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Research Paper

Improving accessibility to cultural heritage for people with Intellectual Disabilities: A tool for observing the obstacles and facilitators for the access to knowledge

Améliorer l'accessibilité au patrimoine culturel pour les personnes ayant une déficience intellectuelle : un outil d'observation des obstacles et des facilitateurs de l'accès au savoir

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ABSTRACT

The Convention on the rights of people with disabilities (UN, 2006) stated that participation in social life is a fundamental human right emphasizing the importance to rethink the concept of accessibility in cultural spaces. Cultural heritage sites, as well as museums and galleries, express an increasing interest in adopting strategies to improve accessibility and participation for all. We used an Inclusive Research paradigm, actively involving a group of individuals with intellectual disabilities (ID) with the goal to investigate participants' perceptions and ideas of obstacles/facilitators to knowledge accessibility. A particular focus has been given to readability and comprehensibility of the existing textual resources in a cultural heritage site. The inclusion of people with ID as informants during the entire research process allowed not only to assess their point of

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view, but also to realize a questionnaire using the easy-to-read criteria. The main variables assessed through the questionnaire are: (a) Perception and Physical Interaction with content resources, (b) Language and symbols, (c) Content comprehension, (d) Engagement with knowledge. We argue that the proposed questionnaire may be useful to inform the process of creating and transforming learning environments adopting an audience-centered dialogue. Enhancing the contribution of special pedagogy in this innovative research field means improving our understanding of people's needs and the complexity of potential outcomes, from an inclusive perspective.

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R É S U M É

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La Convention sur les droits des personnes handicapées (ONU, 2006) a déclaré que la participation à la vie sociale est un droit fondamental de l'homme, soulignant l'importance de repenser le concept d'accessibilité dans les espaces culturels. Les sites du patrimoine culturel, ainsi que les musées et les galeries, expriment un intérêt majeur pour l'adoption de stratégies visant à améliorer l'accessibilité et la participation de tous. Nous avons utilisé un paradigme de recherche inclusive, impliquant activement un groupe d'individus souffrant de handicaps intellectuels (DI) dans le but d'étudier les perceptions et les idées des participants sur les obstacles/facilitateurs de l'accessibilité des connaissances. Une attention particulière a été accordée à la lisibilité et à la compréhension des ressources textuelles existantes dans un site du patrimoine culturel. L'inclusion de personnes souffrant d'une DI comme informateurs tout au long du processus de recherche a permis non seulement d'évaluer leur point de vue, mais aussi de réaliser un questionnaire en utilisant des critères faciles à lire. Les principales variables évaluées par le biais du questionnaire sont les suivantes : (a) Perception et interaction physique avec les ressources de contenu, (b) Langage et symboles, (c) Compréhension du contenu, (d) Engagement avec les connaissances. Nous soutenons que le questionnaire proposé peut être utile pour informer le processus de création et de transformation des environnements d'apprentissage en adoptant un dialogue centré sur le public. Renforcer la contribution de la pédagogie spéciale dans ce domaine de recherche innovant signifie améliorer notre compréhension des besoins des personnes et de la complexité des résultats potentiels, dans une perspective d'inclusion.

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1. Introduction

In the last few years, a growing interest in understanding how to promote knowledge accessibility for people with intellectual disabilities (ID) has been fueled by increased legislative priorities and societal expectations. The Convention of the United Nations on the rights of people with disabilities (UN, 2006) has now stated that participation in social life is a fundamental human right, placing great emphasis on the principle of cultural accessibility as a key factor in its achievement. Article 30, which refers to Participation in cultural life, recreation, leisure and sport cites: States Parties recognize the

right of people with disabilities to take part on an equal basis with others in cultural life. . . , so they have a right to enjoy access to places for cultural performances or services, such as theatres, museums, cinemas, libraries and tourism services, and, as far as possible, enjoy access to monuments and sites of national cultural importance. The UN Convention, referring to the International Classification of Functioning, Disability and Health (ICF; WHO, 2001) model, pays attention to the individual characteristics of people with disabilities when interacting with possible environmental barriers that may prevent their full and effective participation to social and cultural life.

