

How we developed an accessible digital library and gaming app for all users

Despite the Web being conceived as universal and accessible, there are still significant barriers existing today for its unhampered use, especially for certain categories of users, such as those with disabilities. According to figures from the European Dyslexia Association (EDA), there are between 9% and 12% of people with learning disabilities in Europe. These people represent users that require adapted tools and resources to ensure the proper use of digital technology.

When websites and tools are well designed and coded, people with disabilities can navigate through them. However, many sites and tools are currently developed with accessibility barriers that make it difficult or impossible for these categories of users to use them.

In line with the fundamental idea of the 2030 Agenda for Sustainable Development of leaving no one behind, we have sought to ensure that the digital resources of the VISITOR project, the digital library and gaming app, guarantee **equitable access to information, education, and personal fulfilment for all interested users and visitors.** For this reason, we wanted to facilitate access to the content of these resources to reach as many users as possible.

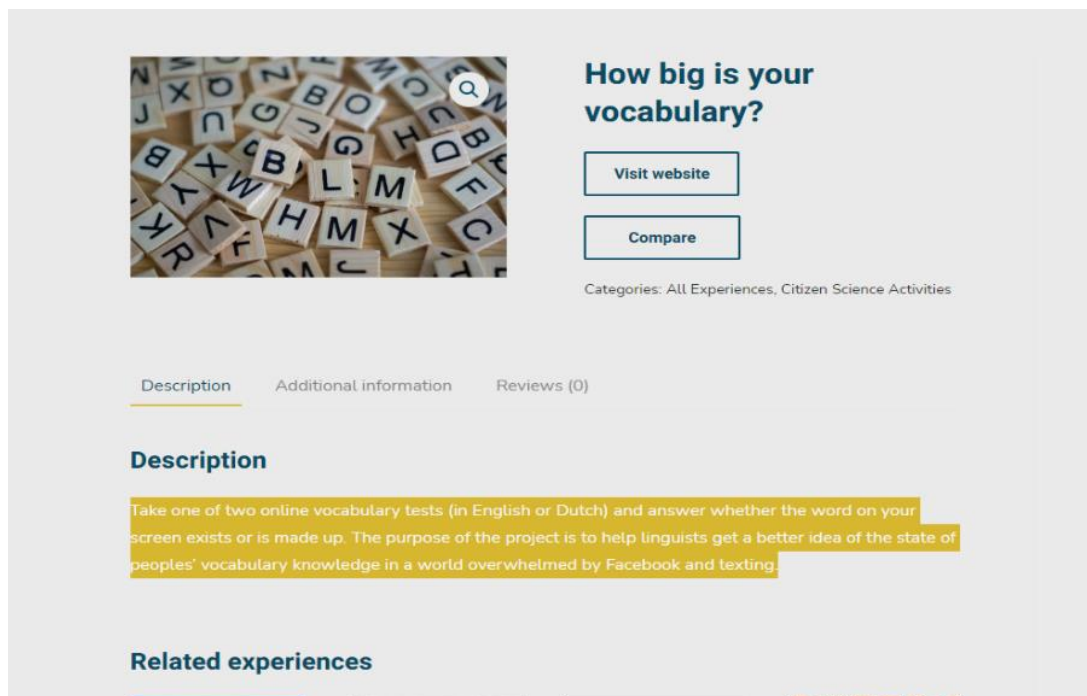
Therefore, we have applied three design principles to ensure digital inclusivity towards people with learning disorders and other disabilities:

1. Predictable design

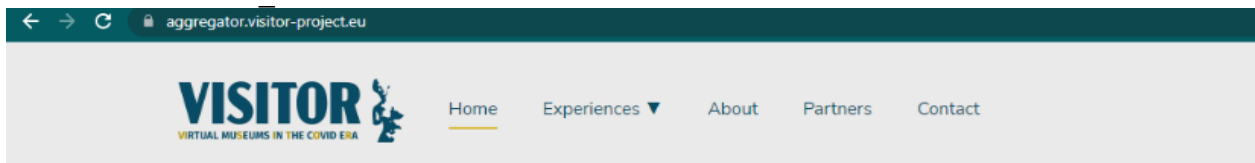
Both the appearance and the operability of the online resources must be intuitive and consistent to help users quickly intuit how to navigate the resources and enjoy a smooth browsing experience. Some good practices in the design of the digital library and gaming app that have considered this element for making content and navigation for all users more predictable include:

