



DISTANCE SIGN LANGUAGE INTERPRETING FOR DEAF UNIVERSITY STUDENTS

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Summary

It is not always easy to integrate Deaf students in the mainstream educational system for reasons that pertain mainly to communication. Not many teachers are aware of the special needs of Deaf students and many see sign language interpreters as unwelcome intruders in their classroom.

This in mind, the Distance Learning Unit at the Polytechnic Institute of Leiria, in Portugal, set up a Project to provide sign language interpreting for Deaf students attending regular classes. Offering signing at a distance implied careful planning, defining possible strategies, finding technical solutions, managing human resources and thorough testing.

Four possible scenarios were drawn up and tested:

1. Netmeeting
2. Netmeeting + Video conference system
3. Video conference system + Web conferencing system
4. Video conference system

Various technical and operational problems had to be overcome. However, a final solution was found using scenario 2 and the service was made available in the school year of 2008-2009.

This presentation will provide details on the technical, educational and social implications of providing simultaneous and consecutive sign language interpreting for Deaf students attending higher education.

Introduction: Knowing the d/Deaf university student better

Deaf students who arrive at University are those who have successfully gone through the basic primary and secondary educational system. They will have also had the grades to qualify for higher education and will have sat for national exams. The fact that they have got through strict selection would make one believe that, once at University, these students have what it takes to become successful graduates. Although it may be true that those who make it to University are normally bright, hardworking students, it is not equally true that they have

“all it takes” to be successful. Deafness has no correlation with intelligence, but it certainly has a huge impact on language use and in conceptualization.

Deafness is a complex phenomenon which goes beyond the biological condition of not being able to hear. Depending on the type and degree of deafness and its time of onset, people will relate to world around them in different ways and will engage with others either through the ruling order of the dominating oral language or through a sign language which will necessarily be a minority language that characterizes a minority group, the Deaf (*cf.* Neves 2005:88). Various educational systems have forced deaf children to oralise, *ie.* to use oral speech, with the aid of lip reading and intense speech therapy. Only recently have sign languages been acknowledged as linguistic systems that open way to what is now known as “Deaf Culture”. Children who are prelingually deaf, *ie.* the onset of deafness occurs before the child has acquired an oral language, normally before the age of 3, now have the opportunity to use a sign language as their mother tongue and to learn the national oral language as their second language. This new paradigm has given way to the existence of special schools for the Deaf and, in many countries, when integrated within the regular educational system Deaf children are now entitled to a bi-bi (bi-lingual and a bi-cultural) education (*cf.* Schwartz 1996). In practice, this means children are integrated with their hearing peers but they are also offered classes in sign language, taught by signing teachers or, when these are not available, sign language interpreters are allowed into the classroom. This integrated solution is becoming more and more common in countries such as Portugal, in which full integration is imposed by law, for the duration of compulsory education¹. Despite the efforts to fully integrate Deaf students within mainstream education, and even when they complete their secondary education with success, there are factors that continue to determine their success as university students. The most important of which is their limited reading ability.

Normative studies on the reading abilities of deaf people (Di Francesca 1972; Conrad 1979; Savage *et al.*1981; Quigley and Paul 1984) substantiate this idea that deaf people attain very poor standards in reading. The results of the well known study conducted by the Office of Demographic Studies at Gallaudet College, in 1971, as quoted by Rodda and Grove (1987:165) indicate that “although the reading skills of deaf students increase steadily from 6-20 years, they peak at a reading level equivalent to Grade 4 in the United States school system (approximate chronological age 9 years)”. Drawing on a study conducted by Wilson (1979) Quigley and Paul (1984:131) state that “deaf students tend to plateau at about the third- or fourth-grade level, at 13-14 years of age, and their scores change very little from then through to at least age 19”. Other studies highlight some of the basic difficulties deaf people have with reading: (1) Deaf children have deficient sight vocabulary which might lead to poor reading comprehension (*cf.* Silverman-Dresner and Guilfoyle 1972); (2) particularly prelingually deaf children have difficulty understanding complex syntactical structures (*cf.* Thompson 1927 and Brasel and Quigley 1975); and (3) deaf people have trouble with dealing with abstract ideas (*cf.* Myklebust 1964).

If one is to set the above said against what is expected from students attending higher education, there are reasons to believe that d/Deaf students attending University will need extra effort to keep up with the amount of reading and conceptualization that is expected from them at this level. In practice this may mean that these students will need more time to go over their study materials and help decoding some of the more complex texts.

