



Semester Project 1

Report

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Summary

In this report, I will explain the thinking process behind the development of my version of the *Community Science Museum* website. The document has been divided into three sections: Design (where I will be exploring the creative aspects of my aesthetic choices), Technical (where I will discuss the successes and failures along my learning journey) and Accessibility, Content Management and SEO (where I will justify the decisions I have taken to make this website compliant with the best practices in terms of usability and accessibility guidelines).

- Website link on Netlify:

<https://cranky-wing-1d6bb5.netlify.app/index.html>

- Mid-fidelity web prototype:

<https://xd.adobe.com/view/b08399c0-a725-4348-ac92-9de243d70591-e5d0/>

- Low-fidelity mobile prototype:

<https://xd.adobe.com/view/5ea1f10f-8843-4eb2-893d-083f197a63ee-0bf2/>

- Work schedule link:

<https://app.instagantt.com/shared/61be4727d4b9055cb29e34dd>



1. Introduction

Playful rather than serious. Simple rather than complex. Objective rather than long-winded. These were the basic premises that guided me in the conceptualisation of the *Community Science Museum* website. From the colour palette to the typographic choices, from the selection of the images to the navigation structure of the project, the choices that I have made reflect a well-defined goal: develop something that is functionally simple and aesthetically appealing to young target audiences.

My creative process started with a basic research question: what do other science museum websites look like? In fact, I studied the web pages of a number of renowned institutions and tried to understand the reasoning behind their design choices. The institutions which I explored in my initial research were:

- <https://www.sciencemuseum.org.uk>
- <https://www.frostscience.org>
- <https://nhmu.utah.edu>
- <https://www.fernbankmuseum.org>
- <https://www.hmns.org>
- <https://new.smm.org>
- <https://www.adventuresci.org>



While some of them are quite attractive, most of them seemed to be tailored to adult audiences. Also, most of these websites seemed overcomplicated in my view. As a result, this initial research served more as a guideline on what *not to do* rather than a real source of design inspiration. I have therefore decided to run some risks and experiment with an original design of my own. As a non-professional designer, that is of course not an easy thing to do. While I still think that my designs look unpolished and amateurish, I am partially happy with the fact that the choices that I have made did contribute to the end goal of my project: playfulness, simplicity and objectivity. This is what I will be discussing in the following chapters.

2. Design

WHAT WENT WELL

Pictures

The power of good-quality images should never be underestimated. Selecting the right images was therefore the starting point my creative process. Astronomy has always been a discipline that triggered our fascination – regardless of age. In my view, the scientific endeavour of astronomers evoke a sense of curiosity and exploration, ideas which are rather fitting for a science museum project.



Pictures of the night sky have, therefore, been selected as the starting point of my design.

I have chosen *Unsplash* as my main source of photographic material, given the free, open and collaborative nature of the service. Sourcing good-quality images may be challenging, though. The best images are often not freely available, and that is the main reason why the photographic quality of my website could have been better.

Speaking of images, I believe designers and developers should be mindful of issues related to equity, diversity and inclusion (ED&I). I hope that the photographic material that I have selected reflects gender and ethnic diversity in a well-balanced manner.

Colour palette

Astronomy pictures take not only a privileged space on my website, they also served as the main inspiration of my colour palette. **Image 1A** shows the creation of a colour palette based on the main cover picture of my website, while **Image 1B** shows the same colour palette after some rounds of accessibility adjustments:



