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SHOWCASING WEB ACCESSIBILITY AND LOCALISATION TRAINING: THE EXAMPLE OF CULTURE AND HERITAGE WEBSITES

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Abstract

Web accessibility has only recently begun to be considered as a key component in the task of the web localiser and, crucially, in the assessment of localisation quality. The ALMA research project (Approaching Localisation by Means of Accessibility) seeks to address this gap by gradually but comprehensively introducing accessibility awareness, issues and perspectives in the principles and procedures of localisation.

One of the approaches of ALMA focuses on localiser education and aims at both integrating web accessibility as content to be transferred in the process of localisation and as a methodological way of rethinking website analysis and interlingual, intercultural, intersemiotic transformation. This would allow localisation students to observe the interrelation between the different semiotic, temporal, spatial or ergodic elements coded in the product, with the aim of being perceived, understood and operated by users through different modalities, senses, capacities and technologies.

In this chapter, the specific example of culture and heritage websites is used to illustrate how the social and technological dimensions of multimodal translation, localisation and accessibility converge. By exploring the interrelation of web accessibility, localiser education, Universal Design for Learning, and culture and heritage websites, we conclude that such combination can provide a critical opportunity to enhance accessibility and learning at various levels: as an outcome of localisation training (more accessible multilingual culture and heritage websites), as a motivational driver for all students to access and be engaged in education, as an accessibility-aware mindset and methodology (better and deeper access to training materials), as well as an excellent interdisciplinary tool.

Keywords

Web accessibility, localisation training, culture and heritage websites, Universal Design, multimodality

1. Introduction

In 2006, Folaron published her article entitled "A discipline coming of age in the digital age." Under this title, the author provided a description of the term *localisation* and highlighted the relevance of its practice as a phenomenon to be considered by the academic institutions involved in translator training. Later, Schäler (2011: 157)

defined it as "the linguistic and cultural adaptation of digital content to the requirements and locale of a foreign market, and the provision of services and technologies for the management of multilingualism across the digital global information flow."

Since the last decade of the 20th century, the Internet has made it possible for information exchange to expand at an exponential rate, as well as for the number of texts being translated to grow into new realms. According to O'Hagan (2013), the Internet and other new technologies have impacted on the entire translation ecosystem: they affect both the micro environment (i.e. the translation tools and platforms) and the macro environment of translation processes, with an expansion of text genres and translation practices.

Indeed, the increasing influence of technology has led to changes in the way we access and translate information. Translation and technology have made us a multilingual society where almost everything can be translated, not least digital products in all shapes and forms (e.g. software, websites, video games or mobile apps). In addition, translation has moved on from concentrating on linguistic mediation to becoming a multimodal discipline (Fernández Costales 2012). It has widened its scope, focusing not only on the relationships between languages, but also on the adaptation of non-textual, semiotic and cultural elements. Due to the combination of all the above, Web Localisation as a field of study also came into existence.

Although most translation activities are technology-oriented nowadays (O'Hagan 2017), it can be argued that technology has been underrepresented within theories of translation (Munday 2009; Williams 2013). Scholars have tried to introduce the topic (Cronin 2003; O'Hagan 2013; Quah 2006), concluding that technology plays an indispensable role in translation today and that it is much more than a supporting tool for translation practice. A recent attempt is exemplified by O'Hagan (2016), who draws on the framework developed by critical theory of technology (CTT) to uncover the relationship between technology and translation. After reviewing CTT's theoretical foundations, O'Hagan (2016: 934) considers that CTT provides "an analytical framework to understanding technology by combining philosophical (substantive) and sociological (constructivist) viewpoints". In this sense, technology is a key factor transforming social and professional practices.

Localisation could participate in the "democratic rationalization of technology" advocated by CTT by understanding how the general public must intervene "in the design of technologies based on their user experience, which is fed back into the original design of the technology" (idem.). Web localisers can help shape a more democratic, inclusive Internet by making content more widely accessible, in linguistic and functional terms. In this context, W3C Director and inventor of the World Wide Web Tim Berners Lee's famous words in 1997, at the time of the creation of the Web Accessibility Initiative (WAI), "The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect",[1] must have a fundamental bearing on our discipline.

