesting to see that while signing she was following the rhythm and very clearly showing when to play and when to stop. I looked carefully at the students and noticed at that at least two of the hearing boys (Leo and Bill) were not looking straight in front of them but were focusing on the interpreter using her gestures to keep the rhythm and know what to do.” (Field journal)

Another example of the way hearing students could use Sign Language to their advantage was in Physical Education lessons. In the beginning of each lesson the teacher would explain the rules of the game they would play during the session. The teacher made extra effort to make the instructions for the game as visual as possible since she was trying to take the DHH student’s need into consideration. I believe that hearing students also benefited from that since it was much easier to understand the rules when the teacher and the interpreter would demonstrate together rather than only by listening to the explanations. I observed this during one of the baseball lesson I taught:

“We played a modified version of baseball. As I was explaining the rules to the running team on the cone line, the interpreter was next to me. She helped showing how kids were supposed to run, release hold, turn around, grab hands and run again. She demonstrated with me because it was the most visual way for the deaf children to understand. The other kids also understood the idea thanks to the demonstration.” (observation journal)

In the events described above it was always up to the hearing children to pick up or not on the visual support from the Interpreter. The teachers and interpreters did not encourage openly hearing students to focus on the signs. Nevertheless I have been told that the deaf teacher had early in the year talked to the hearing students about the way they can take advantage of the interpreter for themselves.

I believe it would be interesting to emphasize the presence of Sign Language in the room for hearing students. Therefore during another of my lesson, I decided to use Sign Language as a support to teach dialogue punctuation rules. We first demonstrated signs with the interpreter for different kinds of punctuation such as quotation marks, period and coma. All the students were then asked to use the signs during the lesson. My assumption was that students would memorize the punctuation rules better if they were able to visually and kinesthetically express them. The teacher seemed to agree with my method and was expecting the same results:
“After the lesson the teacher gave me good feedback and commented that students seemed engaged. She said that she hoped that this time they would remember better because they were doing the signs for it.” (Field journal)

I found out in the interviews that the students themselves were aware of how Sign Language was visually supporting their learning. Two girls mentioned how watching Sign Language helped them to understand:

“Sometimes you understand it more in a way just like watching their signing” (Helena, interview)

“[…] sometimes it does help me understand things a little better if you are listening and you are sometimes watching the interpreter. It kinds of explain things a little bit if you kind of understand it.” (Oona, interview)

Helena even clearly explained how Sign Language in the classroom was supporting different learning styles:

“We've been taught like there is different ways you CAN learn. There is different styles of like/ you write better and you get more from like reading instructions from listening to people or from like drawing or pictures. And this is a really interesting way cause I can do both verbal and I can like watch and draw. If someone draw a picture I can understand it. And it's kind of like if they are drawing a picture almost.” (Helena, interview)

Finally one student explained that she is using the Sign Language interpreter as a visual support when she cannot see the person who is talking. The school staff often made some announcement via the speakers of the classroom and Ilona found it helpful to then follow the signs while listening:

“I watch when there is an announcement and you can't see the person that's talking” (Ilona, interview)

Both, observations and interviews, showed how Sign Language provides an extra communication channel to support students’ learning in the classroom.
As suggested earlier in the theoretical background, Sign Language can be used to visually accompany a story reading event (Poveda et al., 2008). During the research period in the classroom, the teacher regularly read a novel book with the students. Usually the teacher was reading herself out loud. The students had the choice to listen only or to take a copy of the book and follow as the teacher was reading. Most students seem to enjoy watching signing when listening to the story. The following entries in my observation journal show that a fair number of students were engaged in watching the interpreter while listening:

“Story telling: 6 pupils watching at the same time” (Field journal)

“Two girls (Clara and Kelly) did not have the book and were intensively watching the interpreter while the story was being read. Clara seems to be focusing hard on the signs and trying to understand because her eyebrows are frowned.” (Field journal)

In the specific event of story reading, Sign Language seems to be very appreciated and used by the hearing students as a support for listening comprehension. Indeed the interpreter is in a way acting the story out so it is gives an enormous amount of visual clues to the hearing students about the different characters’ personality and the tone of the dialogue. It also helps them picture the spatial environment of the story; for example if something is falling from very high in the story, the interpreter shows with her hands a downwards falling movement.

