Quality archaeological translation into sign language.
An essential prerequisite for the learning of deaf children.

María Asunción Pérez de Zafra Arrufat

Department of Translation and Interpreting, University of Granada, Spain

ORCID 0000-0002-2153-1201 , arrufat@ugr.es

Ainhoa Abasolo Elices

Department of Translation and Interpreting, University Pablo de Olavide,

ainhoaabasoloelices@gmail.com

Abstract: This paper details a significant study on educational accessibility through quality translation processes, specifically focusing on sign language translation in a museum setting. Conducted as part of the Al-Musactra RD project, co-funded by the Spanish Ministry of Universities and the European Union - Next Generation EU, the research focuses on translating content from room 1 of the Archaeological and Ethnological Museum of Granada. The intervention involved a classroom session during the European Heritage Days 2021. It has been designed for students from the Sagrada Familia Special Education School of Granada. The source material was a terminologically rich video featuring a guided museum tour on the prehistoric period of Granada, led by the museum director. The study employed a documented working methodology to address translation challenges, ultimately delivering quality linguistic solutions for the deaf community. Key findings reveal a strong preference among participants for accessible cultural experiences, with technology playing a crucial role in enhancing accessibility. The results emphasize the need for improved staff training in museums to better cater to the needs of visitors with hearing impairments. These findings suggest a broader application of such inclusive practices in cultural institutions to foster greater accessibility and engagement.

Keywords: sign language, accessibility, museum, archaeology, quality.

1. Introduction

At the proposal of the Council of Europe and the European Commission, this year's European Heritage Days 2021 will focus on accessible and inclusive heritage. These days began in Granada in 1985, the year in which the European initiative *Second European Conference of Ministers for Architectural Heritage* was held (Kneubüler, 2009, p. 9)and from which it was adopted to promote access to museums on a European level through *the Historical Monument Open Day*, as had already been held the previous year in France. At the European level, it began to be held following different initiatives from 1992 onwards and its main mission since then has been to disseminate culture and heritage (Étiembre, 2002). The Spanish Ministry of Culture and Sport, through the Spanish Cultural Heritage Institute, coordinates the organisation of the conference, whose main objective is to "raise awareness of the common cultural wealth and increase the recognition and understanding of cultural diversity, contributing effectively to the safeguarding and enhancement of cultural heritage" (Spanish Ministry of Culture and Sport, 2021). In this edition, held under the slogan "accessible and inclusive heritage" with the aim of offering a range of activities, visits, workshops, and conferences on access to culture in which the barriers that prevent approaching heritage are eliminated (European Heritage Days, 2021).

The activity carried out is part of the AL-MUSACTRA project, which has worked on accessibility to museum heritage from the perspective of Translation and Accessibility Studies. The research

group TRACCE: Translation and Accessibility (HUM-770), of the Department of Translation and Interpreting of the University of Granada, has been working since 2000 on the different modalities of multimodal translation. He has described the theoretical and methodological foundations and applied the results of the research through the research projects TRACCE. AMATRA, PRA2, OPERA, AL-MUSACTRA, TALENTO and LECPAT, as well as the teaching innovation projects TACTO, DESAM, CITRA, generating content and applications for direct social transfer such as the online application for access to the UGRQR heritage (Patent IPR-729 2018), as well as the platform for the evaluation of accessible audiovisual resources PRA2 (TRACCE 2024). The aim of this project is to improve accessibility to the information displayed in Andalusian museums, including the Archaeological and Ethnological Museum of Granada.

1.1. The right to access to education and culture for hearing impaired children

The right to education is not only about access to the school or educational institution by removing physical barriers, but there are other less visible barriers such as those in access to information and communication, which also need to be addressed and which present a crossroads for many students (Echeita & Domínguez Gutiérrez, Inclusive education. Argument, paths and crossroads., 2011). The right to education is therefore universal:

> *"The recognition and valuing of education as an essential right to be guaranteed to all people, without any kind of discrimination or exclusion, is a fundamental value and principle, openly ideological, not factual (Escudero & Martínez, 2011)."*

In order not to leave any learner behind, it is necessary to plan and guarantee *full access to* ensure fair participation (Skliar, 2003). This perspective understands the need to respect the right of the hearing-impaired child to learn in a bilingual environment, where information is provided in both sign language and spoken language in order for them to achieve the fullest possible development of their cognitive, linguistic and social skills (Grosjean, 1999). The bilingual environment is therefore a key tool for the proper development of the concept of educational inclusion of students with hearing impairment (Domínguez A. B., 2009), since making the right to education effective requires ensuring that everyone has access to quality education with equal opportunities (Ainscow, Booth, & Dyson, 2006) (Echeita & Duk, Inclusión Educativa, 2008). This offers a response from the perspective of removing barriers to full participation and leaves behind previous approaches based on the medical rehabilitative model of deafness. This paradigm shift exposes the value of the commitment to individual abilities and the incorporation of new pedagogical approaches such as the inclusion of sign language in the school context (Domínguez & Alonso, 2004).