[1] https://www.w3.org/Press/IPO-announce [Last access: 20th February 2019].

Culture and heritage websites serve as a convenient example to illustrate how the social and technological dimensions of multimodal translation, localisation and accessibility converge. They provide a wealth of interactive information and services that are fundamental to the enjoyment of international culture, history and to self-advancement, as well as to the promotion of travel, cultural and linguistic exchange, which contribute to more open, tolerant and cooperating societies. However, it would be much more difficult for such websites —as well as for the cultural and historical heritage that they promote— to be universally appreciated and enjoyed if they are not accessible in sensory, physical, intellectual or cultural-linguistic terms.

While culture and heritage websites are often localised into other languages, functional accessibility is seldom taken into consideration within the process of localisation. Neither is the increase in linguistic and cultural accessibility that localisation provides seen as an opportunity to enhance the access of functionally diverse users in the target (or source) locales or cultures. Similarly, the convergent aims of internationalisation, SEO and accessibility (Galitz 2007; Ishida 2016; Lakó 2014; Rodríguez Vázquez and O'Brien 2017) are not frequently exploited in order to help localisers contribute to a high quality experience for all.

In this paper, we explore the need for and the potential of web accessibility in the training process of translators and localisers. By using the example of multilingual websites providing access to culture and heritage, we aim at analysing how web accessibility can be introduced systematically in localiser education. In particular, close attention is also paid to the possibility that the existing principles, guidelines and techniques for achieving web accessibility can enhance the training of localisers in methodological and motivational terms; as well as to the high suitability of the web genre (Jiménez-Crespo 2013: 74-75, 95-101) of culture and heritage websites for such purposes.

2. The potential of culture and heritage websites for the localisation and accessibility classroom

2.1 Characterisation of culture and heritage websites

Culture and heritage websites offer interesting examples of localisation challenges and examples for students: a mixture of genres with descriptive, instructive as well as expressive texts; highly interactive elements; creative images and videos; forms and services (like ticket selling). Also, particularly when English is not the source language, these websites tend to be multilingual, which means that localisation strategies and results can be analysed in depth.

In addition, certain features of these websites make accessibility both a challenge and something that must be heeded at all times when creating or re-creating the content:

- the various genres included in these websites, requiring consistent, clear, understandable terminology and language in general;
- their highly multimodal nature;
- the need to compress, interlink and gradually present a lot of very rich cultural and historical information;

- and the fact that these websites are often consulted in various situations and devices —while visiting the event or site presented on the website, buying tickets, checking the programme after email alerts and updates, and so on.

These characteristics impact on many of the main barriers covered in the Web Content Accessibility Guidelines (WCAG) in the latest 2.1 version, organised around the principles of perceptibility, operability, understandability and robustness (Kirkpatrick et al. 2018).

For instance, barriers to the *perceptibility* and/or *understandability* of culture and heritage websites can be erected when little or no attention is paid to:

- the variety of multimedia objects needing text alternatives or captions, as well as good contrast, for visually-impaired users or for noisy, bright or low-bandwidth environments;
- the use of colour or other visual or auditory elements as the only way to convey certain meanings;
- the width and depth of information, often requiring creative and ad-hoc visual layouts, which do not necessarily follow a straightforward organisation for people with various learning or intellectual disabilities, or which do not translate well into sequential and semantically-grouped text to be rendered by screen readers;
- the presence of specialised terminology relating to art, history, and culture, as well as various socio-linguistic registers.

On the other hand, the *operability* of these websites can be seriously compromised if, for example:

- there are short, non-adjustable time limits to book seats in events;
- a pointing device, such as a mouse, is the only means to trigger certain demonstrational features on the website, or to operate dropdown menus and browse and select specific options in those menus;
- introductory and promotional image or text with key information leading, through hyperlinks, to more dense descriptions and instructions are not clearly labelled, as people with certain disabilities (including blindness) or preferences browse websites by using the tab key, among others, or by invoking, via keyboard, a list of hyperlinks or clickable elements;
- no clear headings, landmarks or semantic tags are used to group content, preventing websites to be navigated efficiently.

Finally, culture and heritage websites may be designed without a full realisation that they may be used in different kinds of devices and with specific assistive technologies (such as screen readers, magnifiers or voice input software), thus making them less *robust* than necessary to work appropriately with certain software or hardware needed by people with disabilities or with technical limitations.