“[...] Tyler also looked at the interpreter during the story telling, he had a smile on his face every time the interpreter made some funny facial expression. I tried to figure out what was making the boys smile and I realized it is because the interpreter was not only signing the words of the story but also pretending to be the characters who were talking with her facial expression. I realized that having the interpreter signing the story made it almost like theater, it seems like she was acting all the characters too. So we had the words and the tone from the teacher reading and the actions by the interpreter.” (Field journal)
5.4. Develop intercultural Competence

Table 6: Developing Intercultural Competence category

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<thead>
<tr>
<th>Original expressions</th>
<th>Codes</th>
<th>Subcategories</th>
<th>Main Category</th>
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| “It’s a language. It’s just another language in this world really.” | - SL kinesthetic language  
- SL a legitimate language | Legitimacy of Sign Language | Developing Intercultural competence |
| “like how it's not just one type of students” | - Appreciation for diversity  
- Respect for DHH | Support for diversity | |
| “it just seems GOOD that everybody gets to know what they do” | - Fairness of inclusion  
- Equality  
- Appreciation of inclusion | Equality | |
| “He needs signing and I think that's really cool how we get to see signing all the time and stuff.” | - Individuality  
- Intercultural exchange  
- Chance for hearing | Learn from others | |
| “I guess I can kindda relate to them or understand them” | - Feeling of kindness and positive sense of community  
- Empathy/understanding | Compassion | |
| “it's kind of fascinating to watch” | - Interpreter as an expert  
- Admiration  
- Interest in SL logic | Valuing Sign Language | |

As the literature suggested, using Sign Language with hearing children can develop their intercultural competence. (See chapter 3.2.3. Brereton, 2009; Valloton, n.d)

Valuing Sign Language

I mentioned earlier when defining deaf people in chapter 2.1, how important it is to see the deaf community as a cultural group instead of a group of people with a certain disability. To be able to fully consider the deaf culture, one must first see that Sign Language is more than just a way to substitute oral communication. The hearing students in my research were constantly in contact with deaf students and exposed daily to their mode of communication which was American Sign Language. Apart from one student, Sam, who had strong misconception about the Deaf and Hard of Hearing, many students that I interviewed under-
stood the validity of Sign Language and considered it as a real language. When asked to define Sign Language the hearing students acknowledged its legitimacy:

“To me it (Sign Language) is just a different language. It's another language. That's all. It's like English.” (Kelly, interview)

“It (Sign Language) is another language just with hand motions” (Ilona, interview)

“ It (Sign Language) is a language. It's just another language in this world really. That you use your hands because it helps other people to learn better.” (Oona, interview)

Even more than just acknowledging Sign Language, many of the hearing students admire it. Seven out of the twelve students interviewed described Sign Language as being “cool”, “neat”, “fascinating” or “interesting”. Hearing students showed interest and curiosity towards Sign Language. Ella for example wondered if each country had a different Sign Language and seemed very impressed when I confirmed to her that it was the case. Helena found it interesting that the signs are not always what we would expect them to be:

“I think it's different how they interpreter the signs in a way that I wouldn't exactly interpreter them. I think of like a different sign for like addition I put like this, cause that looks like the addition sign but they have a different sign for that and it's just interesting.” (Clara, interview)

**Learning to be compassionate**

In addition to valuing Sign Language, the hearing students of this school learned to be compassionate towards their deaf peers. Adrian felt like having an inclusive school in the neighborhood influenced the community in a positive way:

“It's cool to have like working with DHH students and I think the community here is very nice. It's really kind and helping.” (Clara, interview)

Kindness and mutual help seemed to be values that the kids develop thanks to the presence of DHH students. Clara and Adrian felt that Sign Language was a way to help people.

“It's a language to help other people learn I guess. To learn in a different way.” (Clara, interview)
“It seems helpful if everybody can hear what you are saying” (Adrian, interview)

Ella showed skills of empathy towards DHH students. She describes her feelings well when she reflects on her experience of studying with Sign Language speakers:

“I guess I can kindda relate to them or understand them.” (Ella, interview)

Support equality

Hearing students also cared about equality of the access to education. It is possible to interpret from many pupils’ saying that the use of Sign Language at school is a basic need for equality.

They appreciate inclusion and understand that it is essential in order to provide DHH students the same chances as other students.

“it's really cool to be kind of mixing with them now like when we have gym together and how we have one in our class as well”. (Ella, interview)

“If someone is deaf and hard of hearing or deaf then they can have an interpreter in there instead of just the teacher and then the DHH have to go to a specific classroom with different teachers [...]. It's a good way of doing it in one classroom so that it's a good experience for the deaf and hard of hearing students” (Ilona, interview)

“I think it's really cool because the kids who can't always hear or have some kind of learning disabilities, it gives them a chance to be mixed with the other kids” (Ella, interview)

For Adrian, Sign Language participated to the sense of equality between hearing and deaf people. Adrian also feels that is fair to have Sign Language in the classroom. He says:

“Sign Language is something that makes so everybody can hear. For the people who can't hear so they can hear what the teacher is saying or what we're doing or what's happening It just seems good that everybody gets to know what they do. [...] I think it is fine if everybody hears.” (Adrian, interview)
It is interesting to note that in these quotes, Adrian doesn’t refer specifically to deaf students. Instead he uses the term “everybody” like if he did not want to make a difference between hearing and deaf students.

