

Electronic Dictionaries of the Greek Sign Language *A Case Study of the NOEMA project*

"Language training is a major issue for the Federation of the Deaf", says Mr. Constantine Gargalis, president of the Hellenic Federation of the Deaf (HFD). "Teaching the Greek Sign Language (GSL) as well as Greek to the deaf is a matter of priority and high concern for us."

Multimedia material, taking advantage of the new technologies incorporated in the educational process, such as electronic dictionaries, is highly innovative and powerful. This is further emphasized when the needs of a special social group, which have not been adequately addressed to, are on the focus. This case study features the first GSL/Greek electronic dictionary for deaf learners of Greek and Greek learners of GSL which is available on the Greek market. The Hellenic Federation of the Deaf has been working on the widest possible distribution of the dictionary, since it was anticipated with great expectations and it now covers basic educational needs of young and older deaf people all around Greece, even in less populated areas with restricted access to informational and educational material.

Dictionary of the Greek Sign Language

NOEMA is the first electronic dictionary of Greek signs and also the first DVD-ROM production in Greece. It contains 3.000 video recorded signs with their Modern Greek translations and is equally addressed to native signers as well as to hearing students of GSL. On the basis of an ergonomic arrangement focusing on optimal product utilization by the two user groups, every video lemma is accompanied by its equivalent in Modern Greek, further explanatory remarks, if necessary, as well as synonyms and antonyms in GSL, whenever such exist.

Mr. Gargalis notes that the incorporation of explanatory remarks and Modern Greek translations helps non native GSL users to better understand the meaning of the presented signs, while it allows native GSL signers to enrich their vocabulary in Modern Greek. The dictionary also provides for lemma classification according to semantic categories, the goal of which is to enable presentation, and accordingly, teaching of groups of signs, which are semantically or pragmatically related. However, the most important element of the dictionary, as reported to the HFD by deaf evaluators, remains its multimedia structure, given that the lemmas are actual video recordings of signs, accompanied by a significant number of explanatory icons.

Lemma searching is possible by:

1. The handshape(s) comprising the sign: in this case the user selects the appropriate handshape(s) from an exhaustive table by clicking on his/her selections.

2. Lemma classification according to semantic category: in this case the user may observe groups of related signs such as names of animals and plants, signs related to family life, transportation, etc.
3. Alphabetic ordering of sign translations in Modern Greek. That is, by selection of a word from a list, as is the standard case also in other electronic dictionaries.

The project initiative

The General Secretariat For Research and Technology (GSRT) of the Ministry of Development, through its Operational Programmes for Research and Technology (EPET I & II) in particular, has successfully implemented a policy of targeting the country's research efforts on selected areas, which are both commercially rewarding and directly relevant to the improvement of the quality of life in Greece.

Through Sub-Program II of EPET II - 'Industrial research, technology transfer - Innovation', programmes concerned with the current needs and problems of modern society were successfully developed and implemented. In that framework, the NOEMA project (01/06/1999 - 28/02/2001, total budget of 205000 Euros) was funded by the 'AMEA' program, which contributed to the development of support technologies for people with special needs. The consortium was formed by the Institute for Language and Speech Processing (prime contractor), the Hellenic Federation of the Deaf (HFD), the National Institute for the Deaf (NID), Kastaniotis Publications and NETCOM Ltd.

As indicated by the full title "Project for the Documentation and Processing of Linguistic and Cultural Material from the Greek Sign Language (GSL)", the main objective of the NOEMA project was to systematically collect and analyze original linguistic and cultural GSL data with the final goal of exploiting the resulting data corpus for the development of a series of educational products in electronic form. The list of the project's end products include:

- a general purpose electronic dictionary of the Greek Sign Language (GSL), including 3.000 video lemmas with parallel entries by means of the Greek Manual Alphabet and lemma classification according to the basic handshapes of GSL, the dictionary also provides fields for synonyms, antonyms and cognitive domain as well as interpretation and translation of the lemmas into Modern Greek,
- an electronic children's dictionary of GSL with 500 lemmas, integrated in a software environment also containing word formation exercises and creative narration games,
- a series of children's favourite tales in cartoon form with integrated video narration in GSL.

