

Use of sign language materials in teaching

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Abstract

In Sweden, we have started to use a digital version of the Swedish Sign Language corpus for teaching purposes. Some of the material is now used with students in two separate courses: Swedish Sign Language for beginners, and Swedish Sign Language Linguistics (for deaf and hearing signers). In this workshop we will present some teaching methods and technical problems. Selected examples are shown to demonstrate how students use the sign language corpus through the dictionary database, the corpus database and a learning platform for studying and analyzing sign language texts, like e.g. the small corpus in Bergman and Mesch (2004) and also some old and new recordings. Students have the opportunity to practice sentences, analyze the entries and annotate the texts or their own recordings. Bergman's earlier transcription system for Swedish Sign Language (Bergman 1982) has been updated continuously, and partly adapted for possible use as a standard annotation system. Problems with storing and using sign language material are also discussed.

Bergman, Brita. & Mesch, Johanna. 2004. *ECHO data set for Swedish Sign Language (SSL)*. Department of Linguistics, University of Stockholm.

Bergman, Brita. 1982. Teckenspråkstranskription. Forskning om teckenspråk X. Stockholms universitet, Institutionen för lingvistik)

1. Introduction

In this paper we describe how we have developed courses in text analysis and taught students to use ELAN¹ as a tool for reading, analysing, discussing and annotating. The teaching method was tested 2006, but here we discuss our teaching experiments during spring 2008. Since 1996 we have produced Swedish Sign Language dictionaries in digital version (see 'teckenlexika' on the web [www.ling.su.se/tsp]). We have compiled a large amount of materials in diverse places, such as in universities, national deaf association and its local clubs. There are TV-programmes and web information available in Swedish Sign Language, and some annotated materials in sign language researchers' collections. Today we are in the initial phase of building the Swedish Sign Language corpus in a new way due to a good combination of corpus sign linguistics and technology. A corpus with annotations and films is required not only for research but also for teaching and studying.

2. Course in text analysis

In Sweden, higher education is divided into three cycles: the undergraduate or first cycle (3 years, Bachelor's), the Master's level, or second cycle (2 years), and the doctoral (PhD), or third cycle (4 years). At Stockholm University we have two different types of courses in Sign Language: Swedish Sign Language for beginners and Swedish Sign

Language Linguistics (for deaf and hearing signers). The purpose of the course for beginners in Swedish Sign Language differs from the one for students of sign linguistics.

In this paper we will present some examples from the courses in sign linguistics that are called Sign Language I, 30 HECs (higher-education credits) and Sign Language II, 30 HECs. In both Sign language I and Sign Language II there is a course module in text analysis, 7,5 HECs. The course Sign Language I has the following four course modules:

Sign Language I

- Introduction to sign language and the sign language community, 7.5
- Form and meaning of the sign, 7.5
- Grammar, 7.5
- Text analysis, 7.5

The course module in text analysis includes:

The course module aims to give basic knowledge of conversation structure and narrative texts. In addition, the course module provides skills in using annotation tool for documentation and analysis of sign language materials.

The course module description defines the expected learning outcomes: what a student is be expected to know, understand, master or perform after having successfully completed the module.

After completing the course module Text analysis, 7,5 HECs on level Sign Language I the student has shown that

¹ ELAN (EUDICO Linguistic Annotator), today called Multimedia Annotator, see <http://www.lat-mpi.eu/tools/elan/>

s/he can:

- use a tool for transcription/annotation of sign language texts
- annotate sign language texts
- analyse main aspects of narrative and conversational structure in sign language texts

Sign Language II

- Sign structure, 7.5
- Grammar, 7.5
- Text analysis, 7.5
- Own work and linguistic production, 7.5

The course module Text analysis, 7.5 HECs in Sign Language II includes analysing sign language texts from linguistic and sociolinguistic perspectives.

Here it is important to observe the different levels of expected learning outcomes. The course module in text analysis in Sign Language I is directed at knowledge and skills in transcription of the manual and nonmanual forms according to annotation conventions. The course module in text analysis in Sign Language II entails deeper transcription with annotations of the morpho-phonological, syntactical and textual entries according to conventions for corpus work.

