



2nd International Conference on Higher Education Advances, HEAd'16, 21-23 June 2016,
València, Spain

Raise awareness in society about deafness: A proposal with Learning Objects and Scenarios

Rojano-Caceres, José Rafael^{a*}, Morales-Luna, Cinthia^a, Rebolledo-Mendez, Genaro^a,
Ortega-Carrillo, José Antonio^b, Muñoz-Arteaga, Jaime^c

^aFacultad de Estadística e Informática, Universidad Veracruzana, Av. Xalapa s.n., Xalapa, 91000, Mexico

^bDepartamento de Didáctica y Organización Escolar, Universidad de Granada, Campus Universitario de Cartuja, 18071, Spain

^cDepartamento de Ciencias Básica, Universidad Autónoma de Aguascaliente, Av. Universidad #940, Aguascalientes, 20131, Mexico

Abstract

In this article we propose a methodology to create Learning Objects (LO) to sensitize and provide awareness about deaf people. We observed that deaf people become unnoticed by hearing people because there is not visible physical difference in most cases. Hearing people become aware about them when they see the use of Sign Language, but at the end they can not to interact. By means of such LO we propose a mechanism to teach Mexican Sign Language (MSL) in specific scenarios that allows to hearing and deaf people interact by a common vocabulary. We envisage the idea of using everyday life scenarios such as “coffee shop”, “police station”, “doctor’s office”, “municipal service”, among others, to acquaint the hearing people with MSL, and therefore let us to communicate with deaf people. As a case study we describe the setting of a “coffee shop” which is used to train hearing people as a complement of a course in MSL. Finally, according to enrolled students the material becomes very straightforward to use, besides it provides good support for practicing.

© 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the organizing committee of HEAd'16

Keywords: Inclusion; Learning Objects; Deafness; E-Learning, Mexican Sign Language.

* Rojano-Cáceres, José Rafael. Tel.: +52-228-842-1700 ext. 14183; fax: +52-228-814-9990.
E-mail address: trojano@uv.mx

1. Introduction

In 2010, according to the official statistics in Mexico, around the six per cent of the total population has some disability. Such percentage represent six million people (Gobierno de la Republica, 2013). Although in contrast, different sources suggest a greater count (WHO, 2015). But talking about specific disabilities such as hearing impaired, the World Health Organization (WHO) identifies that the 5.3 per cent of population experiment hearing loss (WHO, 2014). So, in relation with others disabilities, the hearing impaired group represents the third of the common disabilities in Mexico. Even though this group is the third largest, it goes unnoticed by the hearing population because in most cases it does not exhibit distinguishing physical characteristics as in the case of blindness.

Talking about equity and inclusion, Peres and Suárez state in (Peres & Suárez, 2012) that hearing impaired people has very special needs to satisfy, for example they require access to sign language interpretation service as an essential way to establish communication with others. Thus, the best way to establish a conversation with them necessarily involves the use of sign language. Sign Language is viso-spatial system based on hand movements and facial expressions that hearing impaired people used as their native language. In Mexico the teaching of Mexican Sign Language (MSL) has been mainly responsibility of schools of special education, even though there are a few Not Governmental Organizations (NGO) that promotes such language. Unfortunately, now a days MSL is not is not taught as a second language as the case of English language yet.

Therefore, in this article we present a proposal which aims to support hearing impaired people, hereafter deaf people, by defining a methodology to create Learning Objects (LO) (Wiley, 2001)(McGreal, 2004) which includes Sign Language applied to simple scenarios of everyday life. We conceive a Learning Object as a digital self-contained resource which includes a) learning objectives, b) descriptive or explicative content, b) learning activities and c) an evaluation mechanism. Finally to be accessed in a learning platform such resource is packed with their descriptive metadata based on standards as LOM (Duval, 2006) or IMS (IMSGLC, 2006).

2. Scenarios

As we previously stated, hearing people is generally unconscious about deaf people because the absence of distinguishable physical characteristics as in the case of blindness. Therefore what happens in the case of deaf people arriving to some commerce such as a coffee shop? According to our observations in this situation, first waiters usually bring the menu and then they ask for the order after a while. We observe that when the waiters realize that the person is unable to hear and speak, they immediately try to look for a person who to contact in oral language. In other situations they try to communicate by writing a message. Unfortunately, in Mexico only around the 20 per cent of deaf people go the school, this means that most of them are illiterate. Therefore considering different situations where it is necessary establish a communication between hearing and deaf people we design a set of scenarios (see Fig. 1) from everyday life as could be go to a coffee shop, a municipal service or a doctor. In that way our scenarios help to hearing people to learn about deaf culture, and also how to interact in typical situations as those described above by means of learning a common vocabulary.