2.2 Motivational drivers for localisation students

No doubt, technology- and multimedia-savvy students can find the aforementioned challenges appealing, and it is not difficult to take advantage of them to highlight the

interdisciplinary nature of localisation and its mission to make a product more widely used by all, not only in terms of textual and multimodal features but also of functionality and compliance with various user devices. As argued in prior work, linguistic, cultural and functional accessibility should jointly be presented to students as a quality requirement for present-day and future localisers (Jiménez-Crespo 2013; Rodríguez Vázquez and Torres del Rey 2014; Rodríguez Vázquez 2016).

Apart from the existence of business and technical reasons for making websites accessible, as advocated by the W3C (Rush 2018), there are also legal, policy and ethical reasons that can encourage students to embrace accessibility in their web localisation training. Culture and heritage websites, both publicly and privately owned, can provide sound motivations about those reasons. For example, in several countries, web accessibility is compulsory at certain levels. In the case of Spain (through *Royal Decree 1494/2007, of 12 November, and Law 56/2007, of 28 December, on Measures to Promote the Information Society*), the compulsory nature of accessibility affects all web pages served by the Spanish administrations, those companies dealing with public or private services having received funding from public administrations, as well as "economically relevant" companies (banks, insurance firms, travel agencies, transport companies, utilities, etc.) with over 100 workers and a revenue above EUR 6 million. What is more, discrimination acts in various countries also establish that no one should be discriminated against in their enjoyment of culture and media, following the 2006 United Nations Convention on the Rights of Persons with Disabilities (among other articles, 9.2.g on "access for persons with disabilities to new information and communications technologies and systems, including the Internet," and article 30 on "Participation in cultural life, recreation, leisure and sport").[2]

Another positive effect of including awareness of accessibility issues in localisation classes with culture and heritage websites as one of the main objects of study would be the possibility of collaboration between Translation and History and Art students. History and Art students could help describe and analyse multimodal information on the website that needs to be used to make sure the website is made linguistically, culturally and functionally accessible in localisers' work. Besides the motivation and learning opportunities that this type of activity could provide to both groups of students, having accessible and localised websites by Translation students could be generally beneficial for History and Art students, both in general and for those with disabilities.

Finally, localisation students with disabilities (LSWD) can of course benefit from approaching websites in inclusive and Universal Design (UD) terms. If we do not presume that the overall meaning and interaction possibilities of a web page can be gleaned from a general look at the page, or that it can be operated and navigated by highly selective, precise mouse moves, or that users can always focus their attention or remember things for a long time regardless of text structure, page layout or lexical choice, localisation lecturers would be inclined to select accessible websites for presentations and exercises. On the other hand, LSWD can be regarded as privileged interpreters of overall semiotic meaning (including possible actions or affordances) as

[2] http://www.un.org/disabilities/documents/convention/convoptprot-e.pdf [Last access: 20th February 2019].

they strive to make coherent sense of the meaning and affordances of web pages through complementary access pathways, like screen readers, keyboard navigation or voice input. In this sense, they can also help all students to understand general accessibility and localisation principles, guidelines and techniques, by unfolding and walking through the information or action capabilities that LSWD are allowed access to or cut off from.

3. The common ground of accessibility and localisation

As studies from the TRACCE group[3], among others, show, interventions on cultural events and artefacts to make them more accessible to people with disabilities are a form of intralinguistic, intersemiotic (and, optionally, interlinguistic) translation which, even if constrained and "subordinated" to the source form of communication (Jiménez Hurtado 2010: 27), represent an indispensable access pathway to knowledge and leisure for certain communities of citizens.

The enhanced awareness of the access and interpretive needs of a wider range of users, as well as the multimodal or intersemiotic nature of the process of meaning production and transformation in interactive digital products, are both accurate descriptions for what localisation and localisers should, in our view, fully internalise and be trained for. *User-orientation* and *multimodality* are also pre-conditions for digital accessibility. Functionally diverse people often experience difficulties and frustration in their ability to interact or benefit from the various convergent modes of operation and meaning-making that websites offer. This is a form of discrimination that needs to be fully taken into account by localisers, who, as professional translators, know and have been trained to pay special attention to the reader/user in all modern approaches to translation (communicative, functionalist, discourse analysis, pragmatic, etc. —see, for instance, Munday 2016).

