

# TECHNOLOGICALLY FRAMED PARTICIPATION: A GLIMPSE FROM EVERYDAY SCHOOL LIFE OF TWO MAINSTREAMED PUPILS WITH COCHLEAR IMPLANTS IN SWEDEN

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## ABSTRACT

In Sweden, deaf pupils were traditionally placed in segregated deaf schools. However, during the last decade, the number of children attending mainstream schools after receiving cochlear implants (CIs) has increased dramatically, resulting in lower attendance at deaf schools. Despite the significance of this trend, there exists little knowledge regarding the everyday lives of these pupils in mainstream settings. This paper examines how pupils with CIs interact with school staff and other pupils in classroom settings and how different technologies (e.g. hearing aids and microphones) are used there. Furthermore, it aims to identify opportunities and limitations regarding the pupils' participation in communication and teaching. The paper builds upon data from an ethnographic study in which fieldwork was conducted in two mainstream Swedish classrooms, both of which including one pupil with CIs. Interaction in these classrooms was documented through participant observations, video recordings and field notes, and the analysis shows that audiological-oriented and communicative-link technologies play major roles in everyday interaction by both facilitating and limiting the participation of pupils with CIs in different ways, and that it mostly is the school staff that determine how and when these shall be used. The results also indicate that the pupils are largely responsible for their own participation. Overall, the current paper provides a glimpse of **one** way to educate children with CIs in Sweden, namely, in mainstream schools, and the focus is on what really happens in the technologically framed interaction in these classrooms.

## FROM SEGREGATED TO INTEGRATED SCHOOLING

Since 1809, deaf education in Sweden has primarily been conducted in segregated deaf schools located throughout the country, and since the 1980s, deaf pupils have had a bilingual profile, whereby they get instruction through Swedish and Swedish Sign Language (SSL) (Bagga-Gupta & Domfors 2003; Svartholm 2010). This Swedish bilingual model has become relatively well known internationally. However, it is not only deaf children who have attended deaf schools, but also children with hearing loss of varying degrees, although it has been more common for them to attend special classes for hard-of-hearing pupils in regular schools or to have been integrated in mainstream classes where they have been the only pupils with hearing impairment (Bagga-Gupta & Domfors 2003). In the 1990s, cochlear implant (CI) surgeries on deaf children began being done in Sweden, and in the early 2000s the operations rapidly increased in number on younger and younger children, possibly because these operations and the technology are free of charge and included as part of Swedish health care. Today, the majority of children who are born deaf get unilateral or bilateral implants, and this development has led to segregated deaf schools facing major changes with the number of pupils having decreased as more and more parents instead choose to send their children to integrated schools close to their homes (Holmström 2013). This in turn has led to an increasing number of regular schools around the country adapting hearing technologies, as well as many teachers without knowledge about hearing impairments faced with the possibility of teaching pupils with hearing loss in their own classrooms. Unfortunately, very little research, both in Sweden and internationally, has examined this type of integrated schooling and what actually happens in terms of interaction inside the schools. This paper therefore aims to contribute to a growing knowledge about this through reporting from a case study of two mainstream classes in Sweden, both of which has one pupil with CIs.

## **EMPIRICAL DATA FROM TWO CLASSROOMS**

The empirical data this paper builds upon were created through an ethnographic approach in two Swedish classrooms during the spring semester 2011. The classes were followed through participant observations over the course of ten whole school days, both during lessons and breaks. In total, the data consists of 25 hours of video-recordings, an extensive field diary and digital photos. The video-recordings have been examined through micro-level multimodal analysis.

The classes studied here were located at demographically different places in Sweden: the first in one of Sweden's largest cities, and the other in a small village. Usually, a class in a regular school in Sweden consists of 20-30 pupils, except in smaller villages, where the number of pupils is often smaller. However, the two classes in this study consisted of 10-15 pupils each, and the school staff mentioned in interviews that the classes were smaller solely because of the presence of pupils with CIs, in order that the smaller class size might facilitate their interaction with other pupils. Furthermore, these classrooms were homogenous with respect to age, as classrooms typically are in Sweden; however, to guarantee the anonymity of the pupils, their exact age will not be told here, only that they were between 7 and 11 years old. In each class there was one main teacher and some other teachers who taught the class specific subjects, e.g. English, handicrafts and music. The teachers had no previous experience in teaching children with hearing loss and did not know SSL, and therefore, the parents required that the school hire resource persons who know SSL to support the children during the school day, both in lessons and breaks. Although they communicated at a good level in SSL, they were neither qualified as nor employed as interpreters. Nor were these resource persons teachers, although they had taken some educational courses at the university.