3. Method and materials

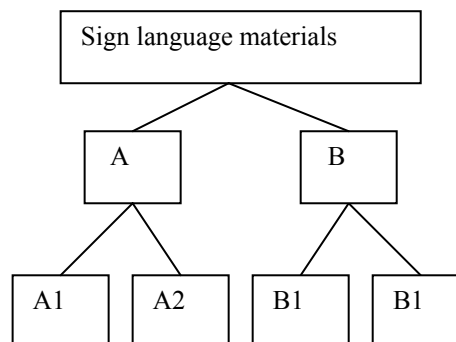
The annotation programme ELAN is gaining ground as a tool in sign language research, particularly because of its ability to facilitate collaboration between research groups who work separate from each other. By using ELAN it is possible for researchers to exchange data and to work together with similar methodology (Crasborn et al, 2007). In addition to research and corpus work, we have tested the use of ELAN and a small corpus in teaching sign linguistics.

Students were expected to learn how to use ELAN for searching and analyzing and annotating entries. A concise manual for ELAN was written in Swedish. Students received sign language materials in the format of mpeg and mov files with annotations in eaf files on DVD or HD in the class room or through Mondo² on the web. Then students could use the materials in their computers or in the class room.

The students used the sentences in the Swedish Sign Language dictionary on the web and the small corpus in Bergman and Mesch (2004) that is a starting point for studying and analysing sign language texts. Also some materials from the old and new recordings were available for annotation of texts, for example conversation, lecture, and stories of old deaf people, tactile sign language and

² Mondo is a learning- and collaboration system which is available to instructors, students and researchers at Stockholm University. The system is reached by using a web browser and is meant to help collaboration between users.

poetry. Some of the materials are not annotated, as shown in figure 1.



A – annotated material with ELAN

B – material without annotation (some annotated in another way)

A1 – search for the entries

A2 – analyze the entries on phonological, syntactical and textual level

B1 – annotate the material

B2 – analyze and discuss the results and the annotation problems

Figure 1: Structure in work with sign language texts

The students were told which parts of the sign language materials they had to search for information and to practice annotations. There were both annotated and non-annotated conversations to work with, and students had to annotate one part. We selected four different levels for working with ELAN: conversation analysis, lexicon/phonology, syntax, and text.

4. Some teaching and technical problems

During the teaching-learning process we have observed some problems in teaching and technical difficulties in text analysis. The annotation work has raised some questions, e.g. which tiers to use for annotation. We have been careful not to let students annotate too many tiers, because annotation work is time consuming and, consequently, would easily frustrate beginners. The most important tier of all is naturally the gloss. It is not difficult to annotate some lexical signs as BRA ‘good’ and FINNS-INTE ‘there is none’. It is more difficult to gloss some signs that have no easy translation in Swedish. It has been discussed if the Swedish Sign Language Dictionary should have a gloss-ID for annotating in order to make it easier for students to master signs and annotate gloss.

Some simple tiers are eyebrow, eye gaze and eye aperture. With the beginners we have skipped mouth movements because of their unclear definitions and the time-consuming annotation work. After annotating a while we discussed which signs are hard to gloss, as homonyms as well as compound signs. For the eyebrows, we have tried to describe how to separate form from

function in only annotating 'raised', i.e. not eyebrow as a marker for question.

At the Sign Language II level we also have conversation analysis, where students search for topics as well as topic change, turn taking, overlap and feedback. For annotating the entries, we have compared three different annotation conventions (Bergman, 1982; Johnston & Beuzeville, 2007; Nonhebel et al., 2004). We have studied how similar or different the annotation conventions are, and how Bergman's conventions fit in ELAN. Furthermore, we have discussed how much our conventions differ from other conventions, and if our future corpus should be translated in English and/or Swedish. We have found that Bergman's conventions differ from Auslan conventions where there is no division for homonyms, like VARFÖR 'why' and GÖRA 'make' (Swedish Sign Language examples). We have preferred to have two different glosses though the signs have same form.

