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The #smARTradio® project and the Talking Map® of Aquileia (Italy): How to make a UNESCO archaeological site accessible to all

Abstract

#smARTradio® is a project by the Radio Magica Foundation in collaboration with Ca' Foscari University of Venice and the University of Udine, Italy. The project aims to disseminate and promote knowledge of the Italian cultural heritage to a targeted audience of families with children — including those with visual, hearing and/or intellectual disabilities — through audio and video stories penned by renowned Italian authors. In this paper, we will focus on the UNESCO archaeological site of Aquileia in north-eastern Italy to show how the use of a Talking Map® can enable access to and ease the understanding of historical and archaeological contents.

1   The #smARTradio® project

The #smARTradio® project (Radio Magica Foundation www.radiomagica.org/smartradio) was launched in 2016 and was inspired by the *History of the world in 100 objects* by British Museum director Neil McGregor (2010). The project complies with the Faro convention principles of 2005 (Council of Europe 2020), which were ratified by Italy in September 2020. These principles were developed by the Council of Europe to recognize the existence of Europe's generations-long cultural heritage. They emphasize aspects of heritage which deserve to be preserved, recognized, and shared, as they relate to human rights and democracy, and promote a wider understanding of heritage in relationship to communities and societies (Interpret Europe 2017). According to the Faro convention, citizens of each nation must recognize this heritage as their own, without arrogance but with legitimate pride, so that they can protect and valorise it. In line with such principles, the project's methodology put in first place a participatory approach, involving children, teachers, and families in the choice of the objects of the cultural heritage to be promoted. As Navracsics (2016) maintains, "bringing citizens closer to their heritage means to bring them closer to one another, and this is a fundamental step into a more inclusive society".

The project, which is funded by the Friuli Venezia Giulia Region, aims to disseminate and promote knowledge of Italian cultural heritage through storytelling. The use of storytelling offers an accessible channel for education and learning because it does not only activate rational, descriptive, and analytical thinking, but it also uses emotions and metaphors to stimulate imagination. In fact, high-quality storytelling is able to activate the so-called "story-listening trance experience" (Sturm 2000), a state of mind in which the listener experiences the same type of alterations of consciousness (trance) that occurs in the case of hypnosis; the listener perceives the story as real and forgets the surrounding world. Trance experience can make the story memorable and enjoyable for any reader/listener, including people with linguistic or cognitive barriers to comprehension (Matos et al. 2015).

At the moment, the project platform (www.radiomagica.org/smartradio) hosts over 120 stories and 40 fun facts dedicated to tangible and intangible objects of the Italian cultural heritage. All texts were penned by renowned Italian authors and aim to

reduce communication barriers through (1) engaging content (use of storytelling) that appeals to a wide audience; (2) simplified writing (Plain Language) (Agorni 2016); (3) a variety of digital formats (i.e. audio, video, video in Italian Sign Language); (4) texts in multiple languages; (5) paper maps with a QR code taking the user to an interactive web-based map which, in turn, gives access to on-line audio and video stories.

The project targets families with children, including those ones with visual, hearing and/or cognitive disabilities. Nowadays, family tourism is one of the most important sectors of the tourism industry around the world, accounting for about 30% of the leisure travel market (Minnaert 2018). Recent market analyses confirm that family tourism is driven by the increasing importance placed on promoting family togetherness, keeping family bonds alive and creating family memoirs. For this reason, family travels are predicted to grow at a faster rate than any other leisure travel (Schänzel and Yeoman 2015). Therefore, our project sets out to respond to a growing demand in the travel industry.

Since its inception, the #smARTradio® project has proven to be a very successful tool for the dissemination of the national cultural heritage not only for the tourism industry, but also for the primary and lower secondary education channel (cf. Section 3). Through ad-hoc interactive workshops with Italian authors and heritage experts, children and young persons of lower grade schools of Friuli Venezia Giulia and other regions across Italy are given the opportunity to suggest and explore objects of their own cultural and natural heritage, which they find particularly interesting or fascinating, and have thus the chance to contribute to phase 1 and 2 of the story production process (cf. Figure 1). By doing so, they become project ambassadors.

