

Planning and Design

First Drafts and Consideration of Game Development

This document outlines the most important parts of the website's planning and design process, alongside first drafts of the splash page, articles and responsive elements, and the development of a matching-pictures game.

1. General Ethos

SmartFox is a website of mind-training puzzles and general knowledge articles, aiming to teach young children important facts about the world, in an entertaining and fun way, while improving their memory, attention span and logic.

The target audience is children between the ages of 5 and 10, with access to a computer or a mobile device. The games are challenging, made to stimulate their curiosity and problem-solving skills, and the news section consists of articles and videos adapted for their age.

2. Site Map

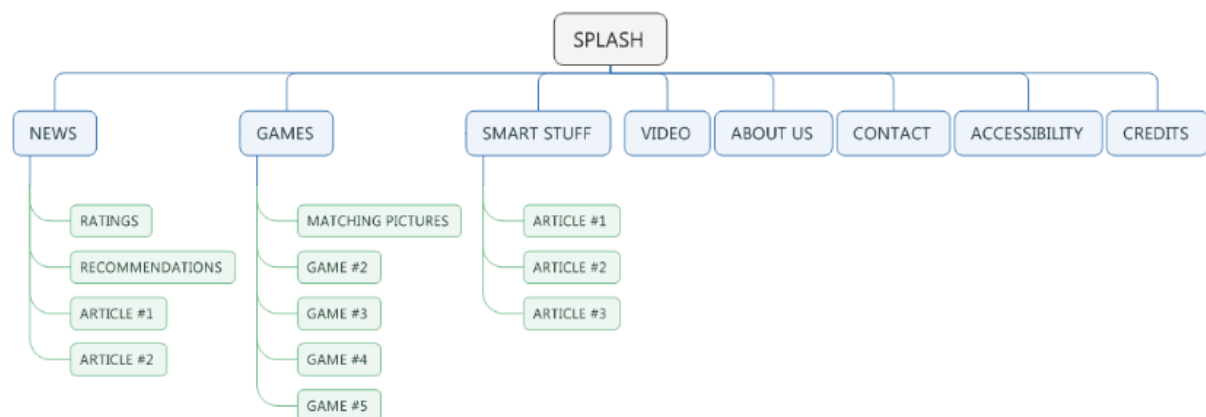


Figure 1 – Site Map

The general structure is kept as simple and intuitive as possible. All pages will be at most three clicks away, therefore the short attention span of children is accounted for. The Splash page (*Figure 2*) redirects the user to all displayed elements: the main game, ratings and recommendations, videos selected from the TED-Ed archive. To prevent loading issues, the latter redirect to Youtube.

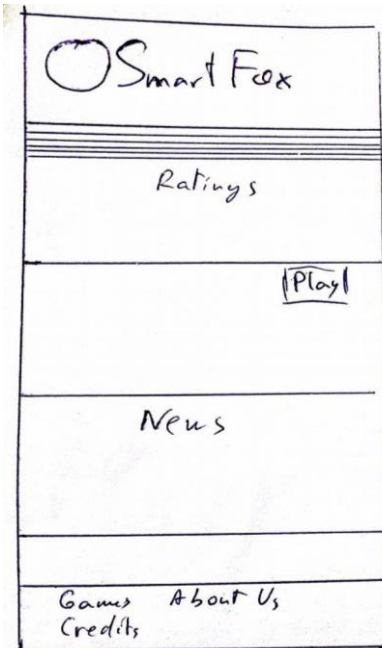


Figure 2 – Splash Page (Mobile)