Difficulties mount when it comes to writing. Producing written work can be highly taxing, particularly to students who do not master the structure of what might be their “second language”². At University level, students are expected to express themselves fluently and to

¹ In Portugal children are compelled to attend school until they have completed the 9th grade or reached the age of 16.

² One needs to recall that Deaf people, whose mother language is a sign language, will read and write the national language as their second language. The use of any foreign language will always be in the realm of a third language.

convey their ideas clearly, whilst showing full command both of concepts and register; a demanding task for this particular set of students.

Even though a few d/Deaf students make it to graduation, they are far less than those that enrol. It is also a fact that most of them enrol in practical courses and at Universities that offer special services to d/Deaf students. These services serve to raise awareness to their needs and help teachers to adapt their teaching approaches to these “different” students. Hints on clear communication, on organising group work, laboratory work, demonstrations and tutorials as well as on how to run lectures, such as those proposed by Sheard (2007) at the University of Leeds, are extremely useful but there are times when there is a need “to employ the support of a professional person to enable them to gain fuller access to the teaching environment, e.g. note-takers, sign language interpreters, or lip-speakers” (ibid.). Whilst note-taking may be carried out by volunteer classmates, using the expertise of professional interpreters is not always easy. On the one hand, there aren’t enough interpreters available and on the other, experience proves that many teachers see sign language interpreters as unwelcome intruders in their classroom.

The Project

When, at the Polytechnic Institute of Leiria, we became aware of the existence of d/Deaf undergraduate students attending classes in different campuses and got to know the barriers that subsist in the system, a group of teachers, IT specialists and the Student Support Unit (SAS) set up a project to offer sign language interpreting at a distance to students who have Portuguese Sign Language as their mother tongue. Setting up a project of this nature meant bringing together partners that had never worked together and finding practical solutions that would be suitable to all involved. The basic concept seemed simple: a sign language interpreter would be based at the Distance Learning Unit in Leiria and using videoconferencing solutions would work for students attending classes at any of the IPL campuses³.

Technical requirements

Generally speaking, videoconferencing allows for real time communication, in which various participants, in different geographic settings, interact with each other at a distance. In this communicational context, participants can interact verbally and exchange audio, video and share documents as they speak. Videoconferencing systems allow for collaborative work, in which participants share information and materials overcoming barriers of all types.

Normally, videoconference systems are specific hardware devices that require a telephone connection with a reasonable band width. With technological advances there are now software applications that allow for the same type of communication. In these cases, equally functional solutions are found with the aid of a simple computer with specific software, such as Netmeeting, a webcam, a microphone and an internet connection. In opposition to dedicated videoconference spaces, that require expensive equipment, one can implement video conferences by using free software and low cost hardware on regular computers. Just like NetMeeting, that is specific to Windows users, there are other tools that also allow for this type of communication, all of which based on specific protocols such as H.323⁴. A protocol is nothing other than a set of norms on which the communication of audio and video is based. This protocol is used by many companies in the field, among which Microsoft, Polycom, Cisco and others offering free software.

³ The Polytechnic Institute of Leiria (www.ipleiria.pt) has 5 campuses, 3 in Leiria, 1 in Caldas da Rainha , 30Km away, and 1 in Peniche, 50Km away.

⁴ The H323 video conferencing protocol is a standard for video conferencing defined by the International Telecommunications Union.

We set out knowing that our interpreting service could be offered via a number of different video conference solutions, namely, audio, video and data transmission, in a point to point connection. In order to find the best solution possible the team set up 4 possible scenarios:

1. Solution 1 – using NetMeeting both in the classroom and in the interpreting booth.
2. Solution 2 – using NetMeeting in the classroom and a video conference system in the interpreting booth.
3. Solution 3 – using web conference service both in the classroom and in the interpreting booth.
4. Solution 4 – using video conference systems both in the classroom and in the interpreting booth.

In order to test these different scenarios there was a need to guarantee a number of conditions:

1. the availability of the necessary equipment: computers, webcams, microphones, sound amplifiers, videoconferencing systems and software, namely, a web conference service and Netmeeting;
2. the availability of technicians to set up the equipment and to configure the network;
3. a system that could guarantee simultaneous transmission of audio and video;
4. video with sufficient quality to ensure a clear perception of facial expression and signing;
5. an audio solution that guarantees communication between users with no interruptions or delay;
6. achieving conditions 3, 4 and 5 imply:
 - the correct configuration of the equipment;
 - ensure minimal bandwidth needs;
 - ensure a stable connection between the classroom and the interpreting booth.

