

The "SignOn"-Model for Teaching Written Language to Deaf People

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ABSTRACT

This paper shows a method of teaching written language to deaf people using sign language as the language of instruction. Written texts in the target language are combined with sign language videos which provide the users with various modes of translation (words/phrases/sentences). As examples, two EU projects for English for the Deaf are presented which feature English texts and translations into the national sign languages of all the partner countries plus signed grammar explanations and interactive exercises. Both courses are web-based; the programs may be accessed free of charge via the respective homepages (without any download or log-in).

Keywords: Deaf, Sign Language, E-learning, Multimedia language course, Accessibility, English for the Deaf, English as a Foreign Language

1. INTRODUCTION

This paper shows the structure of a multimedia course oriented to the learning needs of deaf people in the field of written language. One major feature is sign language as the language of instruction. This structure was already used in order to produce two courses in written English, namely for basic ("SignOnOne") and intermediate learners ("SignOn!"). Both of these projects were funded with support from the European Commission.¹

2. DEAF PEOPLE AND WRITTEN ENGLISH

Learning the written (and spoken) languages of their environment is a crucial issue for deaf or hard-of-hearing people aiming to enhance their inclusion. Although deaf people are visually oriented, written language is often not enough to provide the deaf with the necessary information. This is mainly due to still inadequate teaching methods that do not allow for the fact that even the written language of their home country is a second language for many of them (for a discussion of language learning by deaf people, cf. [1]). Therefore the competences of

¹ This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

many deaf people in their written national language(s) are insufficient for their complete inclusion.

As for foreign language learning, especially English is indispensable for our modern world and for exploiting all the possibilities of the Internet and electronic communication. In keeping with the "structural approach" in language learning which focuses on drill and practice [2], modern language courses – aimed at hearing people – emphasize speaking and listening skills, whereas the deaf need to receive information via the visual channel.

3. THE "SIGNON" METHOD

The "SignOn" method encourages the users to explore English on their own. The model was developed as a consequence of experiences in teaching deaf people a written language. All of the project partner organizations have deaf collaborators and the final decision on all major content issues rested with them.

We follow the "cognitive approach" as described by [2] where language learning is "no longer restricted to passive, drill-and-practice, grammar-based activities but instead emphasized the development of linguistic competencies based on prior knowledge, linguistic knowledge, and interaction with and understanding of the text" (p. 468).

The cognitive approach wants to reproduce in some way the language learning of children or foreign language learning of adults by immersion. Its concept of language learning is that language has to be "anchored" on preverbal or previous perceptions/cognitive processes: we perceive the world via "scenes" and "scripts" (cf. the tradition and development of "Cognitive Linguistics" in the sense of Schank, Fillmore and Langacker, cf. [3]). Language reflects this perception in some way; simple sentences relate to simple scenes. Additionally, categories like the parts of speech or phrases are built up in relation to the categories of perception, the roles of participants in a scene, the location of a scene in space and time, etc.

The users of the "SignOnOne" course are provided with an animation for every sentence in the English text (this is an innovation which was not included in "SignOn!"). These

animations represent the "scene" which is described through the language. The users may first watch the animations to get some idea of the "scene" enacted in this sentence. Then they can decide whether to stay within the English text (as the immersion method would suggest), i.e. to break down each individual sentence into its smaller components and look up the meaning of the individual words and phrases. Alternatively, they may first watch the translation of the whole sentence into sign language which gives the content, but not an exact word-for-word translation of the English sentence. For working with the target language and training, the model also includes interactive video exercises. These exercises are not graded; therefore the users can do them as often as they like, practising without any fear of mistakes. Additionally, they can brush up on their grammar (through signed grammar explanations). A word list completes the features ("SignOn!" also included Internet links for further reference).

Didactically, the "SignOn" method encourages the complete freedom of the users: they can choose from among different options according to their individual preferences – they are not forced to work in a specific sequence or to use all of the options. The users remain completely anonymous and the program does not keep track of what the users are doing. This was a deliberate decision, as many deaf people are wary of a "school situation" where they are continuously confronted with their mistakes. "SignOnOne" provides them with the opportunity to explore English in a stress-free context.