The current awareness on the rights of people with disabilities to participate in social and cultural life emphasizes the need to rethink the concept of accessibility. Previous studies have mostly focused on investigating what factors should be considered in building accessible environments for people with motor and sensory impairments (Argyropoulos & Kanari, 2015; Castrodale & Crooks, 2010; Gray, Gould, & Bickenbach, 2003; Marie Lid & Solvang, 2016; Parkin & Smithies, 2012). However, the current focus on the participation for all highlights the importance of reconsidering the concept of accessibility and to extend it to all its dimensions (Argyropoulos & Kanari, 2015; Hetherington, 2000; McGinnis, 1999). Accessibility to cultural knowledge depends on the complex interplay between a specific person interacting with particular environmental characteristics. It can be made up of many complex factors, which, depending on their degree, significantly influences the possibility of benefiting from products, environments and services in a significant way (Aquario, Pais, & Ghedin, 2017). Such complexity is particularly evident in our current society, increasingly characterized by linguistic, social and cultural heterogeneity (Savia, 2016).

In recent years, the importance of Universal Design for Learning (UDL; CAST, 2011), originally born in the fields of architecture and engineering, has been increasingly recognized in the educational field (Mitchell, 2014). Evidence has been collected to analyze how UDL principles can be applied to the educational system for creating flexible learning methods, materials, and assessments (Aquario et al., 2017; Meyer, Rose & Gordon, 2014; Rose & Meyer, 2002; Glass, Meyer, & Rose, 2013). The UDL approach starts from the idea that variability in learning is not an exception, it is the rule. When learning environments are designed, variability should be assumed as a crucial aspect, so that the design could meet the needs of as many learners as possible (Rappolt-Schlichtmann, Daley, & Rose, 2012). The flexibility in adapting learning environments should be obtained by providing multiple means of representation and expression, and by promoting different modalities of engagement in learning (Rose & Meyer, 2002).

Both formal and informal learning environments, such as cultural heritage sites, museums and galleries, have a special role to play in sparking participation in cultural life, as well as in promoting social cohesion and inclusion (Rappolt-Schlichtmann & Daley, 2013; Black, 2005). Curators express an increasing interest in adopting strategies able to improve accessibility considering its pedagogical, cultural and social dimensions (Hayhoe, 2018; Austin et al., 2018; Sandell, Dodd, & Garland-Thomson, 2010).

Recent evidences in disability research highlight the importance of including the voice of individuals with ID (Correia, Seabra-Santos, Campos Pinto, & Brown, 2017). Giving voice to people with disabilities means recognizing the knowledge they are able to bring to research, exploring the different ways in which activism and the advocacy of rights for disability are lived and practiced. The importance of adopting a participatory approach is quite relevant when we talk about accessibility to textual information in cultural heritage sites. The “European standard for easy-to-read” guidelines (see <http://www.easy-to-read.eu>) are often used for simplifying digital and analogical contents in order to improve textual accessibility. However, the design or selection of simplified texts is not a straightforward issue and, as guideline designers admit, empirical research is needed to investigate the process of comprehensibility in its complexity. This issue is especially relevant in the case of readers with ID who should be directly involved in the investigation process (Nomura et al., 2010; Van der Geest & Velleman, 2014). Knowing their point of view might enable to reach a full comprehension of difficulties and facilitators in accessing textual contents and then to create different opportunities for presenting contents in an accessible way.

Given these premises, the main goal of the present paper was to investigate accessibility to knowledge for people with ID in a cultural heritage site. A particular focus has been given to readability and comprehensibility of the existing textual resources. By using an Inclusive Research paradigm (McEvoy

Table 1

Participant's characteristics. The table shows participants' characteristics in terms of age, sex, diagnosis, level of education. Reading and Comprehension capacities were obtained through the administration of the standardized MT Reading Test (Cornoldi & Colpo, 1995). In particular, the first grade level (final test) was administered to each participant.

Participant	Age	Sex	Diagnosis	Level of education	MT reading	MT comprehension
G.	48	M	Severe oligophrenia with reduced motor mobility	Middle school	Adequate	Medium
S.	36	F	Spastic cerebropathy with cerebellar ataxia and hemiparesis	Middle school	Adequate	Medium
M.	48	M	Infantile cerebropathy with intellectual deficit and psychotic disorders	Middle school	Adequate	Low
S.	56	M	Oligophrenia in outcomes of encephalopathy, hypoacusis and visus deficit	Middle school	Adequate	Low
M.	30	M	Severe mental retardation and epilepsy	Middle school	Adequate	Low
E.	61	F	Down syndrome	Middle school	Adequate	Medium
L.	41	F	Down syndrome	Middle school	Adequate	Medium
F.	24	M	Severe mental retardation	High school	Adequate	Low

& Keenan, 2014) we actively involved a group of participants with ID with the goal to investigate their thoughts on readability and comprehensibility of textual resources. The inclusion of people with ID as informants in the investigative process allowed not only to assess their point of view, but also to realize a specific questionnaire based on easy-to-read criteria. The questionnaire, developed through a data-driven methodology, is a useful tool to explore the obstacles encountered by people with disabilities in accessing cultural information.