The forming of the consortium and the funding of this initiative was envisaged by the Hellenic Federation of the Deaf for a long time. For them, the need to provide to their

members new, innovative tools was always appreciated. This urge led the HDF look for an expert in new technologies, who could take advantage of the existing material and transform it into powerful knowledge. Discussions between the final partners lasted a while, since the GSRT provides the framework for them to grow.

Evaluation

During the evaluation period, native signers as well as hearing students of GSL were asked to use the resources and comment in terms of functionality, structure and content. Special questionnaires were designed for the users, in order to help them notice all levels of available information and accessibility and, moreover, to make sure the feedback obtained is organized, classified and easily analysed. Interviews with the evaluators were also encouraged, as a means of further collecting information and detailed discussion on certain issues.

The overall evaluation was positive towards the different aspects of the questionnaire. Most of the users, although not very familiar with computers and multimedia - according to Mr. Gargalis, only a 20-30% of deaf people, especially younger ones, are acquainted with computers, the internet and electronic educational material - encountered no particular difficulty in navigating through the program and accessing the information. The established links between multiple pieces of information facilitated the easy and targeted transition to the desired material, making it therefore, a useful tool for deaf people who are learning Greek.

In relation to the selected entries and the performance of the corresponding handshapes, some people reported instances of controversial representation of handshapes, comparing to what they knew to be the correct one. It was explained, though, that like an ever evolving language, there is not always one-to-one correspondence nor systematic and unique equivalents between handshapes and Greek words. The demand for expansion, that is, to enlarge the dictionary to include increased number of entries based to the thematic aspects of language teaching, was however massive. In the future, a richer version of this work could be considered.

Conclusions

The successful development of language resources and support technologies for the deaf through the NOEMA project encourages both the members of the federation and the end users. The exploitation of new technologies for the benefit of their particular needs has been seen with skepticism since there is not much evidence of ready-to-use tools for the moment. "In other European countries things seem to be a little ahead", says Mr. Gargalis, and continues "Much is being said about systems to assist communication, applications for educational purposes, technologies to accelerate progress and ensure quality of life for

people with special needs. We are eagerly waiting for these technologies to find their way to our everyday life. We are convinced that NOEMA provides a good example of how an idea materialises into an end product for immediate and so targeted exploitation. We really believe that new suggestions and initiatives will follow."

In response to a question regarding sources of funding and collaborations for the development of special programs, Mr. Gargalis indicates that although the federation works to that end, it is not always easy to gain access to those who could actually do something. Discussions might take too long before a consortium is formed and a proposal is submitted. This barrier seems to be overcome each day that passes as the major players gain experience and form more mature, feasible and competitive proposals. However, funding still derives mostly from national and EC sources, while the private sector grants a minor contribution.

The Institute for Language and Speech Processing is currently cooperating with the Hellenic Federation of the Deaf on the basis of a project for the vocational training of deaf people, within the EQUAL program.

This article is based on an interview given by the president of the Hellenic Federation of the Deaf (HFD), Mr. Constantine Gargalis, on 16th January 2002. We would like to thank him very much for his help and cooperation.

HELLENIC FEDERATION OF THE DEAF (HFD)

1, Millerou str., 104 36,

Athens, Greece

Tel. +3010 5233950

Fax +3010 5233968

Email: hfd@otenet.gr

URL: <http://www.otenet.gr/omkedeaf/>

GENERAL SECRETARIAT FOR RESEARCH AND TECHNOLOGY

http://www.gsrt.gr/html/eng/programmes/re_tech/epet2.html

INSTITUTE FOR LANGUAGE AND SPEECH PROCESSING (ILSP)

Department of Educational Technology

Artemidos 6 & Epidavrou, 15125,

Athens, Greece

Tel. +3010 6875356

Fax +3010 6854270

Email eleni_e@ilsp.gr

URL <http://www.ilsp.gr/noimaprod.html>

Contact Person: Eleni Efthimiou

KASTANIOTIS PUBLICATIONS

11, Zalogou str. 106 82

Athens, Greece

Tel. +3010 3301208

URL <http://www.kastaniotis.com/>

Contact Person: G. Sorolopidis

NETCOM L.td

URL <http://www.netcom.gr/>