Appreciate diversity

During the interviews, I was very impressed to see how deeply students were able to reflect on their learning environment. One of the most striking consequence of being exposed to Sign Language is the way students were able to appreciate diversity. Their comments show how much they embrace differences. They know that people are all unique and should be respected for who they are

“I like how it's not just one type of students” (Ilona, interview)

“It feels great to have the diversity [...] it feels better cause there is a more diverse community than just the schools without Sign Language.” (Adrian, interview)

Ella and Oona show appreciation for differences:

“It's just kind of cool and fascinating how some people communicate with their hand symbols which is different than all the rest of us which is cool and unique” (Ella, interview)

“I think it's really cool that people are speaking in another language based on like almost I don't call it a disability but something different. I think that's really neat.” (Oona, interview)

Even though Helena categorizes deaf and hearing people by saying “us” and “them”, she shows interest towards deaf people’s way of being. She noticed that Sign Language users might behave and think differently:

“It's also interesting just working with the deaf students. He can hear us so you can talk to him normally but it's just interesting how he reacts to everything and stuff.” (Helena, interview)

“ [...] like they have different way of thinking than us. [...] they sign it and then just show the different way of their learning” (Helena, interview)
Hearing students interviewed also understand that we can learn from each other. Kelly considers herself lucky to be in a class with Sign Language:

“Because there is another person that needs something else. He needs signing and I think that's really cool how we get to see signing all the time and stuff.” (Kelly, interview)

Students of the school also had the opportunity to go to an American Sign Language club at lunch time once a week. I went to observe one of their meetings. In my observation journal I describe how the Deaf teacher also includes some essential notions about deaf culture in the lesson. The students were for example asked to practice a small dialogue with signs where they would go to a deaf person, say “hello” and ask “how are you”. The teacher showed that before to speak in Sign Language you need to get the attention of the person by tapping on their shoulder. Learning this simple rule raises the awareness of the kids towards the Deaf world.

5.5. Strengthening Personal Development

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| “He was doing some strange sounds on the couch and it was irritating the interpreter because she couldn’t hear properly what the teacher was saying. Adrian stopped.” | - Peer behavior management  
- Reinforce praise  
- Self regulation | Take responsibility | Strengthening Personal Development |
| “when the deaf kids hold the door for me I'll say thank your or they are asking me a question and I'll say yes or no” “it can help me with Sign Language, I could learn some” | - understand and communicate with deaf people  
- Friendship with deaf peers  
- Explaining DHH  
- Interaction with DHH  
- Learning SL  
- Non verbal communication | Social/ Communication skills |
The hearing students of the classroom were encouraged to work on their personal development because of the presence of Sign Language in the classroom. By having Sign Language as part of their learning environment, they develop their socio communication skills as well as their sense of responsibility.

**Communication skills**

When I asked the hearing students if they were watching interpreter, ten of the students answered that they watched sometimes. Adrian said he was watching the signs every time he was looking at the board and Kelly answered that she was watching all the time. I then asked them why they were usually watching the signs and nine students out of twelve said that they were watching the interpreter to learn some signs. In addition to the nine students, John also mentioned that it could help him learn Sign Language but he explained that his memory is too bad to remember them.

“I just like to learn a bit of Sign Language like a bit at a time” (Sam, interview)

“It’s just cool seeing what the/ I listen to Miss T. and then I hear what/ and then I see what the interpreter says FOR that word” (Adrian, interview)

By being exposed to Sign Language every day, hearing pupils learn a foreign language. Learning a foreign language helps developing one’s communication skills because the brain learns that there is a different way to say the same thing (Siegal et.al, 2010).

The hearing students showed also great abilities to communicate with body language. When I asked in the interview whether they knew any Sign Language, many declared knowing only a few signs such as alphabet, colors, Yes, No…etc.

Despite the fact that most of the children were not able to express themselves in Sign Language because of their limited vocabulary, they had developed very good non verbal communication skills. I observed them several times communicating successfully with DHH students using body language sometimes along real signs. Non verbal communication skills require observing facial and body expressions and being able to interpret them (Deepika, 2015). Hearing students also emphasized their own non verbal cues when communicating with a deaf peer.
“During the PE lesson, one deaf girl briefly signed to a hearing peer. The hearing peer seemed to respond positively with some sort of signs and facial expression (laugh/smile).” (Field journal)

“The team of Benett and Parker had decided to make an alliance with the team next to them. Parker did not hear that of course. He went to steal in their team. So Benett stopped Parker and tried to explain him with gestures that they had made an alliance and that he shouldn’t take balls from there.” (Field journal)

In one PE lesson, half of the children went through an obstacle course while the other half were judges assigned to a station with the task of catching people who failed the obstacle.

“The judges had to make sure that each student went through the obstacle appropriately. If they made a mistake, the judges had to let them know and send them back to the starting line. When it was the turn of a deaf student to go through the obstacle and failed, the hearing judges usually walked up to him/her, touched him/her and showed him/her with a pointing finger that they had to go back to the queue with a strict facial expression.” (Field journal)

When using Sign Language, the signs are often accompanied with facial expressions to emphasize meaning and give the tone. In the previous example, the hearing students used a strict facial expression to emphasize the order to go back to the queue. They seemed aware that body cues are important to be understood by deaf people.