- **A constant colour scheme**

The logo of our project VISITOR is in dark blue with details in yellow, so we have followed this same aesthetic in our digital library; the main headings are in blue while little details such as navigation buttons are in yellow. We can see this in functions such as **when selecting the text and browsing the navigation bar.**



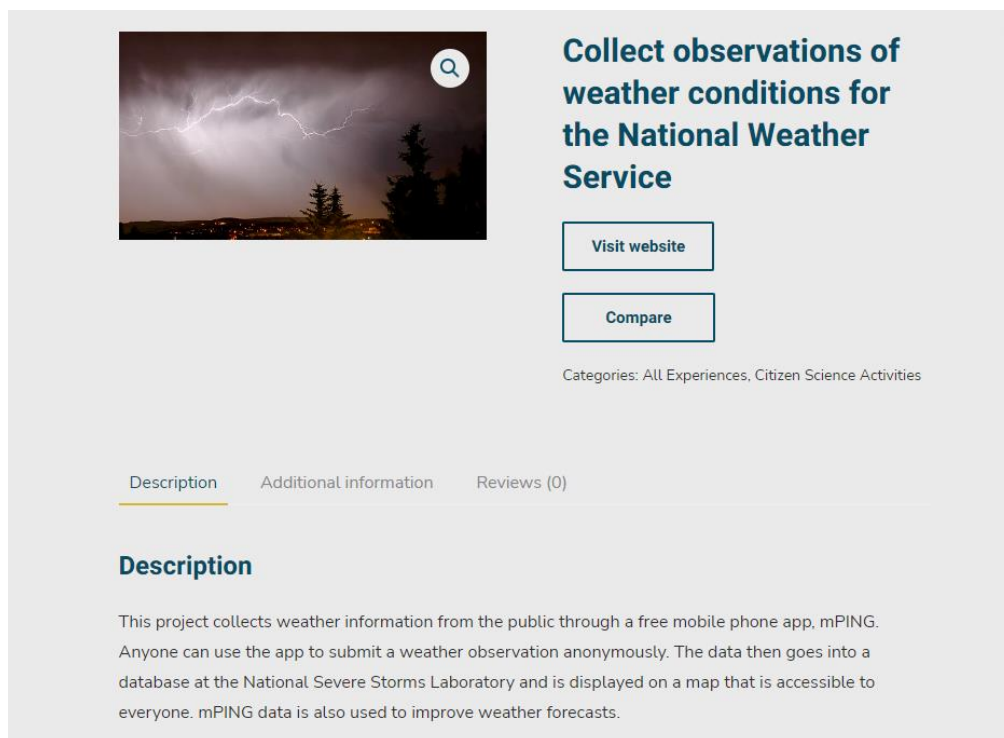
The highlighted text coincides with the project logo colours



The navigation bar coincides with the project logo colours

- **Font consistency**

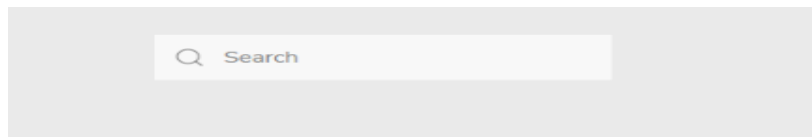
We have designed VISITOR’s digital library in such a way to establish an intuitive visual hierarchy with the font types and colours, so that users can differentiate between the primary and the complementary information. For instance, we have used **headings in bold and in a different font type than the explanatory texts.**