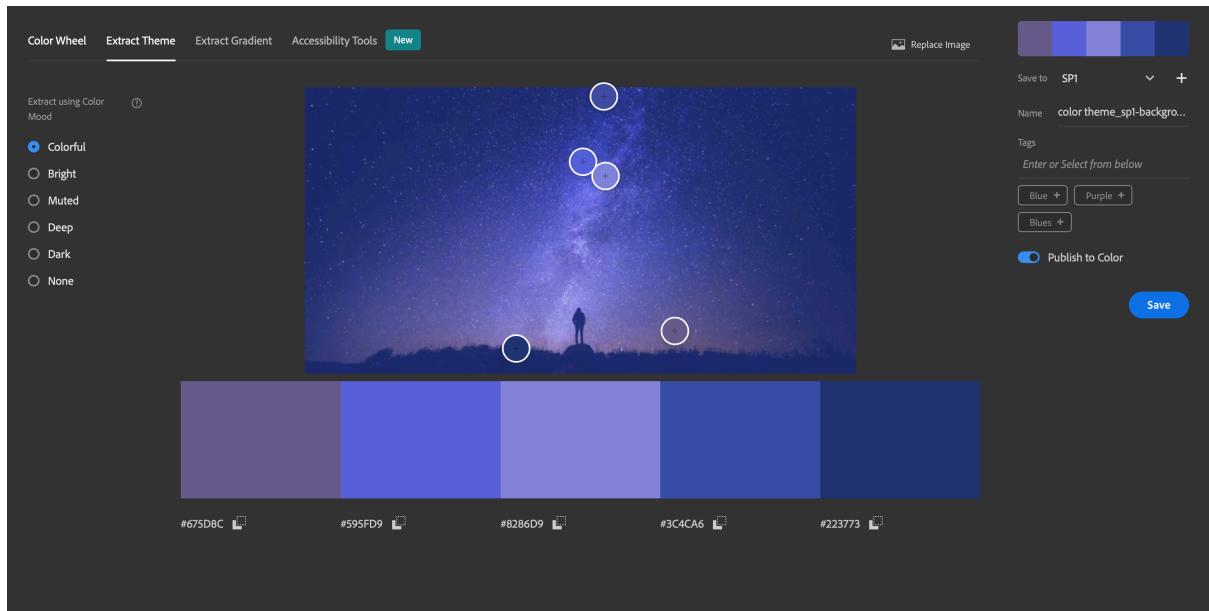


IMAGE 1A

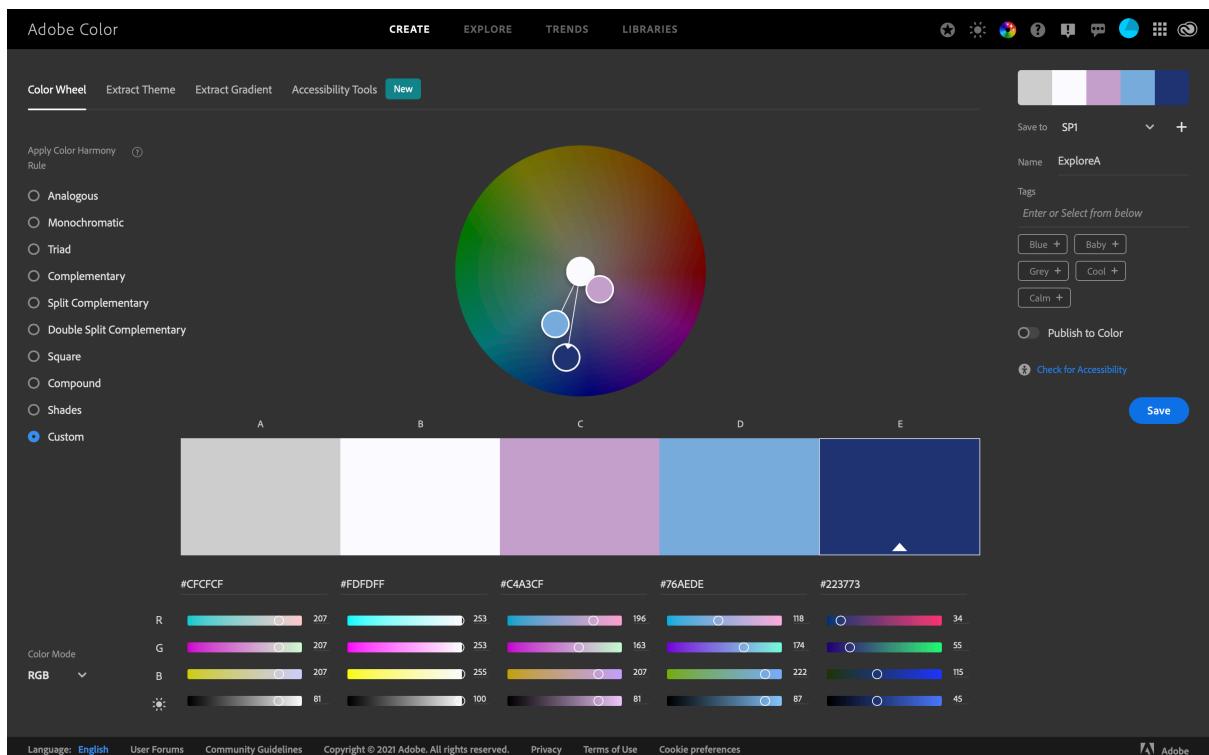


IMAGE 1B

I believe the colour choice has been successful and almost all of the colour combinations from this palette are either AAA or AA compliant, following WCAG standards.

Wireframing and prototyping

Once my initial design ideas were in place, I decided to build a *low-fidelity wireframe* followed by a *mid-fidelity prototype*. This combination allowed me to have, at the same time, a solid structural basis for my development and a certain level of flexibility for rethinking, if necessary, some of my previous design choices.