**Taking responsibility**

Sometimes Sign Language also helped the hearing students to be more responsible. The students of the class showed great signs of maturity in some cases. During a PE lesson I have for example observed a hearing student regulating the behavior of a deaf student. I believe the hearing student was motivated to tell the deaf child what was expected to do only to get the chance to use Sign Language.

“[...] one of the deaf child was fooling around and running instead of queuing, she interrupted him and made the sign of “stop” to tell him to stop to be disruptive.” (Oona, interview)
The interpreter needed a relatively calm and quiet environment in order to be able to hear what the teacher was saying and translate it. The hearing pupils were encouraged to take responsibility for their actions. They understood the importance of low noise level and learned to self regulate their own behavior accordingly. I observed a few situations when the students were reminded to be quiet to respect the interpreter and the deaf student. In every case students who had a disruptive behavior modified their attitude to let the interpreter do her job. In the following statement from my observation journal we can see that the hearing student understood the reason why he was asked to be quiet and respected it.

“In the beginning of the lesson the students were really chatty and not taking turn to talk neither raising their hands despite the teacher reminding them several times to do so.[...] The interpreter got really annoyed because she couldn’t focus on the speaker so she interrupted her signing, turned her body to a chatty boy, said: “STOP” with a loud and firm voice while signing it. The boy felt guilty and stopped immediately talking. He did not interrupt again during the lesson and raised his hand to answer.” (Field journal)

Later on during the same lesson, the teacher used the same argument to motivate the children to regulate themselves.

“Teacher said: “I’m sure it is very hard for our friend Thomas and our interpreter here if everybody is shouting at the same time very quickly”. [...] The kids were much more willing to wait for their turn and raised their hands if they had something to say.” (Field journal)

During the English lessons, students were writing stories. Ella liked to read her stories out loud but she seemed a little bit stressed to share her story so she usually read really fast. Despite the fact that the teacher regularly told her to slow down she usually kept the same pace. Once the teacher explained that the interpreter would not be able to follow if she was reading so fast and Emma finally followed the teacher’s instruction.

“After the teacher explained her why she had to speak slowly, Ella paused in between paragraphs and lifted her head checking that the interpreter was following.” (Field journal)
As demonstrated in this chapter, students enjoyed regulating their deaf peer’s behavior using Sign Language and learned to self regulate their behavior to respect the DHH students’ needs. Sign Language was not only useful to correct disrupting behavior, it also encouraged good behavior. The following journal entry shows how Sawyer got the confirmation that he had done what was expected when he watched the interpreter. He could then feel proud of himself for following the instructions.

“The teacher asked the students to circle up. The interpreter also signed by having her two hands doing a circular motion. Sawyer who was sitting next to Thomas was watching the interpreter. He was already sitting in the circle so he did not move.” (observation journal)

In the same way Adrian once got double praise for completing the task successfully in music. He first heard the praise from the teacher and then saw it from the interpreter. Seeing the applause signs helped him take full credits for his good behavior.

“At the end of the song, the teacher congratulated them [...]. The interpreter made the sign “applause” (hands shaking up above the head). I noticed Andy looking at the interpreter and showing great satisfaction for having completed the task. He had a large smile on his face and looked proud of himself” (Field journal)

All in all students became more responsible about their role in their learning. They gained self regulation skills to become responsible citizens.
6. DISCUSSION

6.1. Summary of main results

Using Sign Language with hearing children has shown a number of benefits in existing studies cognitively and non-cognitively. In this research I wondered if similar aspects show up in the context of an inclusive classroom where hearing students are exposed daily to Sign Language. The findings suggest that many of the hearing students have developed a certain level of interest towards Sign Language and are positively affected by their exposition to Sign Language.

Distraction and misconceptions

After observations of the 27 students of the class and interviews of 12 of them, very few disadvantages raised from the context of an inclusive classroom featuring Sign Language. The use of Sign Language in the hearing classroom has some downsides. Indeed a few students found Sign Language disturbing and a small number of them had developed misconceptions towards the deaf world. As educators it is important to consider those challenges seriously. The distraction that the Sign Language interpreter creates in the classroom needs to be acknowledged. Certain students’ learning could be hindered by the presence of Sign Language.

Another possible downside related to the use of Sign Language in the hearing classroom is the development of misconception about the deaf world. Indeed some students presented a limited and sometimes incorrect understanding of Sign Language and deaf people. Similarly, existing studies had already warned readers about the possibility that parents using baby signs would also have misconception about Sign Language because they could underestimate the complexity of Sign Language (Pizer et al., 2007).