This participation includes, therefore, the possibility of accessing in their language to the complementary cultural activities carried out in educational centres, since access to culture and education are two of the fundamental rights recognised in the Spanish Constitution (art. 27 and art. 44) and in the Convention on the Rights of the Child (1989). In this line, it is of particular value to underline that the fulfilment of these rights is achieved under the principle of relationship between them, i.e. the fulfilment of one of them promotes the guarantee of the other (Luna Sánchez, 2015).

1.2. Quality translation into sign language as a tool for cultural accessibility

Interpreting Studies have given rise to the development of a specific line of theoretical and applied research that addresses the challenges posed by accessibility to information and communication and the role of intersemiotic and multimodal translation in this paradigm of study (Álvarez de Morales Mercado & Jiménez Hurtado, 2016). Accessible translation, in the context of

access to heritage (Soler Gallego, Translation and accessibility in the museum of the 21st century, 2012), aims to eliminate sensory and cognitive barriers through different modalities such as audio description (Luque Colmenero, 2018), subtitling for the deaf(Martínez, 2015), interpretation into sign language (Arrufat Pérez de Zafra, Abasolo Elices, & Martínez Martínez, 2021) or easy reading (Carlucci and Seibel, 2020), among others. The interdisciplinary research work carried out between art educators and translators has favoured a better understanding of the challenges of access to the museum for all (Álvarez de Morales Mercado & Jiménez Hurtado, 2016) (Cabezas Gay, 2017) (Luque Colmenero Soler Gallego, Painting my ears: a cognitive approach to the study of audio description in art museums, 2018). This scientific journey undertaken by researchers has gone hand in hand with public administrations, although in a progress that in certain places has been limited, as stated by Chica and Martínez (Chica Núñez & Martínez Martínez, 2019, p. 10):

> *"The heritage centres (...) and public administrations are making important efforts to respond to the demands of the different user groups, but the work is being carried out in an isolated, incoherent manner and without adequate dissemination and diffusion. Therefore, in many cases, the possibilities of access to culture for users with functional diversity depend on the economic capacity of the centres and institutions to generate accessible events or exhibitions, on the visits organised by users' associations with their own disability experts, or on the willingness of art educators or museum mediators to offer accessible visits."*

However, there are numerous examples of good practices and accessible content developed by heritage centres in sign language, such as the sign-guide of the Alhambra (Redacción Quo, 2010), that of the Cueva de las Ventanas de Píñar (Jurado Almonte & Fernández Tristancho, 2013, p. 29) or that of the Cueva de Altamira (Zalascky, 2013).

One of the key elements in the development of these materials is to ensure that the content has an adequate quality so that it is fully functional and meets the needs of users (Chica Núñez & Martínez Martínez, 2019). To this end, it is necessary that, once the content has been produced and before its final publication, evaluation systems are used with the participation of a sample of end-users and, in this way, it is possible to find out through questionnaires, interviews, discussion groups or other research tools, whether users have been able to access the information satisfactorily or whether, on the contrary, it is necessary to rectify the content. In the case of content produced in sign language, as González (González-Montesino, 2019, p. 76)state:

> *"(...) Law 27/2007 indicates that the Public Administrations are responsible for promoting the provision of interpretation services in Spanish sign languages so that users of these languages have equal access to cultural and leisure activities in, for example, national museums or historical-artistic monuments of the State heritage (art. 10.d)."*

However, one of the main challenges faced by users is that sometimes the result of the accessible product does not fulfil its function, as the legislation does not include the concept of quality within the necessary requirements for compliance. According to (Arrufat Pérez de Zafra M. , 2020, p. 135) Arrufat, a system of evaluation of accessibility measures needs to be established, as the inclusion of accessibility measures requires monitoring to ensure the quality of their implementation. It is true that in the case of subtitling for the deaf or audio description, these are accompanied in Spain by the UNE 153010 and UNE 153020 standards, which regulate quality, but this necessary review stage is not applied in many cases due to the lack of legal mechanisms.