Similarly, Nauert (2007: 5) places Localisation under the sub-discipline of "Multidimensional Translation" by borrowing from Gerzymisch-Arbogast's broad definition of translation as source material to be transferred to another material "irrespective of whether the translated product is in the same (national) language or not, written, spoken or signed, in linear or non-linear form, technology-driven and multimedia-supported".

Torres del Rey (2019) puts forward an inclusive framework for localisation and its teaching (called "ECOS" in Spanish) that combines a semiotic and communicative approach with social (including socio-professional) and object-driven (both technical and related to objects-as-signs) orientations. According to him, localisation is defined to a great extent by "semiotic interdependence between texts and the material product" (or multimodality) in broad terms, i.e. "not only the relationship of non-verbal signs with meaning, but particularly also the relationship of the design of the product, of interactivity, and of its process of communication and use, with meaning". Understanding and being able to analyse the product in multimodal terms is crucial for localisers to "interculturally mediate the communicative and semiotic value and

[3] The TRACCE group, based at the University of Granada, does research on accessible translation and technologies <https://tracce.ugr.es/> [Last access: 20th February 2019].

potential of the product, or, maybe more precisely, of the interaction" of different users (Torres del Rey 2019: 236, 238, 245).

Reliance on interactive multimodality (Carlucci and Seibel 2015: 63) brings the analytical and (re)creative process of localisation very close to accessibility concerns in the various forms of (interlinguistic, intralinguistic and intersemiotic) translation. In such context, alternative forms of meaning-making need to be re-created from the source material by taking into account its whole multimodality, including *space* and the dynamic condition of the text as a multimodal *event* (Soler Gallego 2015: 15; Carlucci & Seibel 2015: 63), as well as its *interaction* with the public/user/visitor and their way of accessing and learning "by experience, touch and feel" (ibid.: 73), which is also part of the object-driven orientation of the ECOS approach.

> If content is—at the same time or in synergetic terms—linguistically, culturally, semantically, pragmatically and technically accessible for source locale users, those synergies must be reconstructed in a different locale, with different expectations and experiences among communities of people with disabilities. It is therefore logical to assume that success in localizing accessible content depends on how that content is transferred and, if necessary, adapted and transformed linguistically, culturally and technically in relation to its surrounding context, and linguistic, cultural, semantic, pragmatic and technical features, and according to target users and use environment. (Torres del Rey & Morado Vázquez 2019: 7-8).

Finally, another important feature of accessibility that resonates with localisation is *interdisciplinary and interprofessional* cooperation, which is also part of the social orientation to the ECOS approach (see above in this section). Audio description as a form of accessibility in cinema, for instance, has long advocated collaboration between authors (film directors) and accessibility-oriented writers (audio describers and captionists), as well as between film-making studies and audio-visual translation studies (Romero-Fresco 2013: 215-218; Luque Colmero 2015: 172). In the same vein, the WCAG 2.1 (Kirkpatrick et al. 2018) involve diverse concerns that are best approached from multi-disciplinary integration (see, for instance, the multidimensional tag categories of WCAG 2.1 guidelines and success criteria, in Figure 1), as the leading principle for accessibility is helping users make sense of what they should, at the same time, be able to perceive, operate and use in their devices.

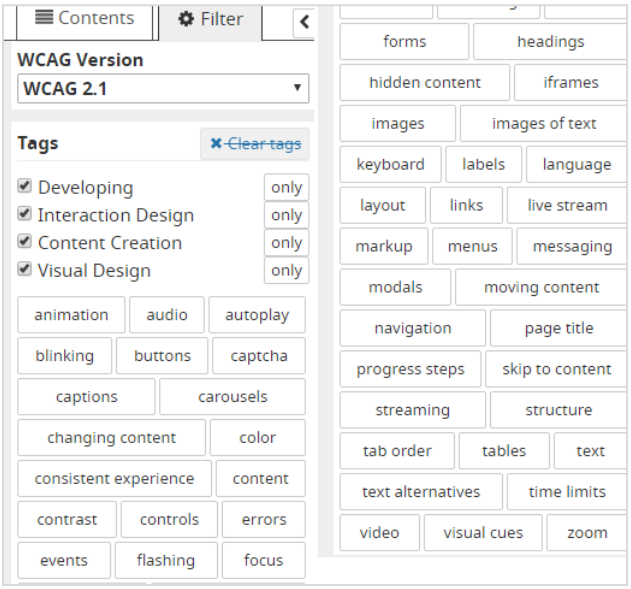

Figure 1. Filter options when consulting guidelines and success criteria of WCAG 2.1[4]