Figure 1. The #smARTradio® methodology

Following these workshops, well-known authors, illustrators, actors and video makers are engaged by the Radio Magica team to produce short fictional texts (phase 3 and 4), which are then converted into audio and video stories (phase 5), to disseminate knowledge of select objects to the wider public (phase 6). Dissemination is approached through multiple channels, i.e. web and FM radios, museums and museum educational services, online newspapers and magazines, schools, tourist offices, libraries, theatres, literary festivals and live storytelling events. Furthermore, #smARTradio is a touring project: once the production of texts and relevant audios and videos for any given geographical area has been completed, new lower grade schools based elsewhere are invited to experience the project first-hand and be the propeller of a new cycle of stories.

2   The Talking Map® of Aquileia

One year after the project's launch, a user experience survey conducted in museums, tourist offices, schools and municipalities highlighted the need for a tangible product associated with the stories on the platform. A new product called Talking Map® was therefore designed to meet this need. Each paper Map consists of a front and a back and is made in collaboration with a professional illustrator to ensure a graphically attractive and accessible design product. On the front, the reference area (e.g. a region, a city, a museum) is drawn together with the cultural heritage objects narrated in the corresponding audio and video stories. On the Map's back, there are learning games and quizzes linked to the stories and to the cultural heritage objects to engage and entertain the younger generations. Moreover, a QR code allows a quick access to the digital version of the Map, which is accessible from the #smARTradio® platform. Each Map is browsable from any mobile device through a dedicated web app developed by the University of Udine (Corbatto et al. 2019).

In this paper, we are presenting the Talking Map® dedicated to the UNESCO site of Aquileia in north-eastern Italy (cf. Figure 2). It is an illustrated map of the town of Aquileia, in which all monuments and buildings of historical, archaeological and artistic importance, from the Roman age to the first half of 1900, are shown. Moreover, there are decorative elements, which are meant to capture children's and adults' attention, and make the Map as fascinating as an illustration or photograph, rather than a simple topographic tool. For instance, a nineteenth-century train is represented to indicate the now disused railway, which connected Aquileia with the hinterland. The east side of the map is decorated with plants, flowers and animals such as deer, a turtle, a hare, and a rooster to indicate a rural area, but also to recall some of Aquileia's mosaic subjects. At the top of the map, two big seagulls recall the proximity of the sea.
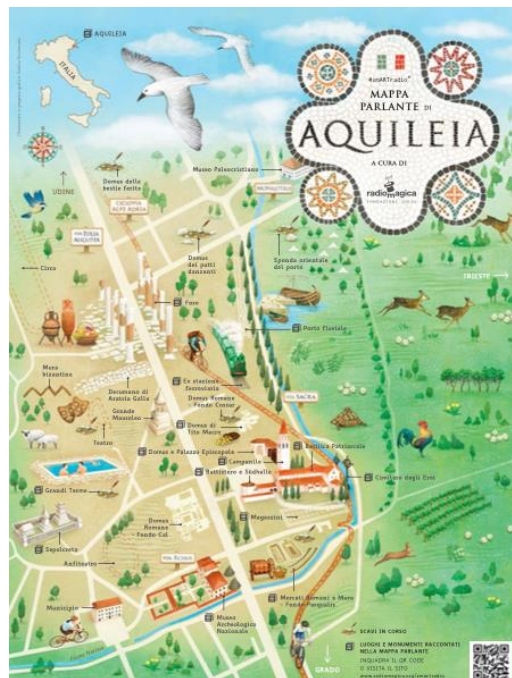

Figure 2. The Talking Map® of Aquileia

On its back, the paper Map lists the titles of 15 stories and 25 so-called fun facts. Fun facts are short texts that answer specific questions, such as "Do you know why Aquileia is famous in history?" (Radio Magica Foundation 2020a), "Do you know who Jupiter Ammon and Medusa were?" (Radio Magica Foundation 2020b), and "Do you know the secret of the bell tower?" (Radio Magica Foundation 2020c). Both the stories and the fun facts, which can be downloaded in *easy-to-read* font (Biancoenero edizioni 2014), have been converted into multimedia formats including 35 audios, nine videos, and two videos with Italian sign language, and can therefore be accessed through the web app.

Involving a target of children, families and people with disabilities requires agile, fun, and family-friendly tools, which are able to catalyze attention while, at the same time, ensuring accessibility. With this Map, storytelling plays a valuable role in every single moment of the site visit. In fact, before and after the visit, it is possible to navigate the Map through the web app, while during the visit, anyone with a cell phone can use the QR code to access the web app and simply enjoy listening to the stories or fun facts and watching the videos on site. In this way, families are encouraged to visit places of historical and cultural interest, while children are stimulated to enjoy the experience of discovery.