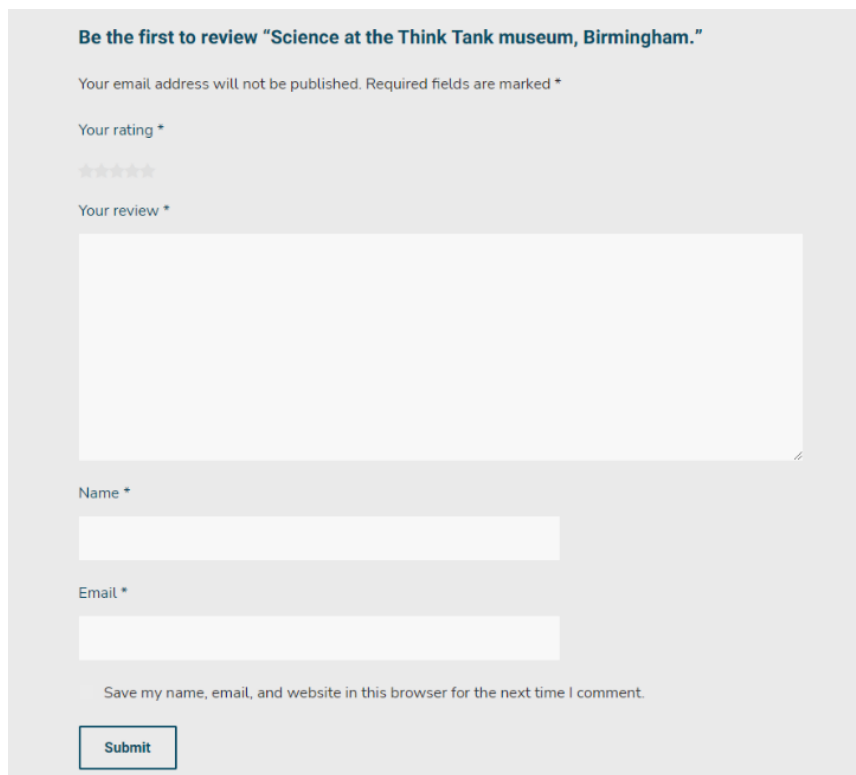
Text that is of higher importance is shown in bolder and bigger font

- **Standard interface patterns and symbols**

The navigation mechanisms and icons used in our digital library as well as in the gaming app are familiar to other website designs, such as: **having the search bar be represented by a magnifying glass and compulsory data in forms by an asterisk symbol**, as well as **moving with the use of arrow keys on a standard keyboard for the gaming app, consistent with the gameplay in other online games.**



Users can easily recognise the purpose of this bar with the magnifying glass symbol



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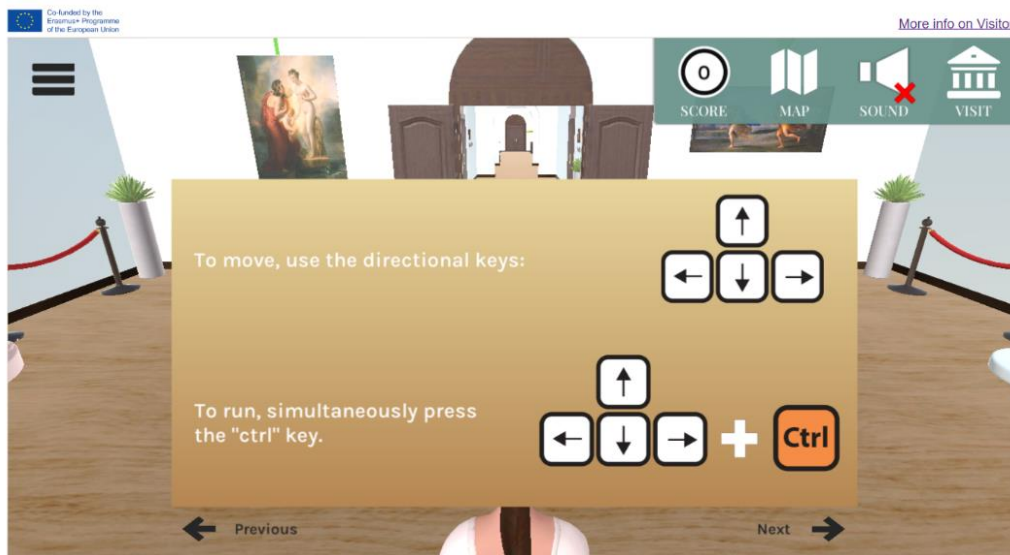
Your review *

Name *

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Save my name, email, and website in this browser for the next time I comment.

