Evaluation Report of the

IS Course and Automatic International Sign Translator

Piloting

December 2022

Abstract

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IS Course and Automatic International Sign Translator Piloting

Deaf and non-deaf students experience difficulties in communicating with each other due to the different languages they use. In an international setting, these difficulties are even more serious due to the lack of a common lingua franca shared by all. Empowering the deaf and the non-deaf to learn International Sign as a common language that all can afford to learn in a short period of time will be a significant contribution to opening the global world of education and mobility to deaf students. InSign aims to promote the access of deaf students to education, international mobility, and global citizenship by raising awareness to IS as a lingua franca to communicate among deaf and non-deaf in international settings. InSign delivers to the community an automatic international sign translator, a course on International Sign and a MOOC, and an e-book describing the communication challenges in Inclusive Education and the main aspects of IS as a globalized lingua franca.

To evaluate the International Sign and MOOC course and IS-Automatic Translator we run several pilots in the partner countries. In this report, we will present the pilot design, setup procedure, evaluation, and results. The piloting of the InSign results has received positive feedback from the respondents. Overall, the majority of the participants have expressed satisfaction with the results and expressed a likelihood of recommending the IS course to others.

Table of Contents

List of Figures

List of Tables

1 Introduction

Deaf and non-deaf students experience difficulties in communicating with each other due to the different languages they use. In an international setting, these difficulties are even more serious due to the lack of a common lingua franca shared by all.

To be effective, the inclusion of the deaf cannot be a one-way path. To be effective, the inclusion of the deaf in regular education must involve non-deaf students and teachers as well as deaf students to share and learn a common language. International Sign can be this common language.

Sign languages differ from region to region. In Europe, there are approximately 50 sign languages officially recognized and being used by millions. All sign languages are different despite sharing common characteristics; a very similar setting as the one with oral languages. A key difference, however, is that in the world of orality, English has become a de-facto lingua franca that enables global mobility and active citizenship worldwide. Likewise, deaf communities will gain access to such opportunities if they use a globalized sign language. This sign language exists; it is named International Sign. However, it is not commonly used except in major international congresses and global events, like the World Federation of the Deaf.

International Sign (IS) is one of the simplest sign languages in the world. It has a reduced vocabulary and simplified grammar when compared to other sign languages. IS is a convenient way to reduce the communication gap between deaf and non-deaf students and teachers. Empowering the deaf and the non-deaf to learn IS as a common language that all can afford to learn in a short period is a cornerstone to promote equity and reduce deaf students' dropouts.

Raising awareness and promoting preliminary contact with IS in academia will be a significant contribution to opening the global world of education and mobility to deaf students. This is the purpose of the InSign project.

InSign aims to promote the access of deaf students to education, international mobility, and global citizenship by raising awareness of IS as a lingua franca to communicate among deaf and non-deaf in international settings.

The Insign project delivers to the deaf and non-deaf communities:

1. an automatic translator from text to gesture in several European languages to International Sign being represented by a 3D avatar,
2. a course on International Sign and a MOOC addressed to the deaf and non-deaf that want to learn a simple sign language.
3. An e-book with ISBN to promote International Sign as a lingua franca with ISBN published in five European languages describing the main aspects of IS as a globalized lingua franca.

To evaluate the International Sign and MOOC course and IS-Automatic Translator we run several pilots in the partner countries. In total four pilots were run, one in each partner country. The pilot course was designed in Moodle and guest access was given to the users to review the pilot course and evaluate the InSign results. In this report, we will present the pilot design, setup procedure, evaluation, and results.

2   Pilot Design, Setup Procedure, and Evaluation

To evaluate the International Sign and MOOC course and IS-Automatic Translator we run several pilots in the partner countries. In total four pilots were run, one in each partner country. The pilot course was designed in Moodle and guest access was given to the users to review the pilot course and evaluate the InSign results. In this chapter, we will discuss the pilot design, setup procedure, and evaluation.

Pilot Design

2.1   Pilot Design

To evaluate the InSign results we designed a pilot for the users to experience the project outcomes and have the opportunity to evaluate them which will be the basis for further enhancements. The pilot will target mainly the main outcomes of the project namely the International Sign and MOOC course and IS-Automatic Translator.