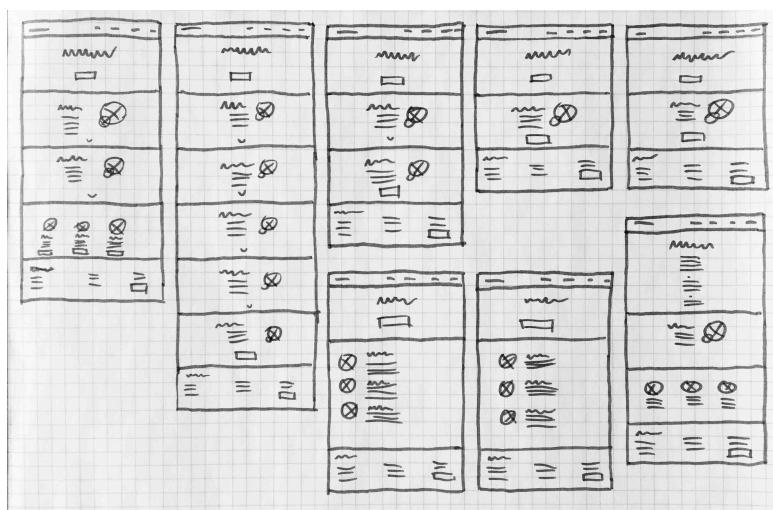


IMAGE 1C

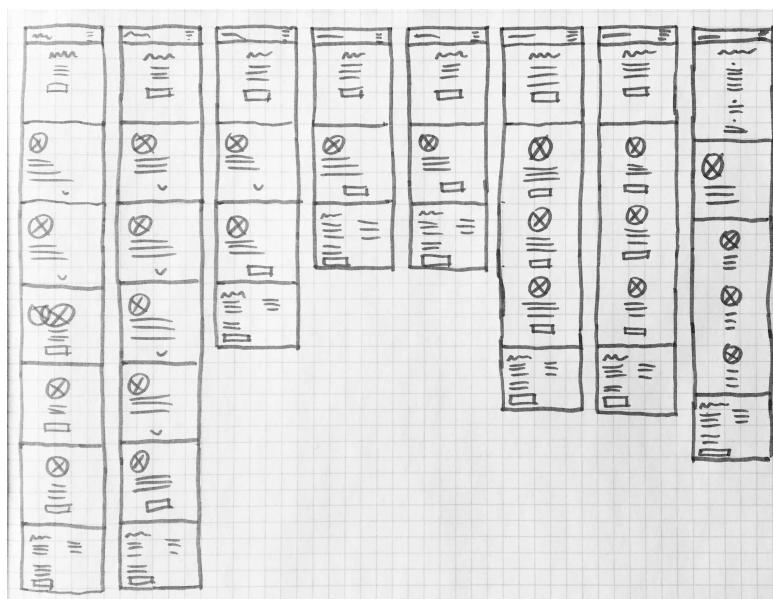


IMAGE 1D

Proportions

The wise use of proportions is key to good design. There is a well-defined thought sequence behind the development of the following layout:

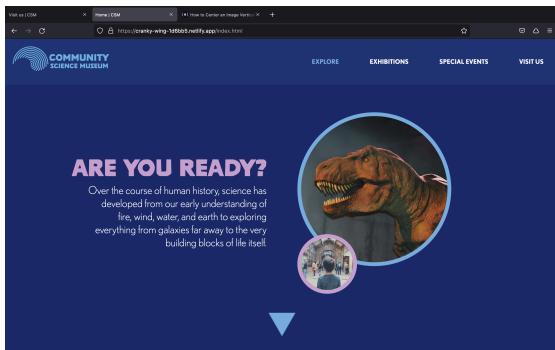


IMAGE 2A

Firstly, I used the rule of thirds by placing the main image on the focal point of the layout, that is, the intersection between the upper and right lines (**Image 2B**).

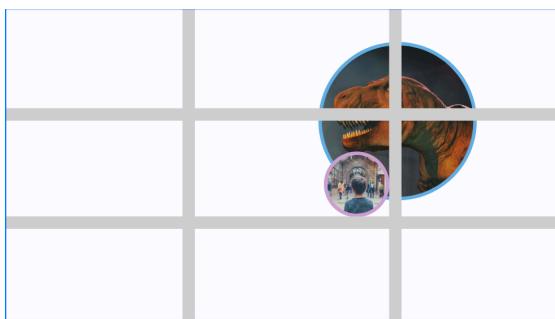


IMAGE 2B

Secondly, I defined the diameter of the main image as 400px and the golden ratio (0.618) has been applied when defining the size of the smaller ones (**Image 2C**). The use of these proportions has resulted in a harmonious way of

adequately sizing the images that appear across the website (for example: $400 \times 0.618 = 247$; and $247 \times 0.618 \approx 153$).