2. Method

2.1. Participants

The present study was carried out with a group of 8 participants with moderate intellectual disabilities, part of the Anffas Association (“Cooperativa Sociale Trieste Integrazione a m. Anffas Onlus”), located in Trieste (Italy). Participants had a similar level of schooling (i.e. completion of compulsory schools) and a similar level of reading, writing and textual comprehension. Participants presented good social and communicative skills, and all of them had learned Augmentative and Alternative Communication to compensate for some communication weaknesses. Only one of the participants (S.) was in a wheelchair, while the others had no particular mobility difficulties. Participants with ID were accompanied by two education workers during the entire data collection phase.

In the Table 1 below, we report participants' characteristics in terms of age, sex, diagnosis and level of education. Moreover, we describe their reading and comprehension capacities obtained through the administration of the standardized MT Reading Test (Cornoldi & Colpo, 1995). As evidenced by the test, all the participants presented an adequate reading (decoding) capacity, and a low or medium level of comprehension.

2.2. Procedures

Participants with ID and their educational workers were involved in two tours across the archeological site in Aquileia (Aquileia, Italy), one of the largest and wealthiest cities of the Early Roman Empire, which was declared a World Heritage Site by UNESCO in 1998. In a first tour, they were asked to go to three places across the archeological area: the main Roman square (Piazza Capitolo), the main Roman church (Basilica), and the Baptistery. These places were previously randomly selected by two researchers from the University of Trieste who accompanied the participants during the entire tour. In each of those areas, a large number of totems with pictures and written information were used as a common modality to transfer cultural knowledge about the archeological site. The following research objectives have been achieved:

- *Phase 1*, an exploratory study was conducted by involving a small group of participants with intellectual disabilities in a first tour to the archeological site. People with ID and their caregivers (educational workers) were involved in five focus groups aimed at comprehending their thoughts and ideas on the physical and cultural accessibility of the visited places. Results of this first investigation are reported in Mastrogiosepe & Span, (in press) and allowed us to identify the main variables useful for phase 2;
- *Phase 2*, data collected through the previous exploratory phase were used by the authors to outline a first draft of a questionnaire aimed at collecting information on the perceived barriers/facilitators within the archaeological site;
- *Phase 3*, the questionnaire was then adapted using a simplified and easy to understand language (“European standard for easy-to-read” guidelines, see http://www.easy-to-read.eu/?page_id=17) in order to make it easy to read and to be understood by people with ID. The adaptation according to the easy-to-read criteria was possible thanks to the involvement of one educational worker (S.) who specializes in translation according to the guidelines, and the 8 participants with ID, considered as test readers;
- *Phase 4*, the simplified version of the questionnaire – reported in Appendix 1 – was finally administered to participants with ID at the end of a second visit to the site.

2.3. Materials

The questionnaire to assess accessibility to knowledge in cultural heritage sites was administered right after the second tour at the archaeological site. It is composed of two parts: the first part contains a questionnaire for visitors with ID and, a second part, some questions that caregivers/educational workers should answer on their own.

The questionnaire for the ID participants included seven closed-ended questions through which the person can express a subjective judgement on a scale going from totally satisfied, neutral, to totally dissatisfied. In addition to these questions, participants were asked to answer to five open-ended questions. The satisfaction questionnaire for caregivers/educational workers included four open-ended questions.

The caregiver/educational workers could help the participant in comprehending and answering the questions whether asked for assistance, or in the case support was needed.

The questionnaire is reported in the Appendix 1 of this paper, both in the original (Italian) and English version.