3. Methodology

Firstly, in order to create the scenarios we talked with deaf people to identify their needs, later we made an observation *in situ* to understand the problems of communication. Such observational study is not addressed in this paper. Secondly, we define a systematic process conformed by seven steps listed below. This steps let us systematically create a Learning Object. Each step is described in the following sections.

1. Define the vocabulary of interest
2. Create/translate the vocabulary into sign language
3. Record episodes with deaf people and interpreter
4. Compile materials into learning objects
5. Validate the LO with deaf people and interpreter
6. Release LO to hearing people

7. Proceed to continuous adaptation

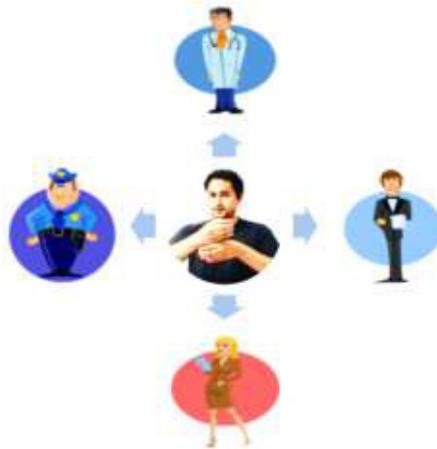


Fig. 1. A set of possible scenarios includes coffee shop, police station, doctor's office, municipal service, inter alia. Icons: adapted from the site of freedesignfile.com.

3.1. Defining the vocabulary of interest

It is important to define how many words will have the vocabulary to record because we use it to guide the granularity of the Learning Object. Also it is very important because it takes a lot of time to reach consensus between the deaf communities about meaning and standard signs. In the study case that we describe in this article the granularity for the LO was decided by categories such as food, beverages, desert between other natural categories.

3.2. Creating/Translating the vocabulary into sign language

Once defined the vocabulary it is necessary that deaf people, with the support of the interpreter, validate the existence of specific signs for translating the words. As we mentioned above, in case there is no sign related to the vocabulary it will be necessary to reach consensus of the sign by the deaf community. Again, when the agreements are made we can proceed to the recording step.

3.3. Recording episodes with deaf people and interpreter

In order to record the vocabulary or episodes it will be necessary the mediation of an interpreter to communicate in sign language the instructions, as well as the vocabulary itself. It is important to note that this step can be eliminated if the signer can read the instructions. In our experience and context, this step meant a double effort because the interpreter first produce the sign and after the deaf reproduce the sign. In Fig. 2 we see the recording process with the different involved roles.

3.4. Compiling materials into Learning Objects

It is a straightforward step linked to the instructional model used for create the learning objects and the set of tools to create the LO, therefore it is not addressed. As reference for the reader can consult (Martínez Naharro, Bonet, Cáceres, Fargueta, & García, 2007; Smith, 2004; Vakhtina & Palkova, 2015).

3.5. Validating the LO

When the instructional material is finished it is reviewed and validated by deaf people and the interpreter. The validation includes review the textual description of signs that provides explanation for the hearing people, and the corroboration that the recorded sign is right. Additionally the expert can validated the LO according to learning methodologies or usability methodologies.

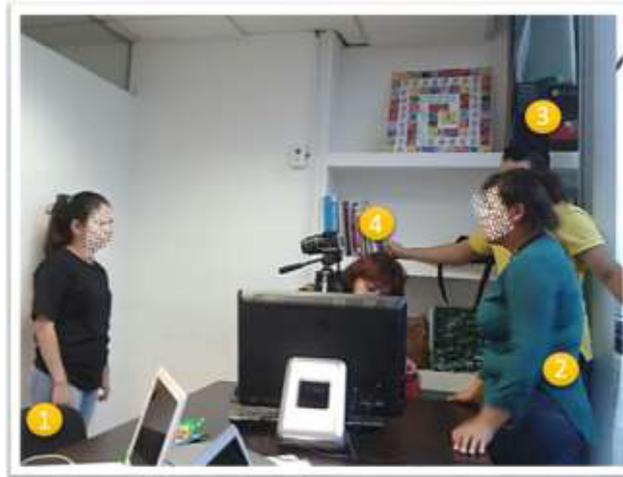


Fig. 2. During the record session participate 1) deaf people; 2) interpreter; 3) cameraman; 4) designer.