Although the "SignOn" courses can be used as self-learning courses, we recommend using them in the context either of a presence course, where the teacher can expand on the grammar and answer questions, or within learning groups of deaf people in order to establish cooperation and mutual assistance within the group.

4. THE FIRST PRODUCT: "SIGNON!" – AN ENGLISH COURSE FOR THE DEAF FOR INTERMEDIATE LEARNERS

The outcome of "SignOn!" (www.sign-on.eu), a three-year Socrates Lingua Action 2 project (113936-CP-1-2004-1-LINGUA-L2; 2004-2007), is a self-learning English course for deaf adults with some knowledge of English (intermediate learners), focusing on Internet English and English for international communication. Austria (University of Klagenfurt, Center for Sign Language and Deaf Communication) was the coordinator; other partners were Finland (The Finnish Association of the Deaf), Iceland (Communication Centre for the Deaf and Hard of Hearing), Norway (Møller Resource Centre), Spain (University of Barcelona, Faculty of Developmental and Educational Psychology), the Netherlands (Pragma – Equal Access) and the United Kingdom (University of Central Lancashire).

"SignOn!" contains ten English texts on Deaf and Internet topics with different modes of translations (all, sentence, word/phrase) into the seven national sign languages of the partner countries (i.e. Austrian, British, Catalan, Dutch, Finnish, Icelandic and Norwegian Sign Language). "SignOn!" also used International Sign (for the introduction and the translations of the whole texts and the individual sentences) to allow deaf people from other countries access to the program. The lessons are of varying complexity and design (e.g. text or dialogue). There were three criteria for choosing a topic: they had to be

useful for Internet users, for travel, or they had to be of special interest to deaf people. There is no given sequence of the topics; the users may switch between them according to their personal needs and preferences as the navigation is completely free. For details of "SignOn!", cf. [4].

5. THE SECOND PRODUCT: "SIGNONONE" – ENGLISH FOR BEGINNERS

"SignOnOne" was produced within a two-year Grundtvig project (141761-LLP-1-2008-1-AT-GRUNDTVIG-GMP, 2008-3469 / 001-001; 2008-2010). There was a slightly changed partner consortium: Austria served again as the coordinator; three "SignOn!" partners chose to join the second project as well (Iceland, Norway and Spain), and in addition there were two new partners from the Czech Republic (Masaryk University, Support Centre for Students with Special Needs) and Hungary (University of West Hungary, Pedagogical Faculty). The final version of the program can be found at the following Internet address: <http://www.acm5.com/signonone/index.html>.

The basic program design with ten lessons and sign language translations remained, although there were some small changes. In contrast to "SignOn!", the lessons build on one another; even so, the user is not forced to work through them in this order as the navigation is still free.

The ten lessons deal with everyday topics which are necessary for every beginner of English, e.g. "Introduction", "Family", "Seasons", "Home", etc. Scrolling is no longer necessary, as longer lesson texts are split up into smaller parts on several pages. In contrast to "SignOn!" where the topics are completely independent from each other, we wanted some coherence among the single lessons for "SignOnOne". As with all the questions of content and layout, the deaf collaborators of "SignOnOne" had the final say on this and they voted against a continued story. Instead, they preferred to have the lessons loosely connected by using the same protagonists in each lesson (these were suggested by the Spanish partners: a family with deaf and hearing family members, their relatives, and their friends). The contents of the lesson texts were also discussed with the deaf colleagues.

Deaf collaborators from each partner institution/organization were also present at all partner meetings. International Sign interpreting was provided so that the deaf collaborators could take part in the meeting and present their ideas and suggestions for the course and the layout. Any discussions were solved by asking for a majority vote by the deaf colleagues.

From the beginning, "SignOnOne" was intended as a course for deaf people by deaf people and so all major decisions were up to them (instead of forcing them to accept what the hearing collaborators thought good for them).