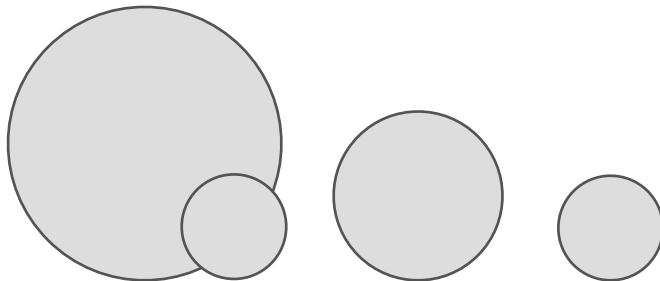


IMAGE 2C

By turning this theory into practice, I have achieved the following result:

A screenshot of a website homepage. At the top is a large circular image of a Tyrannosaurus Rex. Below it is a smaller circular inset showing people in a museum. The main background is dark blue. Below the main image are three smaller circular icons: one for 'FOR KIDS' showing a child, one for 'FOR TEACHERS' showing a teacher at a chalkboard, and one for 'FOR RESEARCHERS' showing two scientists in a lab. Each section has a brief description and a call-to-action button at the bottom.

IMAGE 2D



Typography

Before developing my prototype, I had two solid assumptions: (a) colour and images should be more important than text; and (b) the chosen typography, especially for the main titles, should be as attractive as possible. For the body text of my project, I have used *Nobel*, a well-balanced sans-serif typeface which evokes the spirit of science in its name. For the titles, I have chosen *Poleno*, a playful and informal typeface which stands out as a prominent decorative element. I hope that pairing these two font families has been a successful design choice.

Copy

I have lightly edited parts of the provided copy, with the objective of making it as concise as possible. Also, I have left out what I considered to be non-essential information.

Misc

While I am conscious that good websites usually have a prominent search bar and navigation breadcrumbs, I have decided not to include these in my project. The reason: breadcrumbs are unnecessary given the simplicity of the navigation structure; and a search bar would, at the moment, provide very limited functionality given that, through



both the static menu on the top and the footer, every single page can be accessed in less than two clicks.

WHAT DIDN'T GO WELL

Logo

Logo design is a complex discipline in itself – a discipline that I do not master. I was not satisfied with the logos from the provided material, and I am not satisfied with the logo that I have designed either. As well as creativity limitations, I was largely affected (and considerably delayed) by the fact that my knowledge in *Adobe Illustrator* is quite limited. Trying to design the project's logo took me much longer than expected. As a result, one of the main outcomes of this project is the realisation that, from now on, I should try to learn as much as possible about *Adobe Illustrator*. **Images 3A** and **3B** show my failed attempts in logo design:

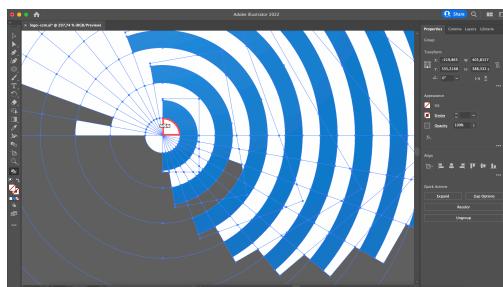


IMAGE 3A

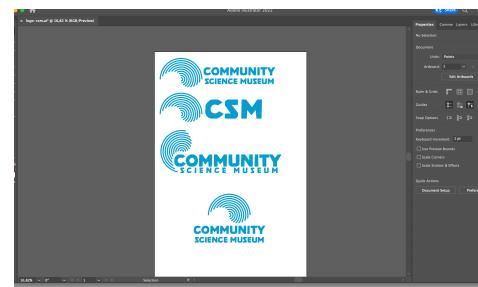


IMAGE 3B

WHAT TO IMPROVE NEXT TIME

I will not underestimate the complexity of the creative process that precedes the development stages of any given web project. While there might be dozens of ways of coding up a prototype, there are literally countless ways of creating a sensible design that is functional and attractive. Also, investing in the acquisition of the best possible images may be a wise step in order to achieve optimal results.

3. Technical

WHAT WENT WELL

Project management

It is crucial to have an efficient workflow and a solid project management strategy. As mentioned in a previous *Course Assignment*, I have chosen to use a Gantt chart (integrating the tools *Asana* and *InstaGantt*) to guide me through this project. Most of my planning worked well – with a few exceptions, notably the first steps of the creative process. Coming up with design ideas, as well as developing a hi-fidelity prototype, consumed almost a week more than I had previously expected. **Images 4A, 4B** and **4C** show my work schedule (Gantt chart) in different visualisation schemes:



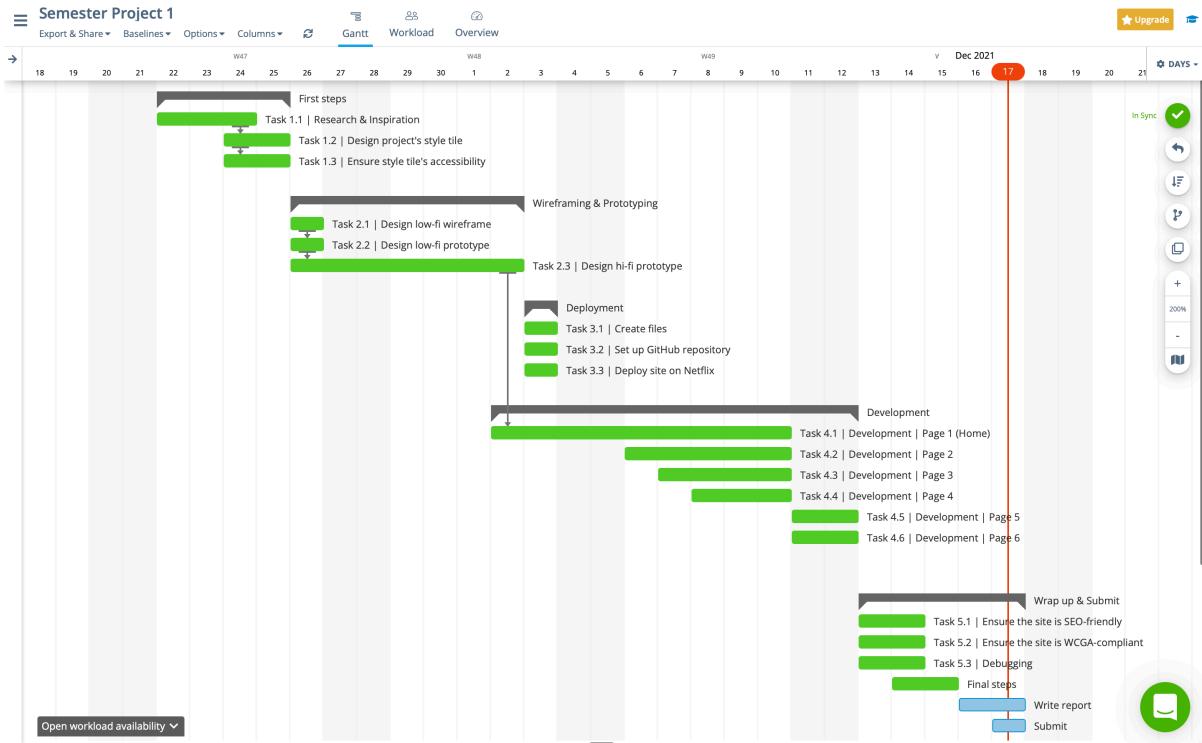


IMAGE 4A

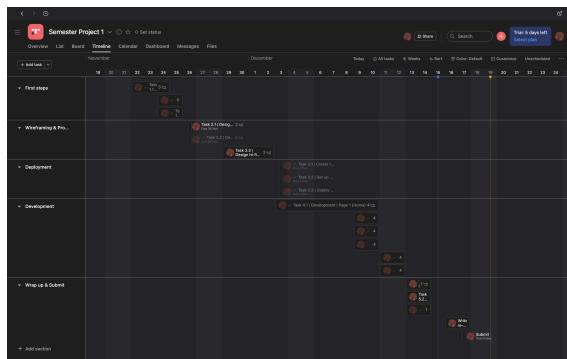


IMAGE 4B

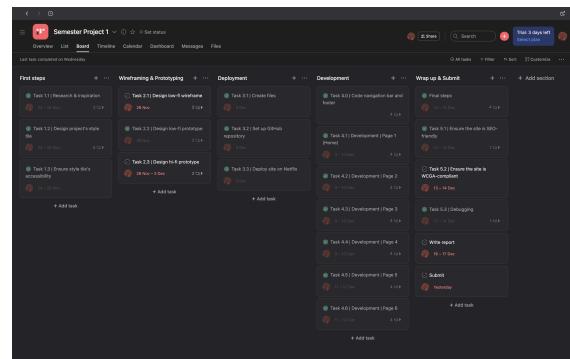
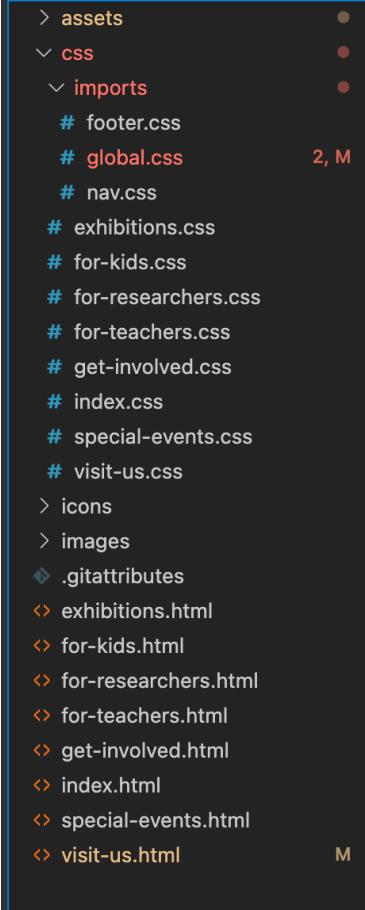