Becoming a culturally sensitive student

One of the main findings of my research is that hearing children exposed to Sign Language show a great deal of intercultural sensitivity. Research says that intercultural competence grows through positive personal interactions with people from diverse cultures. This early contact can encourage young school age people to show more positive intercultural atti-
tudes (Walton, 2013; Fantini, 2000). In an inclusive classroom for deaf and hearing students, children positively interact with each other, learn to get to know each other’s culture and therefore develop appreciation for diversity. The data shows that hearing students who have been exposed to Sign Language regularly feel respect and admiration for Sign Language and its users. Perry (2011) states that intercultural competence requires positive attitudes such as respect, curiosity and empathy. Students showed respect towards deaf people’s need, curiosity about their language and empathy towards their deaf peers.

They also understand the need for inclusion and support equality in the school and in the society. Seeing everyday children who use a different language than them has raised the hearing students’ cultural awareness. Perry (2011) claims that “Interaction between learners and native speakers of a language or ‘tandem learning’ is often used to enhance both language learning and cultural understanding“.

These findings complete the existing literature (Valloton, ; Bereton, 2009) which suggested that children who had been taught Sign Language felt more compassionate than others and understood that communication can be something else than their own mother tongue.

**Finding a reason to go to school:**

The next aspect of Sign Language exposure was rather unexpected. Hearing students almost all felt that being in contact with Sign Language now would benefit them in their future life as adults. The maturity expressed by the hearing students is surprising considering that they are only 11 years old. They mostly referred to their future working place where they might have to cooperate with deaf people and therefore need Sign Language. It seems that exposing hearing students to Sign Language gives a greater meaning of school. They see concretely how going to school is going to help them in the future. Some of the students also showed intrinsic motivation to learn Sign Language either to learn a word of their own interest or to use Sign Language as a secret language.

Being exposed to Sign Language daily during the lessons also brings a feeling of joy to the students. Hearing students described Sign Language as fun. This observation coincides with the results of Mottley’s study (2012) where school age children recently introduced to signs by their teacher declare school being more fun.
**Getting support for learning:**

Hearing students benefited cognitively from the use of Sign Language in their classroom. Indeed as the studies of the theoretical background suggested (Daniels, 2001; Daniels, 2010), Sign Language helped the students to learn and to memorize. One of the main cognitive effects of Sign Language coming up in the results is the way literacy skills of the children in such inclusive classroom are highly stimulated by Sign Language during story reading events. It confirms the studies from Poveda et.al (2008) which presented hearing children using the signs of an interpreter to support their story listening comprehension. Using Sign Language also helped hearing students to focus. The use of visual stimulation seems to increase children’s attention span.

Previous studies suggested that Sign Language can be support learning of students with special needs like ADHD or Autistic kids. One of the ADHD child confirmed that he enjoyed watching and learning Sign Language, the other ADHD child confessed that it was distracting him. The autistic child of that classroom did not seem to be paying attention to the Sign Language interpreter. I believe we cannot do generalization about special need children and Sign Language. Each child is unique and might react differently to the exposure of Sign Language.

Similarly to the existing literature (Cook, 2008; Prevatte, 2007), this study shows how Sign Language helps supporting various learners and more precisely visual and kinesthetic learners. In accordance with Howard Gardner’s multiple intelligence theory, the presence of Sign Language in the classroom seems to provide multimodal communication.

**Growing into a responsible and skilled communicator:**

As the literature suggested (Cattani et. al, 2014; Vercelotti, 2007), using Sign Language helps the development of Visual and spatial skills. The results show that hearing students seemed skilled and comfortable using their body language. According to Pavord (2015) “55 per cent of what is communicated is said to be communicated via body language, 38 per cent is communicated via voice tonality (sometimes referred to as paralanguage) and only 7 per cent of the communication relies on the actual words spoken (see Figure 3.1)”. Since more than half of the communication goes through body language, the hearing stu-
dents who have been exposed to Sign Language have developed essential skills to become good communicator.

Furthermore the presence of Sign Language in the hearing classroom gives a chance for some students to become more responsible of their learning. The data shows that students can learn to regulate their own behavior to maintain a quiet environment suitable for the deaf student’s needs. Watching the interpreter also allows students to take responsibility for good behavior when they get praised by the teacher. Indeed praise too is reinforced visually by the interpreter. Ryan & Deci (2000) states that “self-regulated learners actively avoid behaviors and cognitions detrimental to academic success”. Therefore we can conclude that exposing hearing students to Sign Language helps them to become self regulated learners.

6.2. Quality and reliability of the research

Credibility

Credibility of this research is ensured by the prolonged engagement and persistent observations during the data collection process. The trust of the participants was gained by being present and active in the field for 5 weeks before interviewing the participants. Nevertheless taking the position of a teacher for few lesson might created a relationship of power between me and the children. It is possible that some children did not dare to answer honestly especially to the question “In which situation do you think it is disturbing or annoying to have Sign Language in your class?” (see appendix 3).

The timing of the interview might also have influenced the quality of the answers. In order to be as less disruptive as possible for the students’ schedule, I was asked to do my interviews during lunch time. Children had half hour break to eat followed by half hour recess time to play outside. It is possible that pupils were in a hurry to answer all the questions of my interviews in order to have time to eat and not miss any recess time. To limit this phenomenon I allowed the children to take their lunchbox with them during the interview.