All the filming was done by the deaf collaborators as well. After the initial definition of the content, hearing collaborators with good English competence wrote the texts and checked them again with the deaf and with the other partners. The Czech partners in particular did much additional work to ensure that no lesson contained more than 100 new words or any grammar that had not been introduced in previous lessons (unless it was explained in the respective lesson). They even provided a small database program that allowed us to calculate the new words in

each text and to compare the amount within individual lessons. After everyone had agreed on a lesson text, the sentences, words and phrases had to be broken up into "linking lists" which were used by the Norwegian technicians to link the parts of the text to the correct videos.

Before the videos could be filmed, the sentences, words and phrases as well as the grammar explanations had to be translated into all six national sign languages. For this, we tried to keep as close as possible to the original meaning while still using sign language grammar; this was more important than a word-for-word translation. However, the structure of the program allows the users to click on every single word in a sentence and to compare the meaning with that of the whole sentence or with the modified meaning of a phrase within a sentence. If a direct translation was impossible, a signed translation was given.

6. HOW THE SOFTWARE WORKS

On entering the program, the users first need to choose one of the available sign languages. This is done by clicking on one of the national flag buttons below the video player window. There is a signed welcome; help is available in visual form for "SignOn!" and as a special signed help function for "SignOnOne". The latter can be called up at any time by clicking on the question mark in the upper right corner of the home page: the individual parts of the program (e.g. buttons) will then show up in red frames. When the users click on any of these frames, a signed explanation will pop up.

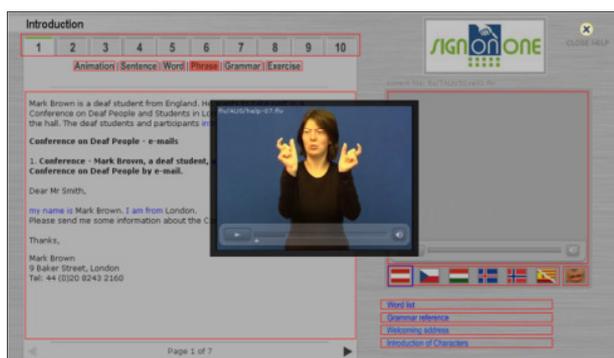


Fig. 1: Example for the help function for "SignOnOne"

From the design, the lessons center on the "Main Texts" in written English which introduce important words and phrases for each topic (cf. Figure 8 below). Translations into sign language are available; the users may choose between three different modes: "sentence", "word" and "phrase" (in "SignOnOne", every single word/phrase is clickable, in "SignOn!" only a selection of difficult ones, chosen by the deaf collaborators). In order to watch the translation (or, if a direct translation from English into sign language is not possible, a signed explanation), they have to click on the respective tab and then on the part of the text they want to have translated, marked in blue similar to an Internet link. All the translated/explained words and phrases are included in the "Word List".

In "SignOn!" there is also a tab "All" which allows the users to call up a single video containing the translation of the complete main text of a lesson. Following the feedback for "SignOn!" we chose to abandon this tab in "SignOnOne". The evaluation showed that the video was too long and that the text could also

be translated by clicking on the translations of the individual sentences.

Instead of "all", we optimized the cognitive approach by introducing the tab "Animation" which provides a language-independent visual representation of the content of the sentences. After discussing and trying out different possibilities for doing this, we finally agreed upon using animations of drawings provided by one of the Czech collaborators, as this let us focus on the cognitive concepts within each sentence. The idea behind these animations is to give the users some idea of what the sentence is about and what to expect before they use the various translation modes. Color serves to accentuate important parts of the mostly black-and-white pictures. The users can recognize the individual protagonists, and certain approaches for visualizing concepts are used repeatedly so that the users are already familiar with them (e.g. a sun rising and then setting serves to symbolize a day). These animations are available in two sizes (a smaller size in the video player window or enlarged to allow a better view of the details).