2.4. Data analysis

We conducted a data analysis by first reading through each questionnaire at a surface level to capture the overall picture of the participant’s experience. A total of 32 open-ended questions was analyzed by using a Thematic Analysis method (Braun & Clarke, 2012) in search of meaningful fragments, which were reviewed and developed into categorical themes as they emerged. Two independent readers were used to analyze random questions in order to triangulate the data and reduce biases. A consensus between the two readers was obtained before identifying the final categorical themes.

Moreover, we analyzed the open-ended questions administered to the two educational workers, for a total of 8 open-ended questions. The analysis procedure used for these questions was similar to that used for analyzing ID participant's open-ended questions.

3. Results

Four broad themes emerged as a result of analyzing both ID participants and educational workers' questions. These themes are related to the main barriers that both the participants with ID and their educational workers had found while interacting with the archaeological site cultural contents:

- perception and physical interaction with content resources;
- language and symbols;
- contents comprehension;
- engagement with knowledge.

For each theme, the participants provided not only their impressions of the main barriers and obstacles encountered during the visit, but also some comments and suggestions on how to create an inclusive transformation of the environment.

3.1. Perception and Physical Interaction with content resources

The most frequently cited barriers and obstacles were related to the physical access to content resources. To the question related to how easy/difficult it was to visit the site, the majority of ID participants answered that it was not easy. Then, they explained that there were several obstacles that negatively influenced their ability to perceive textual contents and physically interact with them. In particular, ID participants said that there were several boards and one flyer, however textual information was scarcely readable because the boards were too far and poorly lit, the characters with which the text was written was too small and barely legible. Some examples of what the participants said are:

L.: "there was too much to read"

G. (with mediation by the educational worker): The boards were far away, they were too small. I couldn't read them. On other boards there were drawings ... I don't know which is their meaning. Then S. (educational workers) asked how the flyer was, and G. answered "Nice, but I didn't read it."

S.: "I don't know. I didn't see those boards"

F.: "there were boards, but I didn't read them"

Other physical obstacles such as an unstable glass floor or the presence of stairs without handrails were reported by the visitors. Since the focus of this paper is on the obstacles that specifically concern the access to textual information, we limit ourselves to mentioning these environmental obstacles. However, we believe that the presence of several environmental, physical and perceptual obstacles represented elements that did not encourage interaction with textual contents, perhaps limiting access to knowledge.

These obstacles were also highlighted by the educational workers. For example:

S. (the educational worker) referring to G. says: "G. couldn't even read the information on the board due to multiple factors, such as the complexity, the presence of characters that were too small, the incorrect positioning of indications (distant, inclined, dark)"

Some suggestions were given by our visitors on how to avoid these barriers. For example, they reported that the information should be provided through different modalities (sight, hearing) using tools such as voice synthesizers.

S.: "put up more signs with bigger words"

G.: "putting easier information. . . Tables that are simpler and a little more readable"

M.: “use drawings and the one easy to hear [audio-guide]”

S.: “I would like that the information is communicated verbally”

These results highlight the fact that information should be presented in a format that may be calibrated and personalized by the user (i.e. text that can be enlarged or highlighted) in order to make it clearly readable. Certainly, the use of digital materials may encourage not only a multimodal presentation, but also a personalization of the provided information.

3.2. Language and symbols

A second cited barrier was related to the capacity of the archaeological site spaces and exhibitions to provide multiple options for language and symbols.

Despite our ID participants were able to read, they reported several difficulties in decoding textual contents. The complexity of vocabulary and syntax, the ambiguity of the words and symbols used were reported as the main obstacles for textual decoding.

E.: “the board of the Basilica must be written in a clear and easy manner”

L.: “Certain words are difficult, for example the fifth century, the Roman writings”

S. (the educational worker), referring to L. says “L. has good reading and comprehension skills. However, the texts encountered in Aquileia are extremely complex for her”

Some participants also gave suggestions on how to transform textual resources in order to promote access. For example, some suggested the necessity to clarify the text through visual and non-linguistic supports (e.g., images, video) or translating the text into Augmentative Alternative Communication (AAC).

E.: “it would be useful to modify, change the words of the text, putting new words. Adjusting to make them easier so that you understand a little more”

S. (educational workers talking about all the participants): “the boards and flyer should be written using simplified language, and some relevant information should be implemented, for example a synthetic and clear description of mosaics”

S. (the educational worker), referring to G. says that “he uses a lot the Augmentative Alternative Communication so it would be useful to translate some simple information into this type of communication”

3.3. Content comprehension

The third cited barrier was related to the capacities of the archaeological site spaces to provide multiple options for comprehension. This obstacle is clearly related to the two barriers previously mentioned. If a text is difficult to read due to physical obstacles and because its complexity makes it difficult to decode, it is clear that the textual comprehensibility will also be impaired.