Translation is interdisciplinary, as it requires the intervention of different linguistic disciplines (like terminology), other human perspectives such as cultural studies, extra-linguistic knowledge relating to the content to be translated, instrumental knowledge (information research, Computer Aided Translation), and so on. In localisation and other types or multidimensional interlinguistic, intercultural exchanges like screen translation, knowledge of the language and substance of the medium (audio visual, technological, theatrical, etc.) is essential. What mediated or constrained types of translation bring to the fore for localisation is the importance of collaboration between all professionals in charge of production and reproduction, both at the design phase (so as to make provisions for future localisation or translation) and during the transformational phase for a new culture or locale. A valuable resource is the Media Accessibility Platform (MAP), which displays different technological and multidimensional modalities where accessibility is (or should be) a key aspect (https://mapaccess.uab.cat).

Intercommunication of different concerns by the professionals and their medium, resources, etc. can not only help the process but kick-start a change of mindset for future collaboration. In this paper, we put forward how such change can be brought about among translation students by introducing an accessibility-mediated pedagogical approach for training future web localisation professionals.

[4] Copyright © [Updated 29 Jan 2019. Version 3.0.0] World Wide Web Consortium, (MIT, ERCIM, Keio, Beihang) http://www.w3.org/Consortium/Legal/2015/doc-license https://www.w3.org/WAI/WCAG21/quickref/?currentsidebar=%23col_customize [Last access: 20th February 2019].

4. Accessibility as a model for web localisation training

Including localisation into the translation curriculum can be an extremely challenging task due to the specific constraints it poses, such as the heterogeneous profile of students or the level of specialisation that trainers should have (Baños Piñeiro & Toto 2015). Yet, nowadays, academic institutions are keen on making the effort, given that "localization can be a source of prestige and modernity for the [Translation Studies] discipline", and it can equally "provide students with insights into many important concepts and techniques that are useful for all kinds of translation" (Torres-del-Rey 2019: 229, 255). Academic institutions are also increasingly aware of the localisation demand that the industry and the market have spurred over the last decade. As a result, many of them currently offer learning programs focusing on the processes, tools and development of strategies involved in localisation.

4.1 Current approaches to the teaching of web localisation

Since the launch of the eColore project (2002-2009)[5], one of the first online translation course initiatives focused on localisation training, a wide range of pedagogical practices have emerged. Localisation training may now come under the form of full stand-alone courses or specific modules within general translation technology or specialised translation courses, either at undergraduate or postgraduate level. The total amount of teaching and learning hours or modules assigned to localisation-related content may, in turn, be divided into different blocks, according to the type of localisable product being studied (e.g. videogames, mobile apps, desktop software, images, web content).

Throughout the years, instructors, practitioners and scholars have defined and applied different didactic approaches to localisation. For instance, some authors have focused on a specific type of localisation, such as the pedagogical proposal made by Bernal-Merino (2015) for "multimedia interactive entertainment software localization" —in short, videogame localisation. For this kind of software, O'Hagan & Mangiron (2013) advocated a socio-constructivist scenario, a shift from knowledge transfer towards an instructor-scaffolded process of knowledge construction by students themselves, from teacher-oriented approaches to methodologies focused on the learner and on expertise acquisition. This fosters interaction with technologies and experiencing the various roles involved in professional translation, such as project managers, localisation engineers, testers, terminologists, reviewers, etc.

Other authors, such as Jimenez-Crespo (2013), have supported a more functionalist approach in the description of localisation from a pedagogical perspective. His proposal, targeting web localisation in particular, focuses on a socio-cognitive textual approach, localisation-related profiles (i.e. localisation expert, manager, engineer), and different localisation competences and sub-competences associated to each of them.