The IS-Automatic Translator is an automatic translator from several European languages to International Sign represented by a 3D avatar. The translator is adapted to International Sign (IS), German Sign Language (DGS), Portuguese Sign Language (LGP), Greek Sign Language (ESL), Cypriot Sign Language (CSL), and Slovenian Sign Language (SSL).
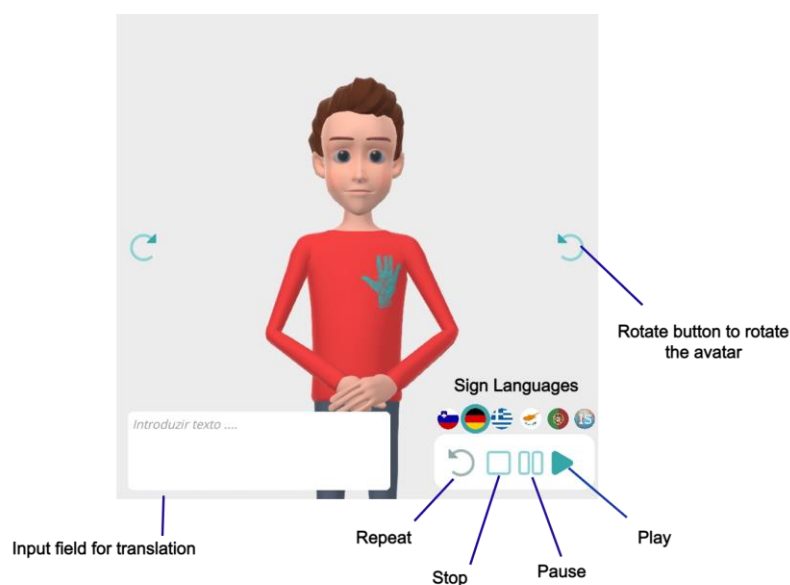

Figure 2-1: IS-Automatic Translator.

The International Sign course is intended for deaf and non-deaf students who are motivated to learn International Sign, probably the simplest sign language to learn. The coursebook International Sign Everywhere - level A1.1 for the deaf consists of 5 lessons and an introductory chapter. The coursebook International Sign Everywhere - level A1.1 for the deaf consists of 7 lessons and an introductory chapter. The first two lessons in the non-deaf version of the course introduce the main aspects of sign language and the communication strategies that one must pay attention to in a signing environment to students. Lessons 1-5 in the deaf version of the course are common with the deaf version. They contain learning materials and exercises targeting International Sign vocabulary and grammar rules.

The course lessons are structured around seven main elements namely Overview, Dialogue, Grammar demonstration, Writing, Summary, and Exercise. The pilot targets all these elements to learn specific competencies that suit the short period of the pilot. The main topics of the pilot course for non-deaf are:

- Sign Languages
- International Sign
- Communication Strategies
- Dialogue
- Greetings
- Sentence Structure
- Personal pronouns
- Writing
- Culture Notes
- Exercise
- Pilot Evaluation

The main topics of the pilot course for the deaf are:

- International Sign
- Dialogue
- Greetings
- Sentence structure
- Personal pronouns

- Possessive pronouns
- Writing
- Exercise
- Pilot Evaluation

In the writing section, the students experience the IS-Automatic Translator and use the translator to translate text into home sign language and IS. The students are given the freedom as well to translate their own text. For the words which are not covered by the translation model, the avatar signs the word. At the end of each pilot, the students are given a matching exercise on the pilot content. Upon successful completion of the exercise, the students are transferred to the pilot evaluation section where they are asked to evaluate the IS course and the IS-Automatic Translator.

2.2 Pilot Setup Procedure

The pilot is planned to run online for five days in the partner countries. The pilots are translated into the national spoken and sign languages of the partners' countries.

The Pilot courses are designed in the moodle platform of our partners in Cyprus. The link to the courses is shared with the participants and are given guest access to the platform.

The pilot introduction to the pilot is presented to deaf participants in written format as well as the national sign language.