When we asked our participants to report what new information they had learned, it was clear that they had comprehended very little of the content:

L. said “I learned so many new things”, then the educational worker asked for an example of the things she had learned, and she replied: “The images on the floor [mosaics] which are particular, different characters. . . I don't remember”

The answers to the open-ended question reported above clearly show that our participants were not able to absorb much of the information presented. We have found a contradiction between what was reported by the closed question “Did you learn new things?” to which the majority responded “yes, a lot”, and what is instead highlighted by the open-ended question “What did you learn?”. Through the combination of both closed and open-ended questions, our questionnaire allows for an investigation that would likely be missed in less detailed questionnaires.

Suggestions were also given on how to improve the comprehensibility of the texts. For example, it was suggested to create resources with different levels of text simplification and to include support for complex terms (explanations, hyperlinks).

3.4. Engagement in knowledge

Despite all the participants with ID expressing their appreciation and willingness to return to the visited site, through the questionnaire it was possible to detect that different obstacles prevented our participants from being involved in the knowledge process. We know that motivation represents a crucial aspect of learning and that there are different factors that may influence the degree of involvement and motivation to learn in various educational contexts.

When the answers they gave were analyzed, it was highlighted that the greatest obstacles to engaging in the materials were represented by the fact that the activities and sources of information were not appropriate for age and ability. For example, when we asked the educational workers if they thought that the methods used to present information attracted the attention or interest of the visitor:

Both educational workers responded that “it was often necessary for me to mediate the interaction between the visitors with ID and the written contents”

M. says M.: “I need an educational worker [to interact with the environment]”

Of course, the inability to actively interact with the cultural spaces and content prevents people with ID from being motivated and proactive in content exploration. Several suggestions were given to improve the methods presented to engage in the information. Mentioned in particular, was the necessity to create strategies that encourage the opportunity for interaction with cultural content, and to use resources that allow the activation of the user’s previous knowledge. Moreover, the necessity to present information in progressive levels of difficulty by dividing the information into smaller elements.

4. Discussion

Promoting accessibility to cultural and social life for people with ID means reducing any existing obstacles and barriers (institutional, pedagogical, cultural, social, subjective, physical, etc.; [Aquario et al., 2017](#)). As recently highlighted by several authors ([Hayhoe, 2018](#); [Austin et al., 2018](#); [Sandell et al., 2010](#)), the growing interactions between museum institutions and scholars interested in disability issues are generating new reflections on how to promote accessibility. The resulting interdisciplinary and international reflections not only stimulate new insights into this innovative field, but also inform ethically and experimentally based practices within museums, galleries and archaeological sites.

In this direction, the main merit of this paper is to have addressed the issue of accessibility to knowledge by starting from the understanding of the pedagogical meaning of the phenomenon itself. In the present study, the use of an Inclusive Research paradigm ([McEvoy & Keenan, 2014](#)), has accompanied the entire research process, from the design to data collection and analysis. Using this approach, we developed a questionnaire to detect needs and thoughts of people with disabilities in relation to their interaction with cultural spaces. The questionnaire was developed using an easy-to-read approach and proved to be an effective tool for understanding participants’ point of view. Data analysis of the questionnaire allowed for detection of the main barriers that participants with ID had found while interacting with cultural contents:

- perception and physical interaction with content resources;
- language and symbols;
- contents comprehension;
- engagement with knowledge.

We believe that the work carried out can contribute to research and educational practice on two fronts.

The first concerns the topic of designing accessible environments. There is increasing attention from international literature on the field (Hayhoe, 2018; Austin et al., 2018; Sandell et al., 2010). The authors of the recent book *The Routledge Handbook of Disability Arts, Culture, and Media* (Hadley & McDonald, 2018), presenting the results of various theoretical and practical reflections, have emphasized: “the benefits on understanding of this field – and the practical, philosophical, and at times provocative diversity of approaches, aesthetics, and politics discussed in this collection – can bring, not just for scholars of arts, culture, and media but for scholars across education, social services, science, health, and medicine, as they think about the way the rights of disabled people are reflected or not reflected in their own systems, institutions, and discourses” (page 1).