However, to the best of our knowledge, no teaching methodology has so far been put forward taking as the departure point Human-Computer Interaction (HCI) fundamentals, such as Universal Design and web accessibility.

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[5] https://www.issco.unige.ch/en/research/projects/ecolore/localisation/ [Last access: 20th February 2019].

4.2 An accessibility-mediated framework for web localisation training

As with localisation in translator training, accessibility has struggled to gain its place within Information and Communication Technologies (ICTs) curricula, probably because, as an academic topic, it is often categorized as a sub-group of HCI, and sometimes of web development; hence its lack of visibility (Lewthwaite & Sloan 2016). In addition, prior work indicates that, as in the case of localisation, different approaches have been adopted over time to include accessibility in the curriculum, ranging from isolated modules of a larger course or stand-alone courses to a more holistic approach, where accessibility topics would be gradually integrated throughout the course (Putnam et al. 2016).

Accessibility, as a general field of knowledge, has made its (sometimes shy) appearance on Translation Studies only over the last decade, mainly as a part of audio visual or technical translation courses, with a strong focus on audio description, dubbing, re-speaking or subtitling, to mention but a few examples. Nevertheless, it has rarely been discussed in the web localisation classroom, at least until very recently. Following the localisation competence proposal put forward by Torres-del-Rey & Rodríguez Vázquez (2016), where localisation is understood at the intersection of translation, HCI and advanced computer literacy and engineering competences and components, and taking the aforementioned ECOS approach as the main pedagogical foundation, web accessibility has progressively been introduced in the localisation syllabus of several universities in Spain, Switzerland and Ireland since 2013. The main goal so far has been to increase awareness among localisation trainees through isolated seminars or modules (from 2 to 6 hours) aiming at reviewing the WCAG, their shared interests with internationalisation and localisation best practices, and making students familiar with accessibility evaluation software and assistive technologies through demos by the lecturer or short in-class exercises.

Exploratory studies conducted by members of the Cod.eX Research Group[6] have shown that, although students' feedback has been generally positive, a more comprehensive, integrated solution must be pursued in the long term (Rodríguez Vázquez 2014). Concretely, a self-efficacy study carried out by Rodríguez Vázquez & O'Brien (2018) indicated that, while this teaching approach can be considered effective (i.e. students judged that they could conduct certain accessibility-related tasks in the future), students' level of confidence in being able to actually embrace accessibility in a successful manner were not always high enough. The latter suggests that there is still room for improvement in terms of the pedagogical approach followed.

As described by Lewthwaite & Sloan (2016), "a thorough understanding of accessibility covers an array of topics that engage with the complexity of accessibility as a socio-technical challenge, and the knowledge and skills to create digital resources that are optimally accessible". For localisation students, it is of utmost importance to consider the diversity of users that may interact with the multilingual product they are

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[6] Cod.eX is an inter-university research group based both at the University of Salamanca, Spain, and the University of Geneva, Switzerland, specialised in localisation standards and multilingual web accessibility, conducting research on Translation-Oriented Localisation Studies (TOLS). http://diarium.usal.es/codex/en/ [Last access: 20th February 2019].

creating, and it is in that socio-technical challenge that ALMA relies upon. ALMA — which, in Spanish, stands for "Approaching Accessibility by Means of Accessibility", or "Accessibility-Mediated Localisation Learning" in its educational branch, is a localisation research and teaching approach that advocates an understanding of the digital product and its multidimensional nature through what we call "an accessibility lens". In other words, we contend that localisation trainees can acquire localisation-related knowledge and know-how by deconstructing the digital product through the analysis of its accessibility features (or their absence), and by experiencing it through the different input and output modes used by people with disabilities.

By integrating accessibility not only as part of the syllabus content but also as a teaching and learning strategy, we expect that students will more easily implement accessibility best practices and better understand the societal impact of doing so. Such approach is in line with what Shinohara et al. (2018) have coined as Design for Social Accessibility (DSA), an approach that analyses how designers address accessible design by focusing on social and functional factors, and jointly working with disabled and non-disabled users. Those scholars aim for these professionals to create "socially usable, accessible and acceptable" objects, where (i) *socially usable* refers to "how usable something is within a social context as a social object, not a functional one"; (ii) *socially accessible* means that the object is not only socially usable but also fulfils a functional objective; and (iii) *socially acceptable* denotes an "object, person, or circumstance that is considered to be within the social norms of a given community" (ibid.: 150).