National institutions such as CESyA, CNMC, CNSE, AICE Federation, FIAPAS, OADIS, ONCE, RPD or RTVE are working on quality indicators that could be standardised and applied periodically to assess accessibility, an initiative that requires legal backing to ensure that quality is another element to comply with regulations (Arrufat Pérez de Zafra M. , 2020). Regarding the percentages

of accessible content established in the regulatory framework in Spain, Vázquez (2019) points out that:

> *"A common shortcoming is the conflation of different communication support tools. Thanks to this confusion between them, laws are enacted that can be misleading in their application. When the percentages of audio-description and subtitling are imposed on TV channels, the two systems are equated and it is established that 100% of the programming must be covered in subtitles and a certain number of hours in audio-description, without any further specifications (...). A deaf person needs 100% subtitling of all audio productions, from news programmes to films, including debates, competitions, galas, etc. A blind person understands everything he or she hears, so audio-description should focus on those works with a strong visual environment, and which prevent the understanding of the work itself. This would exclude from the outset all programming including news programmes, debates, quiz shows, talk shows with commentary by voice-over announcers and society programmes. This reduces audio-description to series, films, and documentaries, so that audio-description of 30% of a channel's programming makes almost 100% of its programming accessible to blind people."*

Regarding this perspective, Vázquez explains the logic with which these percentages that must be complied with in television broadcasts should be applied. It is for this reason that legal compliance should be consistent to ensure that its effective application guarantees the rights it is intended to protect.

In addition to the challenge of quality, accessible translations face the challenge of flexibility in order to adapt to different target audiences, i.e., that, given the same source text, the target text can vary to meet the needs of the target audience, such as the elderly, children of different ages, people with deaf-blindness, people with intellectual disabilities, people with hearing disabilities, people with visual disabilities, etc. In the case of children, more and more resources are becoming available to them (Guernsey, 2013)and the quality of the content is directly related to the possibility of adapting to the abilities of children, which are particularly different in the first years of life(Crescenzi-Lanna & Grané-Oró, 2016). A good adaptation will allow them to interact without barriers and to better understand the content.

Minority languages require a standardisation process in which the linguistic code is intervened upon and is often referred to as a process of linguistic normalisation. Defined according to D'Andrés Díaz (D'Andrés Díaz , 2018) as:

> *"A systematic set of socio-political actions that refer, in the linguistic field, to the achievement of normality in the coexistence of two or more languages in the same social space, and more specifically of normality for the language or languages that suffer minoritisation (D'Andrés Díaz, 2018: 19)."*

It is also associated with other terms and concepts such as language policy (Joan i Marí, 1996, p. 26), language planning (Haugen, 1996), or language establishment (Lamuela, 1994). In this procedure, the corpus is *narrativised*, which involves, among other things, the cultivation or elaboration of the lexical inventory of the normative variety established through neologisms (Castellanos, 2000). According to D'Andrés Díaz's (2018: 20) outline of linguistic standardisation, it corresponds to this:

1. Social normalisation (of status).
    a. Selection.
    b. Implementation.
2. Standardisation (corpus standardisation).

a. Fixing or coding.
   i. Dialectal simplification.
   ii. Norms of the standard.
      1) Graphical standards or graphitisation.
      2) Grammatical rules or grammaticalization.
      3) Lexical rules or lexication.
      4) Orthological standards or orthologisation.
   iii. Extra-standard rules.
      1) Dialectal norms.
b. Cultivation or processing.
   i. Lexical cultivation.
   ii. Stylistic cultivation.

This procedure makes it possible to enrich the specialized terminology of the different fields of knowledge and facilitates communication. This process involves both expert linguists and specialists in different fields with a good command of the language. The people who use signed languages and are part of the Deaf community share a culture and it has been defined by Lane, Hoffmeister, and Bahan (Lane, Hoffmeister, & Bahan, 1996)as:

> *"a group of people with common characteristics, including the use of a*
> *visual-gestural language and a particular way of life, who have knowledge of*
> *their world and share experiences of what it is like to be Deaf."*

Cultural plurality enriches society, however, there is a tendency toward the construction of a national identity in which minority languages, such as sign languages, suffer discrimination (Amezcúa Aguilar & Amezcúa Aguilar, 2018). In this sense, sign languages evolve according to historical, cultural, linguistic, and social factors and are in line with the development of the deaf community (Herrera-Fernández, 2014). This is why the participation of native speakers in the development of neologisms is especially relevant. They are essential for the selection of the most appropriated proposed terms to the context of use.