2.1   Text accessibility

In 2009, the Manifesto for the promotion of Accessible Tourism (Ministero del Turismo 2009, para. 6) underlined the urgency of "positive communication that [...] must be spread in formats that are accessible to everyone and through all the information and promotional channels of the world of tourism". The #smARTradio® project and the Talking Maps® were born with the aim of reaching out to a large and heterogenous target group, including children with disabilities. In order to give an extended audience the chance to enjoy the beauty of a UNESCO site, it was important to invest on communication strategies and create accessible but, at the same time, appealing texts in multiple formats (i.e. audio, video, video with Italian sign language).

As already stated before, the Map texts are intended not just to convey simple basic information regarding a selected object, which would most likely be unappealing to many visitors; there is rather a mix of informational segments — presented as fun or nice-to-know facts — as well as fictional stories involving a major monument, object, or site of the cultural heritage. Fun facts may not necessarily capture the listener's attention by hooking him/her on an emotional level, but they do have two advantages: they arouse interest with curious questions, and they present shorter texts than stories, facilitating therefore comprehension for shorter attention spans. The following fun fact, for example, answers the question "Do you know why a rooster is fighting a turtle?"

> One of the most famous mosaics in Aquileia shows the fight between a rooster and a turtle. It symbolizes the battle between good and evil. The rooster, the creature which announces the beginning of each new day with a cock-a-doodle-doo, here represents the light and all that is good.
> In contrast, the turtle, which is shown retreating into its shell, represents darkness and thus evil. In fact, the word 'turtle' comes via old French from an Ancient Greek word which meant "house of Tartarus", or the dwelling of the wicked.
> In Aquileia, archaeologists have discovered not just one, but two mosaics portraying this battle: one on the floor of the basilica, near the entrance, while the other is in the crypt. These images weren't just chosen by chance: their purpose was to tell stories, which would teach people how to become good Christians and so become closer to God. (Radio Magica Foundation 2020d)

The storytelling methodology, on the other hand, allows to create entertaining and captivating texts at the same time. For instance, in order to explain to a young audience the importance of the Roman thermal baths in Aquileia, the Map gives access to a video story titled "Murder at the Roman Baths" (Radio Magica Foundation 2020e). After an introductory paragraph, which describes the protagonists, the story continues as follows:

> The two criminals had travelled in from the countryside. When they entered the bath house, they couldn't believe their eyes: they had never seen such luxury. The whole place had been designed to strengthen the body and cheer the spirit: the rooms were decorated with colourful mosaics, there were gyms to do exercise and a number of swimming pools full of hot water, warm water and cold. There was even a library!" "This place is huge, brother," Tarquinius exclaimed, his mouth gaping open like a fish on a hook. "Of course, it is. Didn't you know that Emperor Constantine had these baths built in Aquileia to be as big as the ones in Rome?" replied Cornelius. "Come on, let's go and warm up in the *calidarium*," he said pointing to the big pool full of hot water […]. (Radio Magica Foundation 2020e)

Since we believed that the creation of the texts was the most important step that would determine the success of the whole Map project, heuristics for a simplified Italian were written to guide the authors in their writing process (Rocco et al. 2018). Our goal was to create texts that would not be oversimplified, so that they could still appeal to the general public.