Further to these requirements there was a need to guarantee institutional and the personal commitment of all those involved and particularly that of the teachers and Deaf students in case.

Even though we achieved the best video quality using solution 4, we finally elected solution 2 as the one with the greatest potential, given the actual circumstances. The main reason behind this choice was that solution 2 proved most portable. Given that classes take place in different classrooms, there is a need to move and install the system every time it is needed. This became impractical both in logistic and in technical terms, particularly because of network reconfigurations.

Initially we thought a 500Kbps bandwidth would be sufficient. Later, when we substituted the video conference system by Netmeeting, 500Kbps proved insufficient for the quality that audio and video signs demanded. We then dropped the hardware coding system (video conference system) and turned to a software encoder (Netmeeting), which implied a substantial loss in quality and performance.

In sign language interpreting, every facial, hand and body movement is significant and important for effective communication. In some situations, in which the interpreter's body movement required higher processing and bandwidth, image quality fell. This led to interruptions and communication was disrupted.

At this stage decisions were in order if we were to overcome such issues. Our first decision was to transmit video in one direction only, from the interpreter to the classroom. The other decision was to increase the allocated bandwidth to 1Mbps.

With these two actions we found the best possible solution for the circumstances in place.

Final Setting

Once the technical conditions were in place (using solution 2 – using NetMeeting and a video conference system) and the initial pilots were considered satisfactory, the service was implemented on a regular basis. Distance interpreting began to be offered to one Deaf

student attending various theoretical and practical courses in a Bachelor's Degree in Fine Arts in Caldas da Rainha.

The arrangement meant that the teacher would be transmitting his/her class via a small wireless lapel microphone, connected to a computer with NetMeeting software that would transmit the audio signal to the interpreter who would be in his booth at a distance of about 30Km from the student's campus. Upon receiving the aural message the interpreter would convert the teacher's message into PSL and the video signal would be sent synchronously to the Deaf student's laptop (see figure 1).

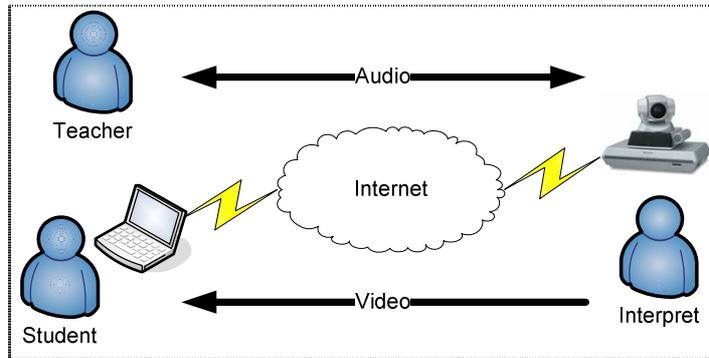


Figure 1 – technical solution in use

At times when the interpreter isn't available, the teacher's voice is recorded and the interpretation is carried out later. In these cases, the interpreted class is sent to the student on a DVD, to be seen at leisure.

Outcomes and final considerations

This project is still ongoing, but there are conclusions that can be taken already. Despite the fact that it is still not working to perfection, we see a number of advantages for all the stakeholders involved in the process, namely, the teacher, the d/Deaf student, other students attending classes, the interpreter and the institution.

Most of the problems we still face are related to the technical requirements that sometimes fail. There are occasions when there are signal failures due to unstable connections. The solution is also limited by the fact that technicians are always required to ensure that everything is working accordingly. Ideally, the system should be manageable by the teacher and student at one end and the interpreter at the other. As time progresses, teachers are becoming progressively more autonomous but IT specialists are always on call should they be needed.

Even if the system still needs perfecting, the advantages are considerable. The teacher is free to carry out his/her lesson as they please. The fact that the interpreter is not physically present leaves him/her in total command. The students are not distracted by the extra member, should the interpreter be in the classroom. The Deaf student is given equal opportunities in a discreet and efficient manner. Her interface is a simple laptop and in all the rest, she is one among many. The interpreter, too, saves time in transportation and is available to cater for the needs of various students attending different courses in different campuses. This in itself is a time and money saver.

At this stage, the project team is working on improving details by collecting input from all the stakeholders. With that feedback and a thorough analysis of actual outputs, the project will move on to phase 2, in which the service will be expanded to other Deaf students attending classes in any of our campuses or even in other universities throughout the country.

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