IMAGE 4C

The DRY principle

The main shortcoming of my previous project (the Square Eyes website) was that I repeated a great deal of code in my CSS. This time, I hope to have done a much better job by using the `@import` feature in my files, which has been suggested in the feedback that I got from an instructor. In

fact, I now have one global style sheet with all of the styles that are repeated across the website and individual style sheets for each page, containing only what is unique to each of them. This approach (**Image 5**) has created, apparently, a file system which is much more understandable and manageable. I hope that this trade-off (a slightly slower loading time in exchange for a more sensible file structure) is a virtue rather than a problem. However, I am still unsure whether having one CSS file for each HTML page has been the best approach. In my first web project (*Square Eyes*), my mistake was to keep a single, overly long CSS file used across all pages. In my second web project (*Community Science Museum*), one of my mistakes may have been to have too many CSS files.



```
> assets
  < css
    < imports
      # footer.css
      # global.css 2, M
      # nav.css
      # exhibitions.css
      # for-kids.css
      # for-researchers.css
      # for-teachers.css
      # get-involved.css
      # index.css
      # special-events.css
      # visit-us.css
    > icons
    > images
    .gitattributes
    < exhibitions.html
    < for-kids.html
    < for-researchers.html
    < for-teachers.html
    < get-involved.html
    < index.html
    < special-events.html
    < visit-us.html M
```

IMAGE 5

Well-defined HTML and CSS sections

I have designed three different layouts. The first one (named “content 1” in my CSS) is mainly used in the home page and in the *Exhibitions* page. The second one (named

“content 2” in my CSS) is used in the *Special events* and *Get involved* pages. The third one (named “content 3” in my CSS) is used both on the audience section (*For kids*, *For teachers*, *For researchers*) and on the *Visit us* page (*Accessibility*, *Food & Drink*, *Shop*). Having designed these three independent layouts beforehand saved me a great deal of time. This was a choice I had made when creating my prototype: by having a few solid and consistent layout possibilities, I could implement them in my code in a rapid and efficient manner.

Navigation bar & Footer

Designing a responsive navigation using only CSS was something that I had failed to achieve in my previous project. This time, however, I seem to have successfully accomplished this task. The footer design also seems purposeful. As already mentioned, each page is accessible in no more than one or two clicks. The top-bottom and left-right reading direction, common in Western cultures, plays to my advantage when placing the “Get involved” button at that specific location of the footer.



CTA buttons

The CTA buttons of my project look intentionally larger than average. This has been a conscious design choice since I want to establish a closer connection with the target audience. My goal is that everything about this website should be as explicit and distraction-free as possible, hence the large, obvious, uncomplicated buttons. One unexpected challenge that I faced, however, was that the buttons “moved” the content around them when on their hover state, if they had a *border* value. The solution that I have found, after checking *Stack Overflow*, was to simply add an invisible border of the same size on their non-hover state. Problem solved.

Debugging

My debugging process was efficient and worry-free. By using the *W3C Markup Validation Service*, the only warnings I got were relative to a few *alt* attributes that were initially missing in some icons. I have also made sure that each individual section contains at least one title (*h1*, *h2* or *h3*), although this requirement may appear unnecessary in the case of the “nav” and “footer” sections.



WHAT DIDN'T GO WELL

Interaction between CSS background images and other design elements at different screen sizes

The main cover of my home page took me a great deal of time to develop. The challenge was to make sure that the CTA button would, most of the times, appear on top of the person that appears in the main background image. Adjusting the screen size and preserving, at the same time, the spacial relationship between specific parts of the image and other HTML elements is a skill that I need to invest more time on.