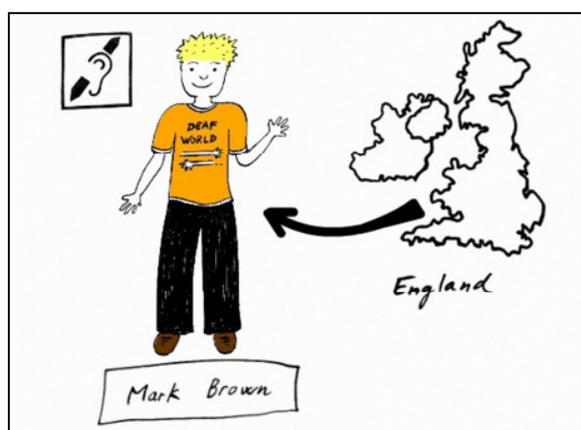


Fig. 2: Animation of the first sentence from Lesson 1, "Introduction" ("Mark Brown is a deaf student from England")

Besides "Animation", the second innovation in "SignOnOne" is the so-called "Talking Head": while "SignOn!" did not include any audio features, we asked a British native speaker to pronounce all the sentences, words and phrases in "SignOnOne".



Fig. 3: Example of a "Talking Head" video

This decision had two objectives: the first one is to provide the users with a lip-reading option, because the written English word often differs widely from its pronunciation so that deaf people are not able to recognize the spoken word; the second one is that some hard-of-hearing sign language users might be able to use the sound files.

As the target group of "SignOnOne" are complete beginners, the grammar explanations are much more comprehensive than in "SignOn!". Instead of brief summaries of the most important grammatical phenomena like in "SignOn!", the users will find signed explanations with tables and example sentences. For an example, cf. Figure 9.

As was the case with the texts, each partner (with the exception of Norway as they did all the technical work) had to prepare grammar drafts for two lessons. When everybody was satisfied, the grammar videos were filmed; each partner was free to modify the draft texts to suit the needs and preferences of the deaf in their country (and to contrast it with the national written language).

The link "Grammar reference" leads to an easy-to-use grammar overview (without sign language) for quick reference.

As for the interactive exercises, there are three basic types in both products, namely "Multiple Choice", "Drag and Drop" and "Right Order". "SignOnOne" contains additional modified versions and some new types. The focus is necessarily on vocabulary and grammar exercises; there are relatively few text comprehension or writing exercises (e.g. "Type in the correct answer"). Because there is no feedback by a human teacher included in the program, the evaluation of any answer had to come from the program itself, which excluded free writing. One compromise was to use the "Right Order" template also for spelling exercises. Here the users have to watch a video and then drag the jumbled letters into the correct sequence to form the respective word (if they are unable to recognize the word, a help function shows the word, but only while the user is clicking on "show answer").

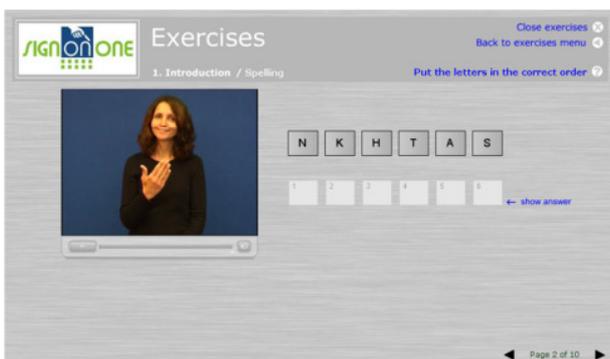


Fig. 4: Example of a spelling exercise ("T-H-A-N-K-S")

In some exercises, the feedback is indirect: when the users answer the questions correctly, they are automatically forwarded to the next exercise; with drag and drop exercises, wrong choices will automatically revert to their original position.

Most of the exercises include either sign language videos or pictures. One example are various matching exercises, where

the users have to match written English (words, phrases or sentences) with the correct videos by clicking on them or dragging them to the respective video.