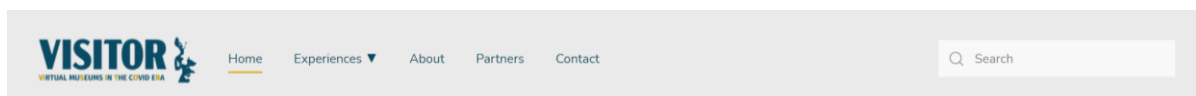
Users can recognise which information is needed to submit their queries



Users move around the virtual space of the gaming app with familiar keyboard keys

- **Navigational elements and sections are instinctively located**

The search bar can be found on the top right, the Home icon on the top left, and the option to change languages is found in the top right of the digital library, crafting an expected interface for users.



Users are met with familiar navigational cues when browsing the digital library

2. Readability of content

This accessible design principle refers to ensuring that both the design and content of the resources is understandable to the user that is reading them (or listening via a screen reader).

In both of our aforementioned online resources we provide a solid structure to ensure that the information contained within is clear and easy to follow.

Therefore, we have considered:

- **Heading structure**

Headings serve as guides that help readers quickly scan through the various sections of our resources' webpages to get an idea of what each entail.

- **Colour contrast**

Contrast is important for accessibility purposes. A good contrast level makes for a good reading experience for all users in general, but we should be mindful to avoid high contrast combinations such as black text on a white background. In our digital library, we use a plain, light colour for the background and a dark grey for the text.

- **Left-aligned text and bullet points**

A consistent left margin makes reading easier.

- **Bold**

Instead of underlining (reserved for links), we use bold to emphasise important information.

- **Clean typography**

Limited variations and diversity of fonts help to maintain a certain harmony in the design. In our case, we have just used two font types, one for the headings and another for the main body text.

Moreover, we also bear in mind the spacing between lines since larger line spacing improves readability (as shown in previous screenshots).

- **Simple and clear language**

Failing to match the reading level of the general public with the content's text could lose many potentially interested visitors and users. By reducing jargon, shortening sentences, and using plain language, we can improve the user's perception of our online resources.

The VISITOR (virtual museums in the covid era) project aims to facilitate virtual museum visits for schools and integrate virtual museum activities into the school curricula. The objectives of VISITOR are:

- The creation of a digital library for teachers and other practitioners to search and share virtual museums and exhibits.
- The development of educational use cases for the museum exhibits (for example, lesson plans).
- The development of a gaming app that will host museum exhibits and educational use cases for those.
- The creation of a training course for teachers to support them in engaging with the digital exhibits and the gaming app.

Good readability seen through the listing of items with bulletpoints and use of clear language

IO1 – Digital museum content aggregator and toolkit

The first output of VISITOR project is a digital museum exhibits content aggregator and toolkit which will be available for all partner countries. The output aims to provide teachers with **an innovative tool** that gathers digital materials developed from the museums. The use of the aggregator targets to create new paths for multi-thematic teaching and learning.

The aggregator goes beyond the state of the art, as it will not just collect digital exhibitions and applications developed by the museums in one space, but will also process the digital resources under categories and tools **tailored to the educational needs** of school education. The partnership aims to gather material from many kinds of museums, in order to enable their integration into the teaching of many subjects (science, history, technology, environment, art, European culture etc.). The materials can be also accessed through **a search engine tool** that will further facilitate teachers to identify the resources available for use.

The **inclusive** character of the platform is also an innovative element, as due to the expertise of Logopsycom, the platform will be also accessible by end-users with learning difficulties.