1.3. Archaeological terminology in the museum and educational contexts

As introduced in the previous section, one of the challenges that sign language has faced is the quality translation into sign language, which, on the part of interpreters in specialised contexts in which they do not have adequate knowledge, may have posed problems for the user:

> *"[...] the interpreter did not master the physical concepts and, in trying to*
> *explain these concepts, contributed to reinforcing spontaneous conceptions,*
> *very common in the Sciences, or could generate misconceptions regarding*
> *the concepts or content since the interpreter had no training in the*
> *disciplines he interprets (Santos & Takeco, 2014, p. 457)."*

From a translatological perspective, the efforts of sign language interpreters have been directed towards offering solutions through paraphrasing as the main translation strategy which, without a proper understanding of the concepts, can lead to errors of meaning and content, to a translation by means of calques of the spoken language which do not visually represent the concepts, to the excessive use of the dactylological or the use of generic signs accompanied by borrowed mouths (Valdéz González, Rodríguez Martín, Álvarez Arregui, & Martín Antón, 2020, p. 192):

> *"(...) a linguistic sign, whether a word or a sign, must evoke an image in the*
> *recipient's brain; if this does not occur, the sign is empty of meaning and will*
> *not give rise to communicative processes. For this reason, dactylology, lip-*

reading, the use of commonly used signs for specific terms, and, in short, resources based on the oral language are going to cause significant harm to signers (...) during the process of acquiring new concepts and their access to information."

In the educational context, quality and equity for the education of sign language learners are directly related to the quality of translations, interpretations, and lexicographic materials produced in sign language, such as glossaries and dictionaries (Valdéz González & Martín Antón, Spanish Sign Language and specific fields. A multidisciplinary and inclusive proposal for the search, analysis and creation of Signs., 2020, p. 160). Within the educational activities of educational centres, museums are presented as a potentially didactic and attractive option for children. The evolution of these cultural institutions has opened the doors to a wide range of users (Soler Gallego, Translation and accessibility in the museum of the 21st century., 2012)who are increasingly committed to quality and accessibility in their offers to the public (Moreno López, Galvez, Ruiz Mezcua, & Martínez Fernández, 2008). In this way, they have gone from being static centres containing works to dynamic entities and social agents in which culture, language, and history make their way to reach citizens, also in sign language (Cruz Aldrete & Sanabria Ramos, 2020, p. 178).

In Spain, the first team of deaf guides to teach the archaeological heritage of the Atapuerca archaeological sites was formed in 2002 (Luque Cortina, 2010). The pioneer museum in obtaining the Accessibility Management Certificate from AENOR was the Guggenheim Museum in Bilbao (2003), which already included a video guide in sign language as part of the adaptations for the hearing impaired. According to this, the municipality of Frigiliana was recognised in 2013 through the Queen Sofia Award for universal accessibility in municipalities for the work carried out with initiatives such as the signoguide of the Archaeological Museum of Frigiliana (Simón Vallejo & Cortés Sánchez, 2017, p. 410). Later, the National Archaeological Museum developed an accessible multimedia guide that integrates, among others, the translation of the content into sign language with the support of the CNSE Foundation and follows the accessibility guidelines for web content WCAG 2.0 (Rubio Visiers & Fernández Tapia, 2014, p. 573). It was not until 2017 that a museum was awarded the AENOR Universal Accessibility certificate, and this was the Museo Nacional Thyssen-Bornemisza. Its offer for visitors includes a signoguide in LSE (Yuste Fonzález, 2018, p. 68). An activity similar to the one carried out at the present European Heritage Days was the one carried out at the Cueva Pintada Archaeological Park in Gran Canaria, in which a pilot experience was carried out with the museum team and the museum educators were trained during two previous sessions and worked together with the LSE interpreter, who brought Arminda, the daughter of the last *guanarteme,* to life through the puppeteer to explain the site as a didactic resource in sign language (Reyes Rodríguez, et al., 2018). This impetus given to the creation of accessible material in quality sign language has led to a specialised corpus of parallel texts from which it has been possible to recover terms and translation strategies used in the workshop.

The study holds particular interest as it explores the transformative impact of quality sign language translation on educational accessibility in cultural settings, a crucial aspect in bridging the communication gap for the deaf community and enhancing their engagement with cultural heritage.

2. Methodology

Since the main objective of this research is to find out the opinion of the hearing impaired children who participated in the day, we have opted for a procedure of data collection through a questionnaire that they have completed in class, in a quiet environment, and with the support of teachers to facilitate the understanding of each of the closed questions.

A total of 13 people took part in the study, of which 9 were male and 4 female. In relation to the age of the participants, 4 are between 5 and 11 years old and 9 are between 12 and 25 years old. The participants belong to the Caja Granada Sagrada Familia Special Education School, which offers, in addition to basic compulsory education, an educational offer that includes hearing and language rehabilitation and audiological care, among others. A questionnaire consisting of 9 items was proposed to collect socio-demographic information and 12 specific items on accessibility in museum environments. The quantitative data were collected through closed questions from which the results were extracted through a descriptive statistical analysis using the RStudio program. The valid sample consisted of a total of 13 responses.