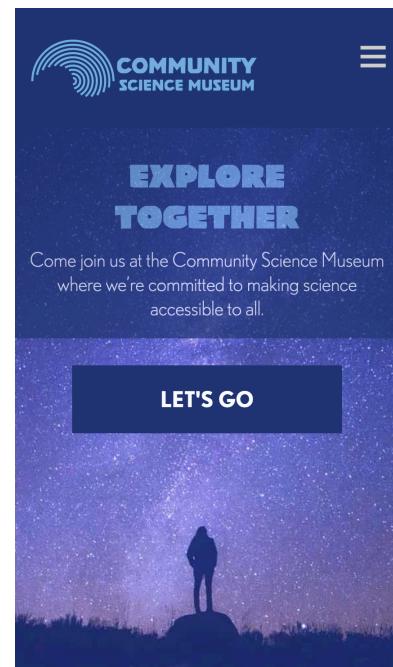


IMAGE 6A: CORRECT

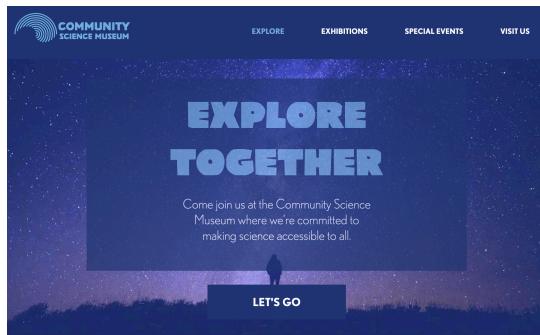


IMAGE 6B: INCORRECT

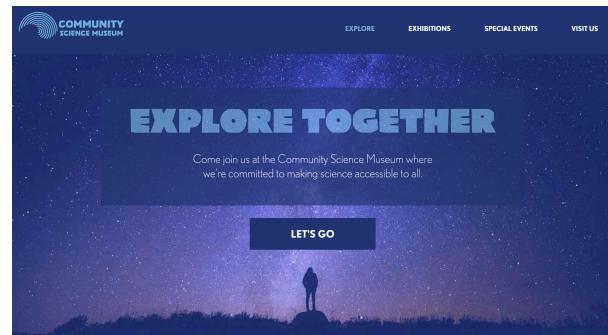


IMAGE 6C: CORRECT

Transparency and transition of CSS background image

Between the home page's main cover and the following "content1" section, I wished to implement a smooth transition (linear gradient) in which the image would gently fade into the purple background. I have not accomplished that. A subtle line separating the bottom of the image and the purple background below is still visible:



IMAGE 7

In theory, I know how to implement that (I got help from an instructor with some tips). Correctly building this, however, is something that I did not have the time to do before the project's deadline.

Animation triggered by scrolling

In my home page, I wanted to have a gentle animation connecting the two images (big and small) triggered by the scrolling function. However, this feature seems not achievable by using only CSS and HTML. For that reason, I have not been successful in achieving this goal. However, I left a small animation in the final delivery just as a proof of concept to be further improved – and not as a desired final

outcome. It is set to *infinite*, but the idea is that it runs only once, as soon as the viewer reaches that specific viewport.

Scroll behaviour on Safari

The CSS *scroll-behaviour: smooth* property, which is a fundamental aspect of my project, does not work on Safari. After browsing the web after a solution, it seems that the Apple browser does not support it. There are alternative ways of achieving the same effect by using Javascript, though. For now, unfortunately, the smooth scrolling effect will not be visible on Safari.

Responsiveness on smaller and bigger screens

My project has been tested on and has been optimised for a 13" screen. At other screen sizes, I did not manage to ensure the correct behaviour and positioning of certain elements. While the present responsiveness is still functional and efficient at all screen sizes, there are many design improvements that can be made to make the website look better on both bigger and smaller screens. Sadly, the design has not taken into consideration screens narrower than 375px.



Also, aligning items correctly, both on the horizontal and vertical axes, remains a challenge that I need to overcome. Whenever I would get my alignment right, I would soon realise that, at different screen sizes, the items would behave differently. This still constitutes one of the main problems of my website. In the “content 3” section, for instance, these alignment inconsistencies remain visible at certain screen sizes. I have, however, probably gotten rid of all horizontal scroll bars that eventually appeared when making adjustments in my code.

WHAT TO IMPROVE NEXT TIME

In my next projects, I will try to make sure that I get the vertical and horizontal alignment of every single item under control, at all possible screen sizes, right from the start of the coding process. There has been a lot of improvisation in my coding journey along this project. Also, I still need to master the relationship between items and areas when using different positioning values, like *relative* and *absolute*. I have the theoretical knowledge to understand it, but more practice is needed in order to fully grasp these concepts and use the document flow to my advantage. Lastly, I would like to avoid using pixels as a measure for font size. Rather, I



must get used to the idea of using more modern and appropriate units such as *em* or *rem*.

4. WCAG, Content Management and SEO

WHAT WENT WELL

SEO

Adding unique tags to each page has been a simple task. Given that the project is relatively simple in terms of content, adding relevant SEO information to each page's respective meta tags has not been a problem.