Another innovative element of the aggregator website is that (collectively with the other outputs) it will promote and include **citizen science activities** that will further engage teachers and students in research activities in a creative way and in an intercultural environment.

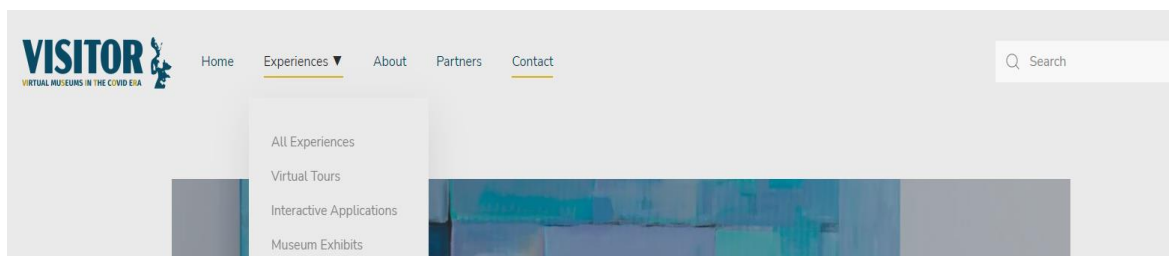
Good readability seen through the use of appropriate heading structures and bold to emphasise

3. User-in-mind design

We aim to create a joyful experience for all who navigate our digital resources and to do so, we need to centre our attention to all users' needs. Thus, we have observed the need to implement the following elements to create as enriching an online experience as possible:

- **Menu markers**

Found below, this design choice serves as a visual indicator that sub-menu options are found within.



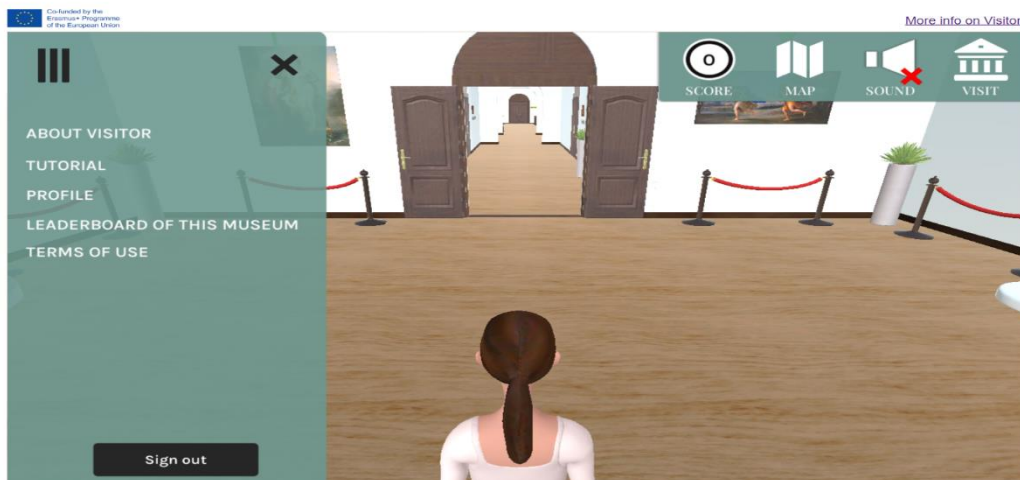
Menu markers serve to show users that more options are hidden within the Experiences menu option

- **Constant presence of help during gameplay**

Since some users may struggle with visual memory, we have provided a retractable menu in our gaming app that is always visible and accessible to inform or remind users about the instructions of the game.

- **Self-paced game**

There is no time limit to answer the quiz questions contained in the gaming app. This functionality has been implemented so as to decrease pressure on users that may have otherwise rushed to find the right answers, ensuring that both gameplay and learning are made more enjoyable for users.



Users can refer to game instructions under Tutorial at any time as they play without time limitations

These were just some of the functionalities of the VISITOR project's digital library and gaming app. To navigate these resources yourself and decide how they can help you create your own virtual museum experiences, check out the Results tab on the project website: <https://visitor-project.eu/>