2.3 Pilot Evaluation

The pilot evaluation is presented to participants after the successful completion of the pilot exercise. The evaluation is made in google forms and available in three languages namely English, nationally spoken and sign language.

The pilot evaluation is divided into three sections:

1. Personal Information: In this section, we collect some information about the participants, e.g. hearing status, first language, country
2. Evaluation of the IS-Automatic Translator: In this section, the participants are asked to evaluate the IS-Automatic Translator by giving a rating from 1-5 to different criteria.

3. Evaluation of the IS course: In this section, the participants are asked to evaluate the IS course by giving a rating from 1-5 to different criteria.

The evaluation questions for each section are presented in table 1-1.

Table 2-1: Pilot course evaluation questionnaire.

Personal Information					
Please, provide information about yourself (Multiple choices are allowed)					
Hearing status					
Deaf	☐				
Non-deaf	☐				
Sign language Interpreter	☐				
Participant country					
Country	Text …				
First language					
Portuguese Sign Language	☐				
Cypriot Sign Language	☐				
German Sign Language	☐				
Greek Sign Language	☐				
Slovenian Sign Language	☐				
Other sign languages	☐				
Portuguese language	☐				
German language	☐				
Greek language	☐				
Slovenian language	☐				
other spoken languages language	☐				

IS-Automatic Translator					
Now we would like to have your opinion on the VirtualSign Automatic Translator					
Please, rate the following from **1 – strongly disagree** to **5 – strongly agree**					
	1	2	3	4	5
1	It is useful	☐	☐	☐	☐	☐
2	Is the automatic translator easy to understand	☐	☐	☐	☐	☐
3	I would love to have this translator with me	☐	☐	☐	☐	☐

International Sign Course Evaluation					
Now we would like to have your opinion on the international Sign course					
Please, rate the following from **1 – strongly disagree** to **5 – strongly agree**					
	1	2	3	4	5
1	Clear organization and structuring of the content	☐	☐	☐	☐	☐
2	Videos and written contents are of high quality	☐	☐	☐	☐	☐
3	Content is engaging	☐	☐	☐	☐	☐
4	Consistency of course materials	☐	☐	☐	☐	☐
5	The language used was easy and understandable	☐	☐	☐	☐	☐
6	Would you suggest the IS course to others	☐	☐	☐	☐	☐

3 Pilot Evaluation Results

The pilots are planned to run in all partner countries. At the end of the project, we have successfully run four pilots. The pilots are run in Germany, Greece, Cyprus, and Slovenia. Unfortunately, the Pilot in Portugal was not run due to technical issues in their courses.

In this chapter, we will discuss the evaluation results of the pilots.

3.1 Participation

The pilots were run in Germany, Greece, Cyprus, and Slovenia. The pilot was run in December for 5 days due to the short time available to the end of the project. We had in total of 69 participants which is a good participation level considering the short period of the pilot course. Figure 3-1 shows the number of participants in each country. Among the 69 participants, 28 were deaf participants and 5 were national sign language interpreters, see figure 3-2.
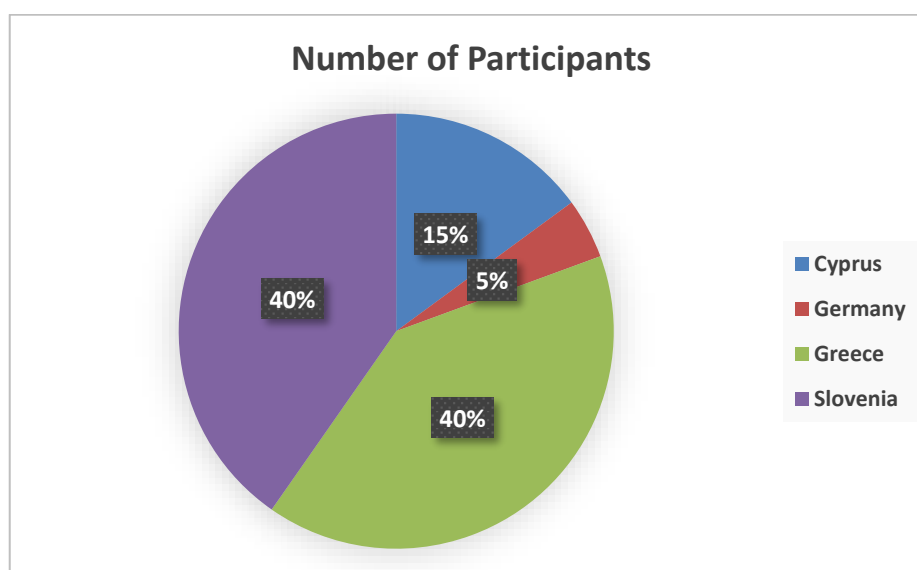