Accordingly, if we take web localisation as an example, students would reflect "on multiple perspectives (disabled, nondisabled, social, functional)" (ibid.: 158) in order to learn which elements need to be localised (linguistically, culturally, technically) by trying to understand whether a given website can be usable by people with the largest possible range of abilities, operating within the widest possible range of situations, which in turn represent some of the pillars of Universal Design (Lawton Henry & Abou-Zahra 2014).

Interestingly enough, a meta-analysis of literature on the use of Universal Design for Learning (UDL) suggests "that UDL is an effective teaching methodology for improving the learning process for all students" (Capp 2017: 791), in all three principles of UDL.

> The philosophy of UDL is based on the idea that there are multiple ways of representing knowledge (principle one), multiple ways students can demonstrate their understanding (principle two), and multiple ways of engaging students (principle three). These principles are underpinned by 9 guidelines and 33 checkpoints (ibid.: 792).

Different strategies can be used in the teaching of localisation to foster the three aforementioned principles of UDL. In fact, it is our belief that web accessibility as a theme —a series of principles, guidelines, success criteria and techniques— can operate on all three UDL principles for localisation students, in the various forms just suggested. More specifically:

- *Principle 1 (multiple ways of representing knowledge)*: web content can be viewed not only as a matter of visual text and multimodal signs, but as a network of

signifiers and meanings that can be and must be apprehended through complementary and alternative means of expression. At the same time, in order to make sure that all students can access the teaching and demonstration materials, the lecturer would be enriching and annotating the explanation of relevant web aspects for localisation. The challenge would, of course, be to strategically scaffold knowledge and the possibility of accessing complementary representations without just giving predefined answers and solutions. One strategy would be to provide explanatory material on video format with subtitles for the deaf and hard of hearing, which would, in turn, focus students' attention on the need to include subtitles on videos on websites.

- *Principle 2 (multiple forms of expressing understanding)*: actively allowing students with disabilities to express their understanding (or lack thereof) of websites via recordings, oral discussions or other technologies and modes can encourage general students to join in and test those modes and methodologies; it might also inspire them to check for the accessibility of localised and to-be-localised websites in various ways and with alternative assessment methods, including automatic and user testing. For the latter, the lecturer could propose to either follow test scenarios based on predefined tasks or apply customised checklists or questionnaires aimed at further exploring other accessibility-related aspects such as the website's communicative efficiency, like the one put forward by López Rodríguez et al. (2009). Explanations on the meaning and affordances of websites could also be provided in the form of flowcharts by students, and, crucially, of accessibility test results, with different test checkers offering varied ways of showing issues and compliance. For example, Figure 2 shows a screenshot of the test results of the Royal Academy of Arts home page after running an accessibility check with WAVE, an automated evaluation tool. Instead of inspecting the source code of the page, students could be asked to analyse the issues detected by the tool in order to understand the product that they need to localise. As can be seen from the image, different elements in the web page are tagged with their corresponding semantic mark-up and are sometimes accompanied by clear explanations of their functionality, which could be extremely helpful during the learning process. Similarly, a more in-depth study of the tool's evaluation report could assist students with the identification of localisable elements deeply embedded in the web page's backend which are difficult to detect without an advanced knowledge of web technologies.