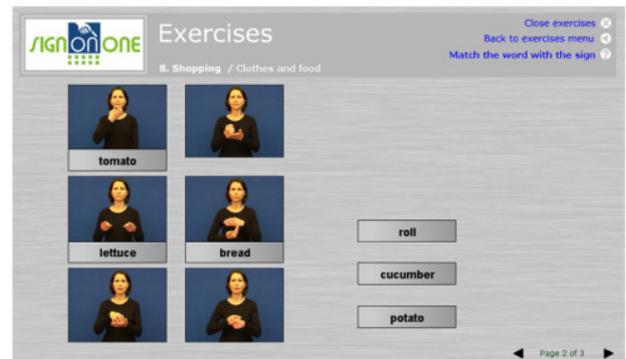


Fig. 5: Example of a matching exercise (word-video)

In others, feedback is given visually (mostly through emoticons and green checkmarks for correct answers and red Xs for wrong answers).

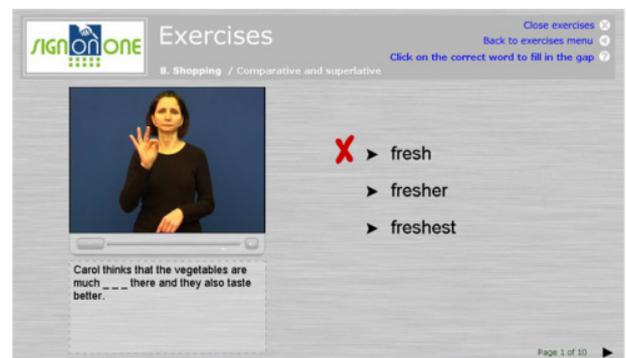


Fig. 6: Example of the feedback for a multiple choice exercise

There are no marks, no limited tries, and the number of wrong answers is not saved, so that the anxiety and nervousness of the users are minimized.

The program is completed by a "word list" which includes all the signed words in alphabetical order.

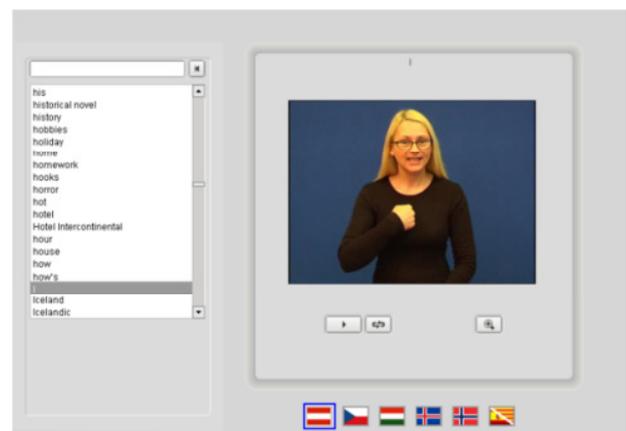


Fig. 7: The alphabetical word list

Again, the users may switch between the different national sign languages at any time. During the project, we also discussed expanding the word list to a kind of miniature dictionary or at least to unify it a bit more, but due to time and financial constraints, this could not be realized yet.

7. SUSTAINABILITY

Both online courses can be accessed on the Internet and are available for free without any download or log-in. Again, this was done on purpose, because many people are wary of registering for a program, and there are often problems with using a downloaded program on computers with varying specifications. The programming from "SignOn!" was updated for "SignOnOne" and should work with all common web browsers.

The use of Flash ActionScript allows for some flexibility with regard to the contents: there are no special Flash programming skills necessary to add new lesson texts or sign languages - the interface can be reused just by editing the external files for text and linking information (text files and xml files). The grammar explanations and exercises use other programming, so some knowledge of Flash is required to work with them. The Norwegian partner also used a new way of storing the data – all the video files for a country are stored in a single folder which facilitates changes or substitutions.

There are several possibilities for reusing the templates: the easiest would be to add either new lesson texts (together with the respective grammar explanations and interactive exercises) or to add a new sign language. For the former, the texts and explanations would have to be written and translated into sign language; then the respective sign language videos would have to be filmed in all the national sign languages. For the latter, only the sign language videos would have to be filmed according to the specifications provided by the technical partner in Norway.