Figure 3-1: Number of participants in the pilots per country.

Seventeen participants out of the 69 reported that their mother tongue is the national sign language of their country, namely 3 their mother tongue is Cypriot sign language, 7 their mother tongue is Greek sign language, and 7 their mother tongue is Slovenian sign language. In addition, one of the participants from Germany knows German sign language as she participated in a German sign language course.
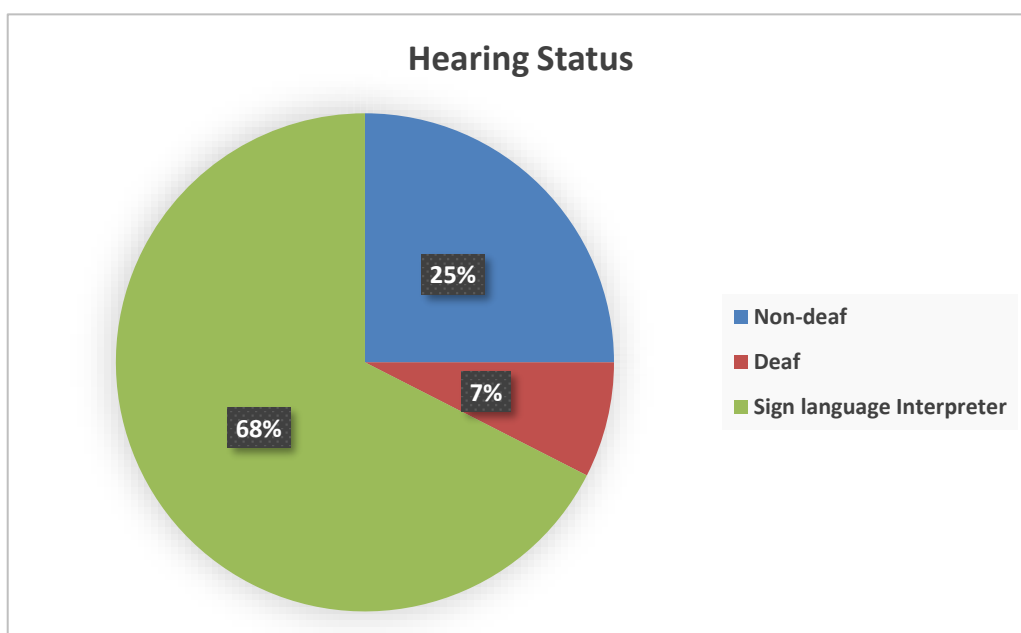
Figure 3-2: Participants hearing status.