3.6. Releasing the LO

Once the learning object is finished it is packed with their corresponding metadata, and then it is uploaded to the Learning Management System (LMS), i.e. Moodle which is a very well-known free software. In our case, after uploaded the LO we provided it to a group of hearing students as a complement in a course of Mexican Sign Language. But remember that one of the objectives of a LO is than can be used as a self-education method.

3.7. Continuous adaptation

Finally, as a good practice in any piece of software, we proposed that the LO should be continually reviewed to adapt the material to the needs of the users, in this case the hearing people. The adaptation process is supported by usability tests, learning tests, and any feedback comments provided by the users.

4. Case study

As a case study of the result of the process that we describe above, we present some examples that shows the structure of the scenario “coffee shop”. First, we present in Fig. 3 how was structured the main page of the Moodle course with their corresponding structure of the course. As previously said, the granularity of the Learning Object was based on the vocabulary classification. Thus, we create different modules to address scene such as generalities and characteristics of deaf culture, in other modules we includes salty food, beverages, and dessert, we define also an specific module which presents a practical use of the vocabulary with clear examples of sentence in the context. As a result the participant can learn how to build sentence in Mexican Sign Language. We generalize this idea as a pattern for every new conceived scenario: a) generalities of the language, b) vocabulary and c) practical scenes with the use of language.

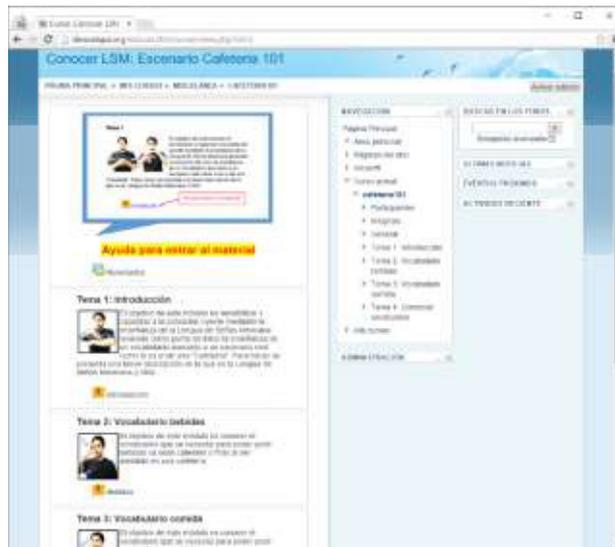


Fig. 3. Main page showing the structure of the modules in the course “coffee shop”.

As example of the case of beverages, in Fig. 4 is show the subcases of hot beverage. In such example the LO provides a textual description about how to execute the sign, it includes the position, the motion and the orientation of the hand. As a support of the explanation we provide both, a static image with relevant hand position and representative arrows of the movement, and the video where is demonstrated the execution. The understanding of the static image is relevant to create exams and memory games to test students about comprehension of LSM. Additionally, we decide to provide a dactylogy representation of the word, because in Mexico many words are based on such system.

When the participant finished the study of the material he/she can practice and evaluate their skills by means of memory games, and other similar didactic strategies. Another example is shown in Fig. 5 where the student is challenged to select the meaning of the information provided by the videos in MSL.



Fig. 4. Learning object for hot beverage. 1) Menu with objectives, content, and learning activities; 2) textual description of the sign; 3) recorded sequence of the sign execution, and dactylogy representation.

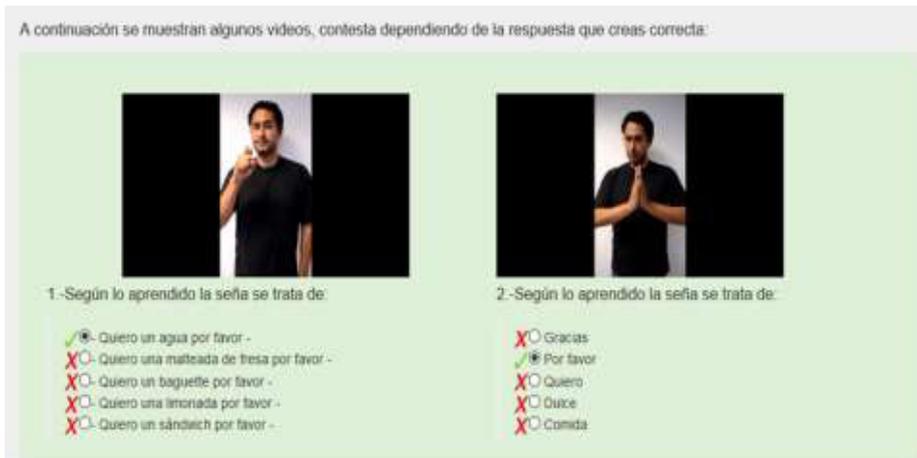


Fig. 5. Example of evaluation for sentences and signs.