Naturally, it would also be an option to use the template for other written languages by exchanging the written texts. This would also mean that at least parts of the linking would have to be changed to fit the new language and that new videos would be required (at least for a part of the words and phrases).

There have also been some inquiries about using the template for other texts, e.g. for explaining complex scientific texts in a national written language to deaf students. This would entail doing all the linking and the sign language videos (translations and/or explanations) for the respective text.

An unexpected bonus that emerged only during the evaluations of "SignOn!" and one which also holds for "SignOnOne" was that both programs can be used to compare or even learn signs from different national sign languages.

During a conference presentation, one participant even proposed using the animations, the English texts and the sound files of "SignOnOne" in her English course for hearing students.

8. CONCLUSION

As a web-based multimedia English course for beginners, "SignOnOne" combines English texts with sign language

translations and sound files, signed grammar explanations and interactive exercises.

The overall feedback from the deaf users and deaf teachers (mid-term and final evaluations for "SignOn!" and "SignOnOne") was very positive. For example, they thought that "SignOnOne" was helpful; about 90 % of them found the texts interesting. The possibility to compare the grammatical structures and the syntax of the national sign languages to English was mentioned as especially helpful. The various translation modes were well-received (although the external evaluator argued that the word tab was less important for adult learners), and many kept comparing the signs from different national sign languages. Some test persons liked the signed grammar explanations very much (e.g. the external evaluator), while to others they appeared too long and difficult. As for the animations, opinions were divided: while some liked them, others, like the external evaluator, thought them more suitable for school children than for adults. All in all, the program received praise; especially, as teaching materials for sign language users are still scarce. The deaf external evaluator who evaluated it from the perspective of a professional educator called it "widely accessible" and a "good tool".

We believe that "SignOnOne" can help sign language users who want to learn English by providing them with information in their first or preferred language. They should be able to improve their vocabulary and perhaps their knowledge of English grammar as well as their reading skills by using it. However, as the project has ended only recently, it is too early to have concrete results. Once "SignOnOne" has been used by English teachers with their students, it might be possible to show measurable improvements through working with the program. At the very least, "SignOnOne" will allow the users to approach English without fear and to explore the lesson texts within presence courses but also on their own.

There also has been interest from various countries to add their sign language or reuse (parts of) the program for other purposes. This would be no problem as the "SignOn" model can be extended to any sign language or spoken/written language by including the respective texts, video and/or sound files. We welcome any (re)use of the program.

9. REFERENCES

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Seasons

1 2 3 4 5 6 7 8 9 10

Animation | **Sentence** | Word | Phrase | Grammar | Exercise

Spring
 Spring is the first season of the year. There are three months in spring: March, April and May. There are many flowers in many colours: red flowers, yellow flowers, white flowers and blue flowers. The trees have new leaves. The grass is green. There are many baby animals.

The weather is warm. But there is much rain, too. It is sunny, and then there are black clouds. It starts raining.

Easter is in March or April. On Easter Sunday, Carol and Peter hide chocolate eggs in the garden. Anna and Mark run around looking for the eggs. Kate sees a little brown bunny. She thinks it is the Easter Bunny. The children and the parents wish each other "Happy Easter!"

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sign on one HELP

current file: flv/AUS/03se02.flv

Word list
Grammar reference

Fig. 8: "Main Text" of Lesson 3, "Seasons"

School, work, education

1 2 3 4 5 6 7 8 9 10

Animation | Sentence | Word | Phrase | **Grammar** | Exercise

Past simple – to be

<< Back to grammar menu

was/were
 Tom's teacher was strict
 was not/were not
 wasn't/weren't
 Tom was not/wasn't a good student
 Was Tom a good student?

Page 1 of 3

sign on one HELP

current file: flv/AUS/05gr01.flv

Word list
Grammar reference

Fig. 9: Example for a signed grammar explanation ("past simple – to be")