The archaeological site under investigation was highly interested in investing in the renewal and removal of environmental and social barriers that could interfere with the full expression of the functioning and cultural potential of the site itself. The comments and suggestions provided by the visitors with ID through the proposed questionnaire may help the curators in the understanding of obstacles/facilitators for learning accessibility.

The second contribution, closely related to the first, concerns opportunities to include the voice of people with disabilities. The inclusion of people with ID as informants in the investigative process is an effective way to assess their point of view, recognizing the contribution they are able to make to research (Correia et al., 2017). We strongly believe that giving voice to people with disabilities in investigating their perception and thoughts on obstacles and facilitators to knowledge means to respect their right to self-determination. The importance of adopting a participatory approach is relevant in research on disability and social justice especially at a time of great social, political and cultural change (Soldatic & Johnson, 2019).

Designing accessible environments not only for them but also with them, means enhancing the effective interaction between individual processes/experiences with environmental characteristics, giving crucial insight on how to design and develop resources that reach the criteria of inclusion (Terzi, 2014; Bellacicco, 2017).

5. Conclusions

Capabilities, i.e. the opportunities that people have to be and do what they consider desirable and valuable (Sen, 2009), arise from the encounter between individual processes and the environment with which the person interacts. Including the voice of people with disability is crucial for understanding the complexity of their needs and the variety of potential responses (Bortolotti & Mastrogiuseppe, 2019). Through our questionnaire we wanted to capture the ideas of people with ID referred to their capacity to interact with cultural spaces. The proposed questionnaire could be a valid tool for cultural institutions, allowing visitors with ID to expand their level of capability, and to express their ideas on facilitators/obstacles in accessing knowledge. Cultural heritage site curators may use the information collected through the application of the developed questionnaire with the attempt to develop theoretical reflections that can inform operational practices. We argue that the proposed questionnaire may be useful to inform the process of creating and transforming learning environments, adopting an audience-centered dialogue, from an inclusive perspective.

Disclosure of interest

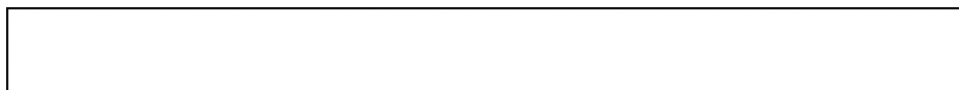
The authors declare that they have no competing interest.

Appendix 1. Tools for observing the obstacles and facilitators for the access to knowledge

Questionnaire for the visitors with special educational needs

We ask you to answer to the following questions

You should write the answer when you find a space like this



Or you can put a cross

On the green face to say **a lot**



On the yellow face to say **enough**



On the red face to say **little**



Thank you for your collaboration!

Notes for administration: the questionnaire described above have been translated from the original language (Italian) to English. The original version has been written using an easy-to-read language, with the following criteria: the text has been formatted in A4 standard (21 × 29.7 cm) double spaced, Arial 14-pitch font, with 1" (2.5 cm) margins on four sides of the page. The open-ended questions were followed by a space (square frame) like the one reported in the example above. The multiple-choices questions were always followed by the following symbols:

- Did you like the place you visited? (*multiple-choice question*)
- Have you learned new things? (*multiple-choice question*)
- What did you learn? (*open-ended question*)
- Was the place easy to visit? (*multiple-choice question*)
- If you answered "little" or "enough", please write why. (*open-ended question*)
- Describe how the information was presented. For example, were there tables, captions and flyers? (*open-ended question*)
- Was the information only written or were there images? (*open-ended question*)
- Was the information clearly expressed? (*multiple-choice question*)
- The words used to express the information were easy to understand? (*multiple-choice question*)
- Would you have wanted the information being presented in another way? (*multiple-choice question*)
- If yes, how? (*open-ended question*)
- Would you visit this place again? (*multiple-choice question*)
- What advice can you give to improve the place you visited? (*open-ended question*)

Questionnaire for the caregiver

Please answer to the following open-ended questions:

- Do you think the texts were too complex to read and understand for the visitor? If so, why?
- Do you think the modality used to present information have attracted the visitor' attention or interest?
- What could have helped him/her to participate more actively?
- What could have helped him/her to better understand the presented contents?

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