5. Conclusions

Here we present a methodology to build Learning Objects were deaf people is involved in their creation. We describe that this is a complicated and long process mainly due to a) the lack of a complete reference vocabulary between the Mexican Sign Language and the Spanish Language, and b) the need of reach consensus between deaf communities to create the sign if it does not exist previously the corresponding sign with the word in Spanish.

The idea of everyday life scenarios is key for the success of inclusion. This is because it let us create opportunities to integrate deaf people by teaching Sign Language to hearing people in specific situations which are not addressed in formal courses.

Also, we firmly believe that in order to create an inclusive society in Mexico we should provide the means and guarantees to access the knowledge for that reason we decide to create Learning Objects. Besides, such LO and the knowledge represented within has been validated by the deaf community. We are sure that giving access to an open and serious material we can sensitize the society, and help to understand how the deaf community performs communication.

In the meantime writing this article the preliminary studies about the use of LO between hearing students indicates a very good acceptance, as well as positive comments in the sense that the material is not studied within their formal course, and because they now have a reference material.

Hence, we believe that our contribution is not only for the possibility of sensitizing the society, but also the possibility to reinforce and build new knowledge about MSL by means of Learning Objects.

Finally, as a future work we are working to validate the use of Learning Objects to assist deaf community in the process of learning Spanish.

Acknowledgements

The author gratefully acknowledges the support to the Mexican Federal program “*Programa para el Desarrollo Profesional Docente, para el tipo superior*” (PRODEP) for the research funding. Also, the author acknowledges the invaluable support of the deaf community integrated by the “*Asociación Difusión, Inclusión y Educación del Sordo, A.C.*” in the Xalapa city, especially we acknowledge the effort of Elio, Miriam, Mari Carmen and Carina.

References

- Duval, E. (2006). IEEE standard for learning object metadata (LOM). Accessed on December 12, 2015. Available on line http://ltsc.ieee.org/wg12/files/LOM_1484_12_1_v1_Final_Draft.pdf
- Gobierno de la Republica. Plan Nacional De Desarrollo (2013). Accessed on October, 5. Available on line <http://pnd.gob.mx/>
- IMS Global Learning Consortium. (2006). IMS Meta-data Best Practice Guide for IEEE 1484.12. 1-2002 Standard for Learning Object Metadata. Available on line http://www.imsglobal.org/metadata/mdv1p3/imsmd_bestv1p3.html
- Martínez Naharro, S., Bonet, P., Cáceres, P., Fargueta, F., & García, E. (2007). Los objetos de aprendizaje como recurso de calidad para la docencia: criterios de validaci{ó}n de objetos en la Universidad Polit{é}cnica de Valencia. In IV Simposio Pluridisciplinar sobre Dise{ñ}o y Evaluaci{ó}n de Recursos Educativos Reutilizables (SPEDECE2007). Bilbao.
- McGreal, R. (2004). Learning objects: A practical definition. *International Journal of Instructional Technology and Distance Learning (IJITDL)*, 9(1).
- Peres, M., & Suárez, P. (2012). Best International Practices for Access, Ownership and Use of Information and Communication Technologies for People with Sensory Disabilities. In *Proceedings of the 6th International Conference on Theory and Practice of Electronic Governance* (pp. 67–70). New York, NY, USA: ACM. doi:10.1145/2463728.2463744
- Smith, R. S. (2004). Guidelines for Authors of Learning Objects. New Media Consortium.
- Vakhtina, E., & Palkova, Z. (2015). Didactic designing of learning objects. In *Engineering for Rural Development* (Vol. 14, pp. 661–668). Latvia University of Agriculture. Available on line <http://www.scopus.com/inward/record.url?eid=2-s2.0-84937411734&partnerID=tZOtx3y1>
- WHO. (2014). 10 facts on deafness. Accessed on September 05, 2016, Available on line <http://www.who.int/features/factfiles/deafness/facts/en/>
- WHO. (2015). Disability and health. Accessed on January 01, 2016, Available on line <http://www.who.int/mediacentre/factsheets/fs352/en/>
- Wiley, D. A. (2001). Instructional use of learning objects. *Agency for instructional technology*.