3. Results

Statistical analysis of the responses obtained allows for some specific observations, which are set out below. Among the preferred cultural activities, 38.5% chose visits to natural areas, 23.1% cinema, 15.4% reading and 7.7% concerts, 7.7% theatre and 7.7% dance. A 100% of the participants indicated that they liked the fact that the spaces and contents were adapted. According to 53.8%, they visit museums once or twice a year, 23.1% never, 15.4% only on holidays and 7.7% visit them frequently. An 84.6% usually go with friends. An 84.6% usually go with friends or relatives, while 15.4% go in organised groups. An 84.6% said that if museums were more accessible, they would definitely or probably visit them more. As for the purpose for which they visit, 61.5% say they visit museums to learn, while 38.5% visit for fun. A 100% of the participants think that new technologies improve the access of people with hearing impairment to spaces and knowledge in general. The following multiple-choice variable shows that the most highly valued type of visit is the guided visit in sign language and spoken language, as can be seen in the following graph.

The 69.2% prefer to use the museum's apparatus, 23.1% have no preference and 7.7% their own. Finally, 69.2% of the participants consider that in general those responsible for accessibility in museums do not understand the needs of people with hearing impairment, while 30.8% said that they do not know.

Figure 1. Preferred type of visit (own elaboration).
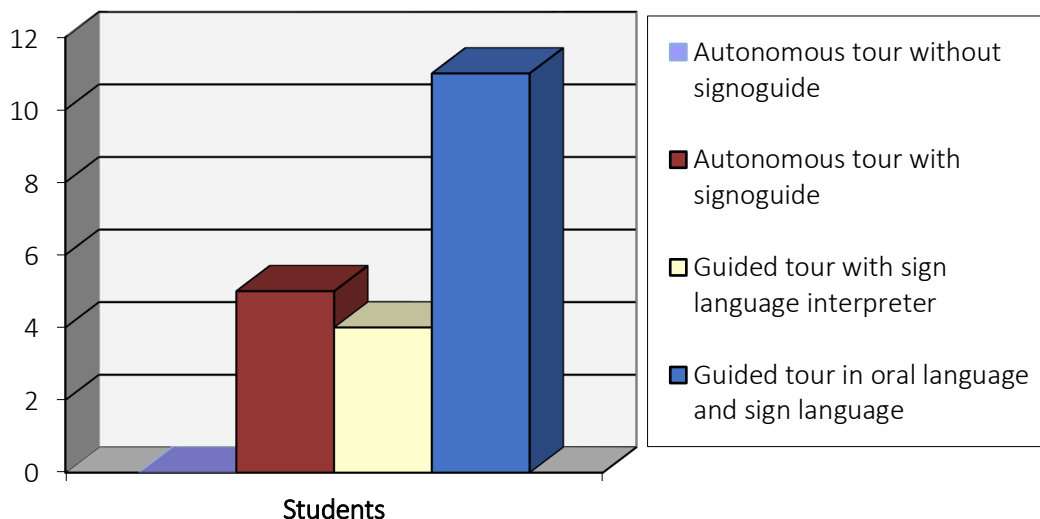
4. Conclusion

The European Heritage Days have promoted a large number of pioneering events to bring heritage closer to everyone. In this sense, the event held with the students of the Colegio de Educación Especial Caja Granada Sagrada Familia, in the Archaeological and Ethnological Museum of Granada, has allowed bringing the prehistoric heritage of Granada closer to the children through an inclusive day in which both oral and sign language have been used. For the translation of the terminology, quality has been a key element to which special attention has been paid due to the educational nature of the day to bring history and culture closer to the children. In this sense, one of the most valued places was the natural space, so it could be very beneficial for the students to carry out more inclusive activities in these environments. Adapted and accessible spaces bring the content closer to all audiences and, taking into account the amount of information they preserve and their learning value, increasing visits by children and young people through group or family activities could be a great commitment for cultural centres. Thanks to their evolution, museums in the 21st century are more interactive and fun, which generates a greater attraction for them. However, as the participants pointed out, it is essential to train museum professionals in hearing impairment so that they can better understand the needs of this public and the barriers they may encounter. Finally, as a future line of research, we will continue with the accessible translation of content from other museums in order to carry out inclusive activities in which oral and sign language are combined to improve access to information for students with hearing disabilities.

5. Acknowledgements

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