3.2 Evaluation of the IS-Automatic Translator

In the evaluation of the IS-Automatic translator, the majority of the participants found the tool very useful, and easy to understand and would love to have the translator, see figure 3-3.
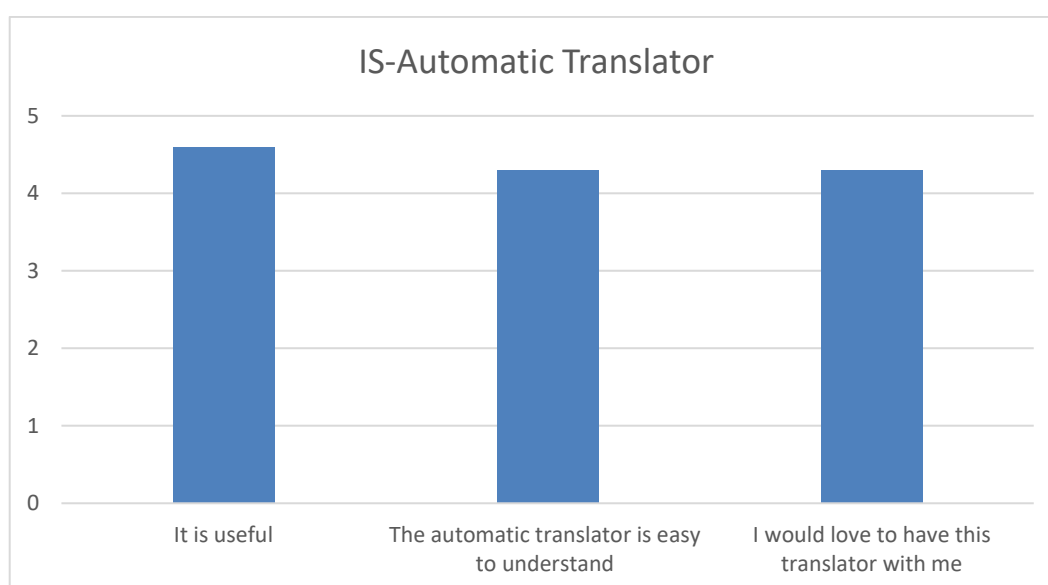

Figure 3-3: IS-Automatic Translator evaluation results.

The Cypriot participants gave some valuable suggestions for improvement. 20% of the respondents reported that the avatar component was not intuitive, but they still deemed it useful. Additionally, 60% of the respondents expressed a desire for continued access to the avatar, while the remaining 40% showed less enthusiasm for frequent use.

The German participant who had experience with sign language expressed that it is very important to slow down the avatar and equip it with recognizable mouth movements. The comments are very understandable as the signing speed depends mainly if the signers are experienced or beginners. Currently, the speed of the sign is adjusted by national sign language interpreters when they validate the signs. We believe the signing speed should be regulated by the perceivers (i.e. the users). We can give them a recommendation regarding the signing speed but they should have the possibility to adjust it accordingly. The mouthing of spoken words is also very important in the German Sign language. The majority of the vocabulary is combined with mouthing of the spoken words which is an indispensable part and can not be neglected. Therefore in future releases, this future is a must.

The Slovenian participants suggest more improvements in the avatar as they described it as weirdly proportioned, and his moves can sometimes be very mechanical, which can make it hard to understand at times. This complies as well with the German participants who know German sign language.

3.3 Evaluation of the IS Course

The IS course has received positive feedback from the respondents. The majority of the participants found the course contents to be well structured, organized, consistent, and of high quality. They reported as well that the content is engaging and understandable. The majority of the participants have expressed satisfaction with the course and expressed a likelihood of recommending it to others. Figure 3-4 shows the evaluation results of the IS course.

The Slovenian participants gave some valuable suggestions for improvement of the course. The first and possibly the biggest change they suggested was the use of subtitles. Even though, in general, the deaf have problems with the written language, it does help (at least for some of them) with the understanding of the contents. This would be especially welcome as they have described the avatar used in the translation tool as weirdly proportioned, and his moves can sometimes be very mechanical, which can make it hard to understand at times. In preparing the video contents, we have made sure that all of the videos have a second or