The two children in this study, both girls, had bilateral implants and received their first one before the age of two and the other implant one to two years later. Both girls mainly communicated through spoken Swedish, but they also understood SSL because their parents had chosen to learn this language, and used it to some extent when they communicated with the girls at home. Both girls were referred to by their teachers as talented in several school subjects and neither had any additional disability.

## **TECHNOLOGICALLY FRAMED CLASSROOMS**

The present study is based on sociocultural perspectives on learning (Säljö 2000; Wertsch 1998; Vygotsky 1978), where the interaction between the participants in the classrooms is the main focus. The teaching itself is not regarded as the main medium for developing knowledge, but instead it is when pupils and teachers interact with each other that learning occurs. When the pupils get the opportunity to work together with each other and the teacher, they can develop their skills in different ways. And in this interaction, the communication between the participants is of great importance, something that is particularly interesting here because one of the participants in each of the two classrooms uses CIs and therefore does not have the same starting point for spoken communication as the other participants in the classrooms.

Swedish classrooms are generally equipped with a range of mediating technologies: from scissors and pencil sharpeners to whiteboards or SmartBoards. Modern digital technology has become more and more common in the classrooms in the last decade or two, and governmental initiatives have led to an increasing number of Swedish schools providing one computer or tablet to each pupil in individual classes or even entire schools (Skolverket 2013). Use of the Internet has also increased dramatically, and social media have become a common place for both teachers and pupils to interact. Swedish classrooms are thus highly technologically equipped, and the participants are familiar with using various technologies during everyday life at school. In classrooms where there are pupils with hearing loss, there are also completely different type of technologies available that are designed to facilitate the understanding of oral speech for pupils who use hearing aids or CIs, e.g. teacher microphones, pupil microphones, FM-systems, etc. (see also Heiling 1999).

The two classrooms in this study were equipped with both general technologies and audiologically-oriented technologies (Holmström & Bagga-Gupta 2013), and in addition, the classrooms had acoustically modified ceilings, walls and floors. The furniture was also acoustically designed, for example, with resilient bench lids, which means that they could not be slammed and thereby cause painful sound for pupils with CIs. The classrooms also had hearing equipment that the adults could adjust and control, i.e. telecoils and microphones. Furthermore, the adults had remote controls to the pupils' CIs, so that they could raise or lower their volumes. The furnishing in the classrooms was also visually adapted: the benches were placed in the shape of a U, so that the pupils could see each other better. The resource persons are also regarded as a technology here in that they were a communicative-link technology (Holmström & Bagga-Gupta, forthcoming) and were present in the classrooms the entire school days.



Figure 1. Classroom in U-shape



Figure 2. Teacher speaks in microphone

### **A GLIMPSE FROM THE EVERYDAY SCHOOL LIFE**

As shown above, many resources were deployed in the two classrooms with the aim of providing the pupils with CIs a functioning school with as much support as needed to benefit instruction. The investigation and analysis of empirical data shows that many of these resources work well, and that the technologies and their use promote the pupils' participation in interaction and teaching in different ways. An initial impression of the recorded material suggests that the technologies were used in intended ways: the teachers wore the teacher microphones and ensured that the pupil microphones were used; the adults occasionally checked that the technologies were working in the classrooms; the resource persons occasionally support the learning of the pupils with CIs by visually mediating the spoken communication through SSL, etc. Furthermore, the main teachers developed different strategies to facilitate the pupils with CIs: they usually spoke at a normal tempo with clear voice and distinct lip movements; they ensured that all pupils spoke in turn; they occasionally repeated the pupils' answers; and they wrote often on the board. However, the in-depth analysis revealed a more complex picture of the interaction in the classroom in which recurrent phenomena and patterns could be problematized, which together show that pupils with CIs did not participate in classroom interaction in the same way as hearing classmates, but instead adopted a more peripheral position (Wenger 1998) in different ways. Particularly prominent is how much the pupils with CIs themselves must take responsibility for keeping up with the communication and teaching.