Due to the COVID-19 emergency, it was not possible to collect significant results from a series of accessibility tests that we had planned to run for both the paper and digital Map in 2020. However, it was still possible to carry out some work on text accessibility. The Italian version of "Murder at the Roman Baths" (Radio Magica Foundation 2020e) was used to run a quantitative text analysis. The first tool used was Gulpease (Lucisano and Piemontese 1988), a readability index that is calibrated for Italian language content. The index works on two linguistic variables: the length of the word (in characters) and the length of the sentence (in words). This assessment method shows some limitations, in that a word length does not necessarily coincide with its difficulty; the same applies to sentence length, since we assume that longer sentences are always grammatically more complex, but this is not necessarily the case. The Gulpease scale of readability values goes from 0 (minimum readability) to 100 (maximum readability). The readability value obtained is measured with respect to three levels of schooling: elementary (80 and up), middle (60 and up) and high school (40 and up). The readability value we obtained for "Murder at the Roman Baths" (Radio Magica Foundation 2020e) was 69, which suggested that the text might be difficult for elementary school readers, easy for middle school readers, and very easy for high school readers (cf. Figure 3).
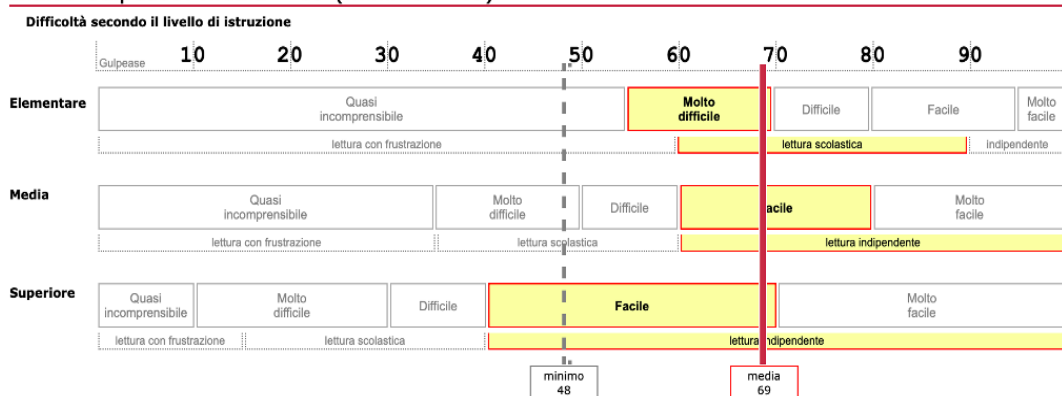
Figure 3. Gulpease readability value for "Murder at the Roman Baths" (Radio Magica Foundation 2020e)

The Gulpease value indicated, therefore, that a further simplification of the text in question might be necessary. The READ-IT readability assessment tool (demo version; Dell'Orletta et al. 2011) confirmed that the text might pose comprehension barriers, particularly to lower grade school readers. As can be observed in Figure 4, the tool measured a global level of text difficulty of 83.5%, suggesting that the text might not achieve maximally enhanced comprehensibility.

indice di leggibilità	livello di difficoltà	
READ-IT Base	5,8%	
READ-IT Lessicale	89,3%	
READ-IT Sintattico	48,9%	
READ-IT Globale	83,5%	

Figure 4. READ-IT readability indexes for "Murder at the Roman Baths" (Radio Magica Foundation 2020e)

It is also worth mentioning that "Murder at the Roman Baths" (Radio Magica Foundation 2020e) scored a very high percentage on the READ-IT lexical assessment (i.e. 89.3%), thus hinting that the text has a high probability to pose lexical barriers to less experienced target readers. A type/token ratio (TTR) of 0.700 further confirmed that the lexical variety in this text is above average levels as compared to the average TTR obtained from the READ-IT reference corpora.

Following this readability assessment, results might suggest that an intervention to further simplify the text should be taken into consideration. However, excessive simplification, or maximally enhanced comprehensibility, might result in a non-appealing or even stigmatising text for the larger audience (Maaß 2020). The challenge for us is thus to find the right balance between text accessibility and text acceptability for the ultimate success of the project (cf. Maaß 2020). More reception studies are thus urgently needed.

3   Final remarks

The #smARTradio® project and the Talking Maps® have been widely acknowledged as offering a bottom-up inclusive approach to art and culture dissemination in both

educational and tourism settings. In 2018, the project was included in the Italian Agenda of the European Year of Cultural Heritage by the Italian Ministry of Cultural Heritage and Activities (MiBAC) and, in 2019, the project won the Tullio De Mauro award at the Global Junior Challenge in Campidoglio (Rome) with the following motivation: "A project with the aim of telling the Italian cultural heritage in a smart way to bring families, young people and non-experts to the world of art. A portal inspired by the British programs of the BBC and the British Museum to bring the History of Art to everyone". This recognition encourages us to continue our efforts to provide innovative solutions, which might result informative and entertaining at the same time, involving both the educational and the tourist fields.

The COVID-19 emergency has rapidly transformed the way cultural activities are perceived by tourists, schools, and general end users. Although this outbreak may be temporary, we should keep in mind that this world emergency has for sure accelerated the move towards digital engagement. It is therefore essential to keep investigating how to create appropriate contents, which could be enjoyed by large audiences.

Acknowledgments

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