two of nothing going on at the beginning and end of the videos and during transitions (from interpreter to avatar or from language to language). However, the deaf would prefer to have no delay as it makes it less natural and introduces the problem of losing the meaning of things said previously. Similarly, the contents of the course are divided into many shorter videos containing one individual topic or example. This is not bad in itself; however, the deaf participants in the pilot did not have much experience with computers and online environments. Therefore, they had problems moving between videos (they would continue to watch the next video on YouTube instead of going out of the video and going to the next one in the course). As a whole, they would prefer fewer and longer videos without the need to switch videos so often.
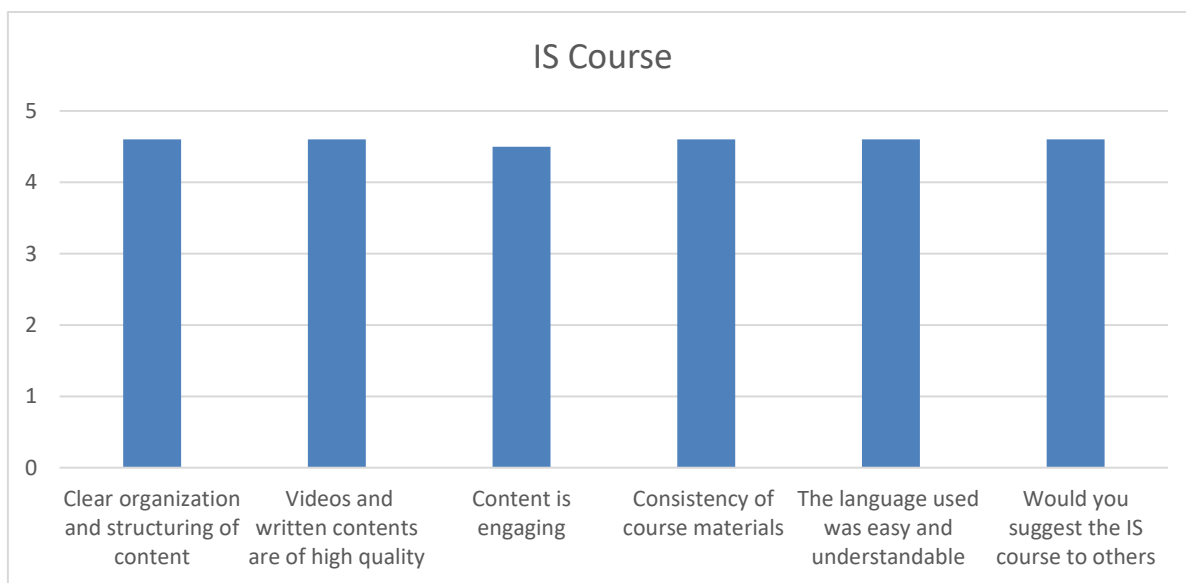

Figure 3-4: IS course Evaluation results.

Discussion and Conclusion

InSign aims to promote the access of deaf students to education, international mobility, and global citizenship by raising awareness to IS as a lingua franca to communicate among deaf and non-deaf in international settings. InSign delivers to the community an automatic international sign translator, a course on International Sign and a MOOC, and an e-book describing the communication challenges in Inclusive Education and the main aspects of IS as a globalized lingua franca.

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The pilots were run in Germany, Greece, Cyprus, and Slovenia. Unfortunately, the Pilot in Portugal was not run due to technical issues in their courses. The pilots were run in December for 5 days due to the short time to the end of the project. We had in total of 69 participants among them 28 were deaf participants and 5 were national sign language interpreters.

The pilot results of the VirtualSign Automatic translator have been received positively by the respondents. The majority of the participants found the tool very useful and easy to understand. The third question ''I would love to have this translator with me'' received a noticeably less positive response (4.3/5). We suspect this is because they do not often come into contact with deaf people and therefore do not see a big need for it, or they already know sign language to communicate with the deaf (which may be the case with the interpreters).

The participants gave as well some valuable suggestions for improvement. For example, they suggested more improvements in the avatar movement, speed, and mouthing of the spoken words (e.g., in German Sign Language).

The pilot results of the InSign course have been received positively by the respondents. The data collected from the International Sign course evaluation demonstrates a favourable perception of the course structure, the quality of the video materials, the consistency of the course content, and the language utilized. The respondents have expressed that the course is engaging and that they would likely recommend it to others.

The participants gave as well some valuable suggestions for improvement. For example, the Slovenian participants suggested including subtitles and the use of longer videos instead of having multiple short videos under one topic.

In conclusion, the piloting of the InSign results has received positive feedback from the respondents. Overall, the majority of the participants have expressed satisfaction and expressed a likelihood of recommending the IS course to others.

The suggestions of the participants are shared with the output leaders for further analysis and will be used as a base for future updates.