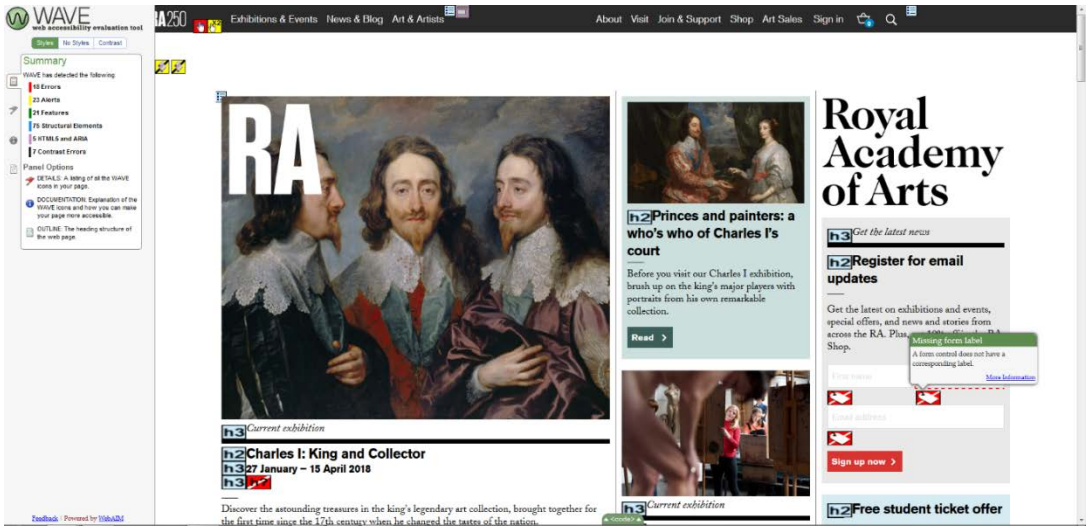

Figure 2. Display of accessibility-related mark-up after running a check with WAVE.[7]

- *Principle 3 (multiple ways of engaging students)*: this tends to be seen as a derivative outcome of principles 1 and 2. "By recognising that no single option works for all students, teachers provide students with a range of engaging learning materials" (Capp 2017: 793). This is in line with what we have previously discussed in the present chapter about different ways of collaboration between interdisciplinary students, including social frameworks and alternative ways of analysing web content that can, in our view, be deeply engaging for them. For instance, culture and heritage websites could be used in an exercise for students to inspect their macro (file and folder) and micro (code and text) structures (Torres del Rey 2019: 249-250) using different techniques. As mentioned above, these websites tend to be visually appealing and present a considerable amount of information. The size of the elements depicted in the web page (font, images) shown in Figure 2 may provide students with a rough idea of how content has been structured and is meant to be used (and localised). By turning off the CSS in the browser or by switching off the screen and navigating this page through keyboard and speech synthesis software only, students could analyse the web macrostructure by inspecting the menus, links, headings and forms available. At the same time, these two inspection modalities would help them understand whether the backend and frontend of the web page are both semantically and navigationally meaningful.

5. Concluding words and outlook

In this chapter, we have showcased the multidisciplinary competence that localisation trainees can acquire if accessibility is introduced in their curriculum, not only as an isolated topic to be discussed in class, but as a means to understand the products and tasks that they might be asked to deal with in the future. By using culture and heritage

[7] Home page of The Royal Academy of Arts https://www.royalacademy.org.uk/, accessed and analysed on 31st January 2018. WAVE http://wave.webaim.org/ has been developed and made available as a free community service by WebAIM since 2001.

websites as an example, we have suggested some ideas of how localisation instructors could rely on web accessibility-related guidance and software to make students aware of the different components of digital software.

In doing so, we have also highlighted the importance of letting students know that, in the end, accessibility is essentially mediational, as content can only be accessible, usable and acceptable if not only functionally diverse users but also the different kinds of devices they use are taken into account when re-creating the product in localisation. In order to be successful, code (development), interaction design, visual language as well as verbal language, in written and oral form, need to fit together and be made to "talk to each other" to create a proper digital multilingual experience.

ALMA is an innovative pedagogical approach that emerged from the realisation of the functional, semiotic, technical and social dimensions shared by the fields of accessibility and localisation. Additionally, it responds to the call for action made from experts in the accessibility field, who encourage scholars and practitioners from disciplines other than Computer Science to explore other forms of inclusive education and education for inclusion (Lewthwaite & Sloan 2016).

While still in its initial stages, ALMA holds, in our opinion, the potential to foster a change in the localisation training landscape. We are currently expanding its theoretical framework and, in the short term, we plan to complement it with a didactic guide with examples illustrating the approach, which could be then used in the localisation classroom. Our goal is to complete this first stage before the next academic year 2020-2021, when we expect to put the aforementioned pedagogical proposal in practice in three universities in Spain and Switzerland.

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