In phonology we have discussed how exact the annotations of the glosses are, for example INDEX, no matter which hand shape (index finger, flat hand, thumb finger) they have, and whether there is a long or short, or no movement to breast. We have pointed out that it is the function, and not the form that changes annotation.

There are some variants, for example the sign SPRINGA 'run' and how to annotate these. The students have not agreed with the Auslan conventions with GLOSS-1, GLOSS-2 and GLOSS-3. They have preferred other examples, such as SPRINGA-knutenhand 'RUN-clenched hand', SPRINGA-krokfingerhand 'RUN-hook finger hand' and SPRINGA-dubbelkrokhand 'RUN-double hook hand'. Should we have such a SPRINGA-group for common gloss or specific gloss for each other sign in purpose to searching gloss or word in ELAN or Swedish Sign Language Dictionaries?

We have tested a combination of the conventions from Bergman, Auslan and ECHO. Purposefully we have looked for a user-friendly version for teaching, searching information and working with a large corpus. We have found the Auslan conventions interesting concerning dialogue materials. Head movement is one of the things that students have shown varying learning results in annotating. Usually the head is directed to the camera in a monologue text, but directed towards the conversation partner who sits on the right side in a dialogue text, though the signer's body is nearly directed to a camera. One student annotated that the signer in the movie has his/her head directed to the left, but another student annotated forward. Which of these directions is neutral? This is one of the many discussion topics. Another example of the topics discussed is how to annotate eye gaze on a signer, for example 'p' (person), and how often. If all eye gaze is annotated there will be too much information, and what is happening may not be understood. It is preferable not to annotate 'p' if it adds no

meaning. If the signer's head is directed to the addressee, not to the camera, the students have no longer annotated it.

When annotating eye gaze, we find the Auslan conventions work well, though not exactly describing the direction the eye gaze is directed to. It depends on if the signer is directed to the addressee, and how the addressee's mind perceives it, i.e. not as we look at it in a movie and see the signer directing her/his eye gaze, regardless of where the addressee is sitting. Still, it is important to annotate the direction of the eye gaze far left or right, up or down. We have discussed these directions with the students, and pointed out that they must observe the addressee's use of INDEX, head and eye gaze, and see if the addressee is telling things from a here-now-perspective. In addition, we have talked about possible surrogates (Liddell 2003).

One of the functions in ELAN is the possibility of expanding a transcription file with an individual student's home work (figure 2), as well as extra tiers for semantics and perspective changes of narrator and actors. A movie tells more than the annotations and compared to the transcribed sentences in earlier research reports.

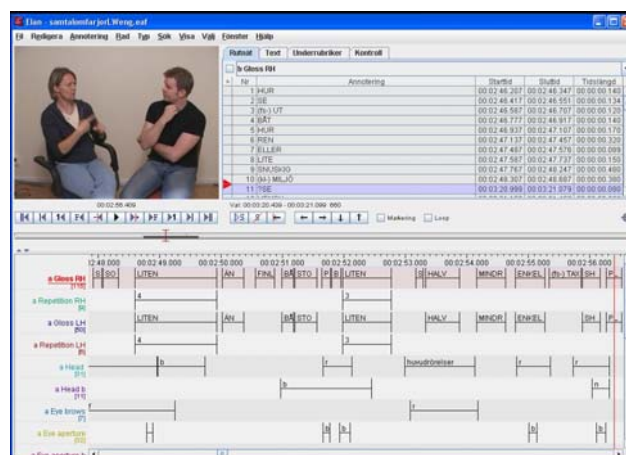


Figure 2: Student's work in ELAN

Another important function in ELAN is the possibility for a student to send an eaf file to a teacher as a completed assignment through Mondo (figure 3). The instructor is able to see the result of the students' homework individually. If there are many students in a course, it becomes hard to compare the students' eafs. It is preferable to have all tiers of many students' homework together in one and the same eaf file for comparing results. This is really a challenge we want to overcome in the future. So far we have decided to search for one word, for example 'captain' that we know is referred to several times in the text. The result, after searching for this word with all students' eafs, it shows how the students have