One of the recurring phenomena in the classrooms that was very common was that the resources around the pupils with CIs were not always reliable in several respects. In particular, this observation can be applied to the resource persons whose roles, based on the data, were extremely vague. It is quite clear that the resource persons were in the class to support the pupils with CIs, but there were no guidelines for how this support should be given, or under what conditions, or when. Data show recurring situations in which pupils with CIs themselves turned to the resource person to ask for clarifications or help, or to ask them to visually mediate the spoken communication because they did not receive this support automatically. Despite such engagements, the pupils did not always receive the support they asked for or demanded; rather, it seems that the resource persons sometimes did not notice

or understand that the pupil wanted help or explanations, and sometimes they explicitly denied help to the pupil or to visually mediate the communication. At the same time, the relationship between the resource persons and the pupils with CIs appears as extremely unequal, where the pupils with CIs had both a subordinate position vis-à-vis the resource persons and were dependent on them in many situations.

Another resource that was not fully reliable was the audiologicaly-oriented technologies. Many times these malfunctioned, which led to all classroom instruction sometimes stopping while the adults directed their entire focus to the technologies in order to get them to work. This led to all the pupils in the class waiting until the problems were solved, and indirectly it was the pupils with CIs causing these interruptions in instruction, because the technologies were used only for their participation. To a great extent, the pupils also interrupted instruction when they reported that something was not working. When the pupils with CIs were not present in the classrooms, no such interruptions occurred. Another recurring phenomenon in the classrooms was that the adults wanted to create a calm and quiet environment for the pupils with CIs during individual tasks by turning the microphones off. Often this action seemed to be random and without reflection, and the adults usually did not discuss this with the pupils with CIs. Even if the intentions were good in this procedure, it can also be problematized, because it simultaneously led to lesser possibilities for these pupils to listen to the teachers' explanations to other pupils, and consequently they had fewer opportunities for passive learning by listening to other ongoing conversations in the classroom.

An additional phenomenon in the classrooms was that the adults appeared to have unlimited power over when and how the technologies would be used, and they could also, sometimes without the pupils' consciousness, use a remote control to raise or lower the implants' volume and to determine that the pupils should move into another room to train their hearing while instruction to the other pupils continued. Furthermore, the pupils and resource persons many times had parallel dialogues during the ongoing teaching, something that on the surface appears as if the resource person was mediating what was being said and providing additional explanation, but that in the practice often means that they were having their own dialogue about something completely different, or that they were discussing whether the pupil should speak up and report not being able to keep up with the ongoing communication or not. Taken together, these things show that the pupils with CIs had peripheral positions in the classrooms, with great responsibility for their own participation.

## **CONCLUSIONS**

As indicated in this text, the placement of children with CIs in mainstream schools is complex, with many different things to consider and take into account. It is easy to take an outside perspective on children with CIs: They have had an advanced hearing technology implanted that provides them many opportunities to participate in spoken communication, something that opens up new possibilities for participation in the society that previous generations of completely deaf children have not had available to them. But the children do not become hearing through the implants, and their hearing is still quite different from that of normal hearing peoples. This also means that one cannot expect that these children will act as hearing in most situations, even if they have access to a range of technologies. Their participation in hearing contexts are highly technologically framed and therefore extremely vulnerable when the technologies malfunction, or when they not are used as intended – or when they are inadequate because human interaction is so complex. It is also important to look more closely and deeply on what is actually happening in the interaction where children with CIs participate. We still know too little about many everyday situations and how children actually experience them. How are they affected by always being a little different from others? The one who needs special adaptations, or special handling, and who are always being forced to be alert and prepared to speak up and help themselves to be included? These questions cannot be answered yet; rather, further research based on these children's school experiences is needed.

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