Accessibility of the colour palette

Most of the colour combinations of my chosen colour palette are either AA or AAA compliant, according to the WCAG standards. To check that, I have used Adobe Colour's new accessibility tool:

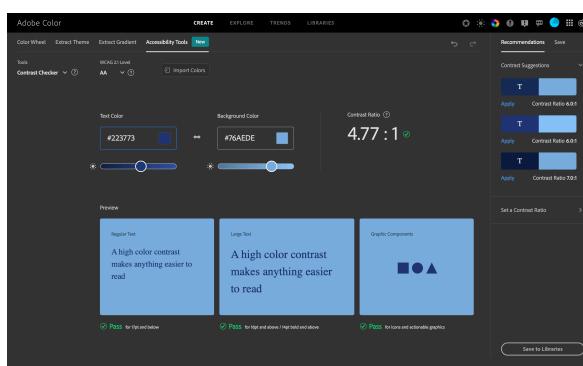


IMAGE 8A

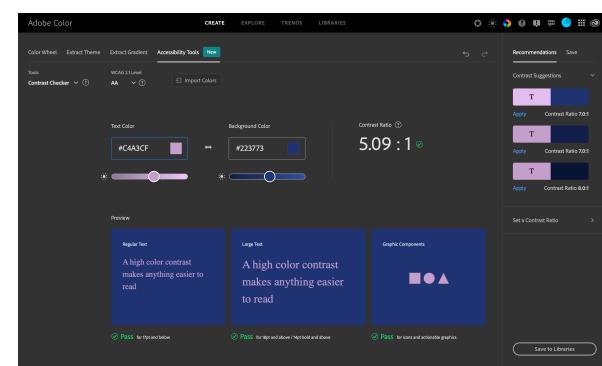


IMAGE 8B

In some cases, however, it was not possible to achieve a AA or AAA mark (for example, the chosen blue or pink over a white background). These combinations have, therefore, not been used – whenever they appear, if they appear at all, they are only serving decorative purposes of secondary importance. All essential text or visual information necessary to the efficient use the website is complying with either AAA or AA standards.

Overall accessibility of the website

For a more in-depth accessibility test, I have used the *Wave Web Accessibility Evaluation Tool*, developed at the Utah State University. No errors or accessibility issues have been found, as shown in **Image 9**.

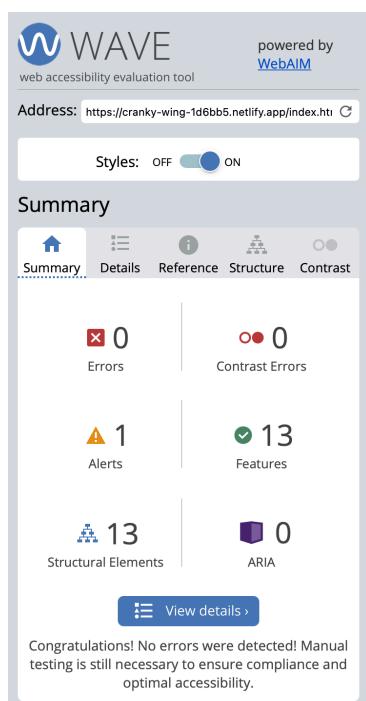


IMAGE 9

The only “alert” issued by the Wave service refers to the repetition of links (since the “home” and the “explore” pages are in fact the same), which is not actually a problem, but a choice that I have made in the early stage of my design process, to make sure users will always find the familiar term “home” somewhere near, at the distance of a click.

WHAT DIDN'T GO WELL

There are so many online tools for checking whether or not a website complies with good accessibility standards. It may be challenging to figure out which are the best and more reliable ones.

WHAT TO IMPROVE NEXT TIME

I believe that, even for better accessibility results, a “mobile-first” approach may benefit web projects in general. This time, I have not done it. It is something that I do plan to do in my next projects. Also, creating a fully AAA-compliant colour palette is something that I would like to do in the future.



Conclusion

Despite looking raw, unpolished and amateurish, this project has taught me a number of important lessons:

- (a) The creative process that precedes the technical implementation of the project is of paramount importance and it may take longer than expected to come up with the right design solutions that will appeal to the right target audience;
- (b) Mastering tools such as *Adobe Illustrator* and *Adobe Photoshop* may give developers a considerable advantage;
- (c) Following the DRY principle is easier said than done;
- (d) Developing web pages which work well across a multitude of devices and screen sizes is something I surely need to get better at.



References

- Kadavy, D., 2011. *Design for Hackers*. New York: John Wiley & Sons Inc.
- Krug, S., 2014. *Don't Make me Think*. San Francisco: New Riders.
- *Learning Gantt Charts by Chris Croft*, available at <https://www.linkedin.com/learning/learning-gantt-charts/how-to-manage-projects-with-gantt-charts?u=43268076>, accessed on November 18th 2021.



Annexes

GANTT CHART