Parents got information about the research topic in the consent form therefore it would be interesting to know if the students discussed the topic of the interview beforehand with their parents and whether it might have influenced the children’s answer.
There are a few limitations in this study which can have influenced the results. I strived to make my presence in the classroom as natural as possible and to make sure that my position of researcher was as discrete as possible. Nevertheless one statement in my observation journal shows how observing the children in the classroom might have affected the way they behaved:

“Note for myself: Sometimes I try to keep eyes on a specific child to see if they look at the interpreter but they often feel my gaze and start looking at me” (observation journal).

Since the students sometimes felt that I was observing them, they stopped their current action whether it was drawing, talking to a friend or looking at the interpreter. If the students would have been video recorded they might have been less influenced by my presence but according to the school principal consent for video recording would have been hard to get from the parents.

The focus of the study was to discover the effects of Sign Language on hearing students who share their learning environment with deaf students and Sign Language interpreter. The findings of this thesis present benefits and challenges due to the presence of Sign Language in the classroom. Nevertheless some of the characteristics observed could also be explained by the presence of Deaf children in the school and by the school culture in general

Transferability,

The interpretation of the results is closely linked to my own view and interpretations of the “reality”. In the case of this research, there is probably one different truth for every different classroom, so an infinite number of truth. The findings of this research are not meant to be generalized. They are strongly related to the external environment of the classroom where the data were collected. Every cases of inclusive classroom will be different, so it is not possible to ensure the same results in a different country, with different pupils, different teachers, different working methods and different society. However the context and the process of data collection is thoroughly described. This transparency may allow the reader to evaluate how transferability of the results is possible depending on the similarities of the setting.
Dependability

The approval given by the Board of Education Ethics Committee ensures the quality of this research in terms of planning, methods and ethics. The research methods and the analysis process are presented in details in order to give all the necessary elements for the reader to judge on the validity of the results.

Confirmability

Objectivity was a constant worry during the data collection process, therefore I reflected on my position as a researcher before, during and after the data collection and the analysis. Nevertheless it might be that the tone of interview questions led more to one answer than to another. This was more obvious with the first interviewees than with the last ones as my technique improved with practice and I made more effort on staying neutral.

6.3. Ethics

Ethics comity approval and anonymity:

In order to proceed with the collection of data, in the school, I was asked to apply for research approval to the Ethics Committee of the province’s Board of Education. I have provided a detailed research plan and explanations in depths of the process of data collection and analysis. Interview questions and consent forms were reviewed by the committee which granted me research approval in January 2015 (see appendix 2).

Anonymity of the school and of the participants was promised in the research plan, in the consent form for parents as well as to the children before starting the interview. Anonymity of the school was assured by keeping its name and location unknown. Participants were kept anonymous by making sure that their name would not be cited anywhere. During the data collection phase, each student was attributed a number and I used only the numbers when writing my notes in the observation journal. The name list with numbers was kept in a secured and different location than my observation journal. In the thesis names have been replaced by pseudonyms.
**Ethical consideration around the deaf culture and inclusion:**

While participating to the school culture, I discussed with the staff about ethical challenges regarding the inclusion of deaf students and the deaf culture. This research presents inclusion from a hearing perspective and focuses on the benefits for hearing students. Inclusion is nowadays often seen as the right thing to do when developing education but the Deaf community as another point of view.

Sparrow (2005) defends deaf people by reflecting on the way the hearing community sees deaf people. According to him human beings have always seen differences as human deviation from an imagined perfection. He claims that deaf people have other abilities that hearing people lack. The researcher even goes further by telling that inappropriate judgment as already been made in the past by the majority population and that we might just be repeating the same mistake by thinking that a normal human being needs to possess 5 senses. In the history we have defined a normal human being by being a white man with properties. Today we realize that this definition was incorrect.

Studies (Most, 2007; Wauters & Knoors, 2008) found out that deaf children who are included in hearing school suffer from a sense of loneliness as they do not have full access to communication with their peers. Sometimes relationships between hearing and deaf students result in an unmutual friendship where the deaf child is the only one considering that they are friend. These consequences depends a lot on the case and mostly on the speech intelligibility of the deaf child. According to research only deaf students who are able to produce speech are able to benefit from inclusion (Most, 2007). The most worrying factor of inclusion for deaf people is the loss of deaf culture exposure. Since most deaf children are born in hearing families, it has been so far at school that they could get to know the deaf culture. The deaf culture is different from other culture, instead of being transmitted from one generation to the next, it is mostly transmitted within the deaf community. (Most, 2007)

**Using Sign Language in hearing environment**

Sign Language might become more and more present in the hearing classrooms, either due to the inclusion of deaf and hard of hearing students or due to the raising interest of teach-
ers towards Sign Language as a mean of communication. In both cases teachers and educators need to carefully consider the ethical issues that arise when incorporating Sign Language into their classroom.

*If deaf and hard of hearing students are among the students and that the teacher cooperates with an interpreter, both the teacher and the interpreter need to discuss their role and their perspective on the deaf culture. The role of the interpreter is to convey the spirit and the communication of the classroom to the deaf or hard of hearing child. Professionals say that the interpreter should not be a teacher assistant or a tutor (Pepnet, 2015). This is to ensure that the entire interpreter's energy is focused on providing the best access to communication to the DHH child. Hearing researcher*

The literature (Meurant et al, 2013; Harris et al, 2009; Singleton et al, 2014) warms researcher about doing research on Sign Language and its community and being as being a member of the hearing community. I am myself hearing and I am not part of the Sign Language community therefore. Even though deaf people is not the center focus of my research, I find important to state clearly that I do not mean any harm to the deaf community. If my findings can be interpreted as supportive for inclusion of deaf children, I want to remind the reader that one needs to consider the bigger picture and keep in mind the DHH students' interest.
7. CONCLUSION

My research shows how great learning can become when we include everyone in the same environment. Thanks to the inclusion of deaf students in the traditional classroom, hearing students get a different environment to learn. They get more stimulation, become more open minded and enjoy learning. Hearing students are mostly positively affected by the exposure to Sign Language. This thesis reveals that students’ cognitive skills, students’ personal development and the classroom atmosphere are all enhanced when Sign Language is part of the daily routine. In the context of the study, students were exposed to Sign Language by default due to the presence of a DHH student. Nothing was done to purposely encourage the students to use Sign Language at their advantage; it is easy to imagine that the benefits would be increasing if Sign Language was directly targeted at the hearing students.

In order to enlarge the implications of this work, further research in traditional classroom for hearing students should be pursued. It would be interesting to study the consequences that Sign Language can have when used exclusively with hearing students without the presence of DHH students.

Even more than supporting inclusion, I hope these findings can also inspire teachers who work with hearing students in traditional classrooms. Teachers who are interested in developing their teaching methods can find in my research scientific foundations to justify the use of Sign Language with their pupils and motivation to try something new.
REFERENCES

- *Journal of deaf studies and deaf education* - Oxford University Press.

- SAGE Publications Ltd. - *Participant observation and fieldnotes. handbook of ethnography. SAGE publications ltd*


De Gruyter, M. (2008). In Gert Rickheit H. S. (Ed.), *Handbook of communication competence*


Kamala, R. (2014). Multisensory approach to reading skills of dyslexic students. *Journal of Humanities and Social Science, 19*(5)


Marian, V., & Shook, A. (2012). The cognitive benefits of being bilingual. *Cerebrum, 13*


Merriam, S. (1998). *Qualitative research and case study applications in education: Revised and expanded from case study research in education*


Mottley, A. (2012). The use of signing with hearing children as a mean to communicate and manage behaviour: A study into the perspective of children in year 2 classroom. *Journal of Trainee Teacher Education Research, 3*


Niparko, J. (Ed.). (2000). *Cochlear implant: Principles & practices* (Lippincott Williams & Wilkins ed.). PA, USA:


Paling, J. (2007). Critical review: Does baby sign language has a positive affect on the language development of typically hearing children of hearing parents?


pepnet. (2015). *Sign language interpreters: In the classroom*


UNESCO. (2013). EFA global monitoring report: Children need to be taught in a language they understand. France: UNESCO.


Webster, J., & Watson, R. (2002). Analyzing the past to prepare for the future: Writing a literature review. MIS Quarterly, 26(2)

Williams, C. (2007). Research methods carrie williams, (E-mail: Carrie_Williams@nnsa.doe.gov), grand canyon university. Journal of Business & Economic Research, 5(3)


APPENDIX 1: Parents Informed Consent Form

Title of the Research Project:
Exposure to Sign Language in Inclusive Classroom
And
Influence on Hearing Children

Purpose and Use of the Research:

My research will focus on inclusive classrooms welcoming at least one deaf or hard of hearing child, who is supported by a Sign Language Interpreter in order to be able to follow the mainstream education. The main goal is to observe hearing pupils' attitude towards Sign Language. I will observe the interaction and the communication between hearing students and the Interpreter, the teacher and the deaf child in the classroom. The study aims to establish how the use of Sign Language as a medium of instruction can benefit hearing children.

The classroom of your child has been selected to be observed for this research as it is an inclusive classroom. Your child is a possible participant as he/she is a hearing pupil exposed to Sign Language in a regular basis due to the presence of a hard of hearing child in his/her class.

This research will be part of my Master’s Thesis in the faculty of Education of the University of Oulu in Finland and the results of my findings will only be published as a Master Thesis at the University of Oulu in Finland.

What will I be asked to do?

I will observe all children participant of the classroom in the normal and usual progress of their school time. After few weeks of observation I will select 5 to 10 children of the class according to their learning style and ask them to answer orally to some questions.

Similar questions such as the followings will be asked to your child if he/she is selected for the interview:
– Do you like Sign Language? Why?
– Do you know a sign? Can you show me one? Why did you choose this one?
– Do you look at the Sign Language Interpreter in the class?

Interviews will be audio taped.

Is my participation voluntary?

Participation of your child is fully voluntary. Interviews will be made only with children whose parents have given their consent. You and your child have the entire freedom to withdraw from this research at any point without penalty. Before the interview every child will be explained the purpose of the discussion and will be asked if they wish to continue or not the discussion. In case of withdrawal from you or your child, the data collected until then will be erased and will not be used for the research.
**What type of personal information will be collected?**

No personal identifying information will be collected in this study, and all participants shall remain anonymous.

For confidentiality concerns please view dedicated part below.

**Are there any potential risks or discomforts as a result of participating in this study?**

The only discomfort that your child might experiment by the study could be a small pressure due to the fact that I will be interviewing them. Nevertheless the interview will look more like a casual discussion. Since I am spending 5 weeks in the classroom of your child, he/she should already know me well at the time of the interview and feel comfortable talking to me.

Time of the interview will take around 10 minutes per participant and will be organized in cooperation with the class teacher at the least disruptive time for the pupils and class' schedule. You child will miss none or very minimum amount of instructional time.

**How do I benefit from this study?**

Your child will not directly benefit from the study. However education professionals are in constant need of research about methods used in classroom and their effect on pupils. Inclusion being a very recent educational policy in many countries of the world, the results of my research will be essential for any teacher, headmaster and educational staff who need to adapt their teaching in order to fulfill the needs of every individual in the class.

**What happens to the information I provide?**

No names of participants or school will be mentioned in the research. Anonymity and confidentiality is ensured during the research and during its publication.

Interviews will be transcribed and analyzed by myself. No one except the researcher and her supervisor will be allowed to hear any of the answers to the interview tape. The anonymous data will be stored for three years in an external hard drive only accessible by the researcher and her supervisor, at which time, it will be permanently erased. This hard drive will be encrypted and password-protected.

The only publication of the research will be at the University of Oulu as a Master Thesis. You have full rights to review the recordings on request.
WRITTEN CONSENT FORM:

Your signature on this form indicates that you understand to your satisfaction the information provided to you about your participation in this research project.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

I allow my child to participate as a research subject and to be audio taped if he/she gets interviewed by the researcher.

Circle your answer: YES NO

I would like to meet with you to discuss the research or have more information
(I will be available on both Wednesday 4th and Friday 6th between 8:30am and 4:30pm)

Circle your answer: YES NO

Wed 4.5 at ……o’clock

Fri 6.5 at …….o’clock

- Participant’s Name: __________________________
- Name of the parent/guardian: __________________________

Signature of parent/guardian __________________________ Date_________________

The researcher will fill up this section and return a copy of the signed consent form to you

- Researcher’s Name: __________________________

Researcher’s Signature: __________________________ Date: _______________

Contact Information:
If you have any questions or concerns about this research and/or your participation, please contact

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APPENDIX 2: Ethics Approval Letter

December 1, 2015

Mariette Monney
Jalkhaukante 3C20
90250 OULU
Finland

Dear Ms Monney,

I am pleased to confirm that the Calgary Board of Education has granted permission for you to conduct the study Sign Language Exposure in Inclusive Classrooms.

The granting of this approval indicates that as a school jurisdiction we have no ethical concerns with your study. The final decision to participate rests with the school administration, teachers, students and parents involved. This letter does not obligate participation by anyone associated with the Calgary Board of Education.

Please present this letter to Calgary Board of Education personnel when requesting access to teachers and students. This approval does not include access to student, staff or school records.

We wish you success in your study. We would appreciate your sharing your findings and a copy of any material that you subsequently publish.

Yours truly,

Pat Kover
Research and Innovation

tel: 403-817 7514
fax: 403-777 6150

pakhovr@calgary.ab.ca
APPENDIX 3: Interview questions

- *First question to make the kids comfortable talking to me:*
  - Have you always lived here in Calgary?

- So have you always been in a class with a Sign Language Interpreter?

- Have you ever been in a classroom where they have not been a Sign Language interpreter? Are there anything different / what is different in these classes?

- What do you think about being in a class like that? (what do you like/don’t like)

- Can you tell me what Sign Language is for you?
- Do you watch the interpreter during class? How often?
- WHY do you look at the interpreter?
- When do you think you look at the interpreter? During what activity/in which subject?
- Do you think it helps you in certain situations? In what/which way?

- Do you understand any of the signs from the interpreter?
- Do you know any of the signs? Can you show me one?
- Why did you choose to show me this particular sign?

- In which situations do you think it is helpful for you to have the interpreter signing in your class?
- In which situations do you think it is annoying or disturbing for you to have the interpreter signing in your class?

- How do you think being in a school that has ASL speakers could help you in your future life?