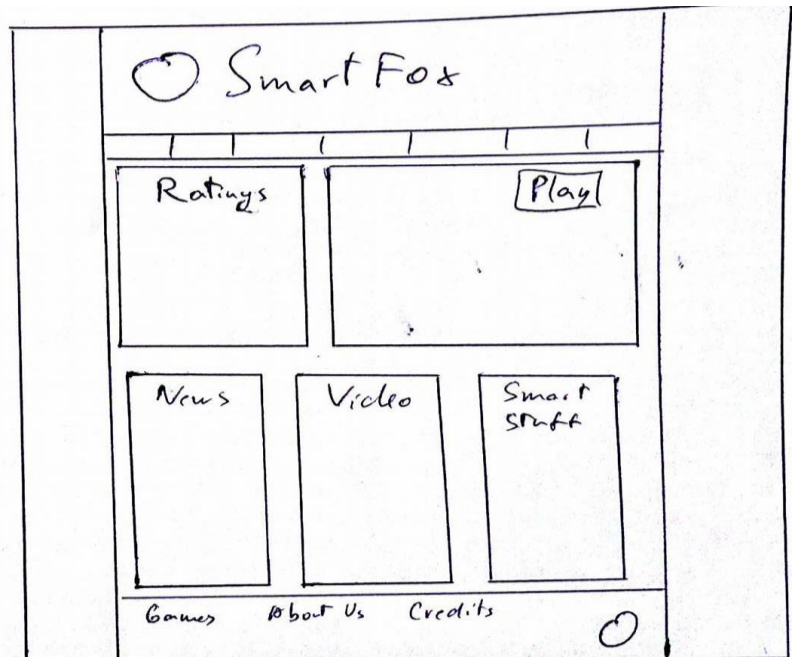


Figure 3 – Splash Page (Desktop)

3. Accessibility

Accessibility is an important issue and in order to properly integrate it in every aspect of the website, references will be made to both W3C's Accessibility Guidelines [1], as well as to StudyGs.com's concise description. [2]

The chosen colour scheme and background pictures have enough contrast to accommodate users with monochrome vision, and the pages remain aesthetically pleasing in style and structure even for people with colorblindness. All pictures used have an "alt" tag, to allow blind children to know the visual content of the page, and the navigation can be done using access keys, in conformity with some widespread norms. [3]

If possible, the game can be played by visually impaired users. On clicks, the alt tag of the picture displayed will be read out, alongside its position in the grid. When two photos are displayed, the user may hear the words "Match" or "Not a Match" accordingly.

4. Design Mock-ups

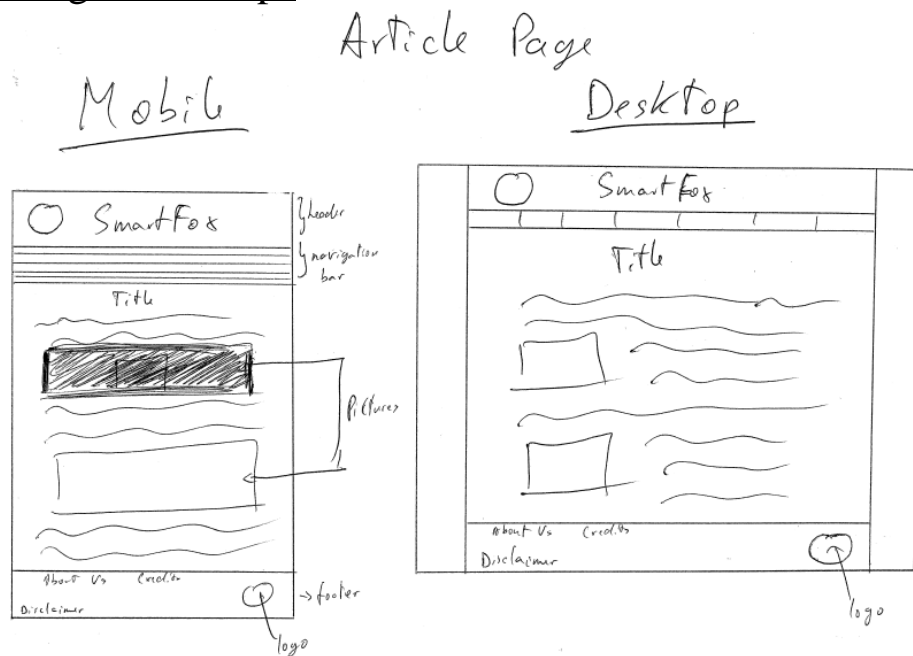


Figure 4 – The draft of an article page

As can be observed above (Figure 4), simplicity was the key word, the transition between mobile and desktop display being made seamlessly. The text wraps around images, who will increase in size on the mobile version, to ensure visibility.

All articles are responsive, changing from row to column display and adapting title size (if necessary). SmashingMagazine [4] has proven useful in making choices related to responsive images and navigation.

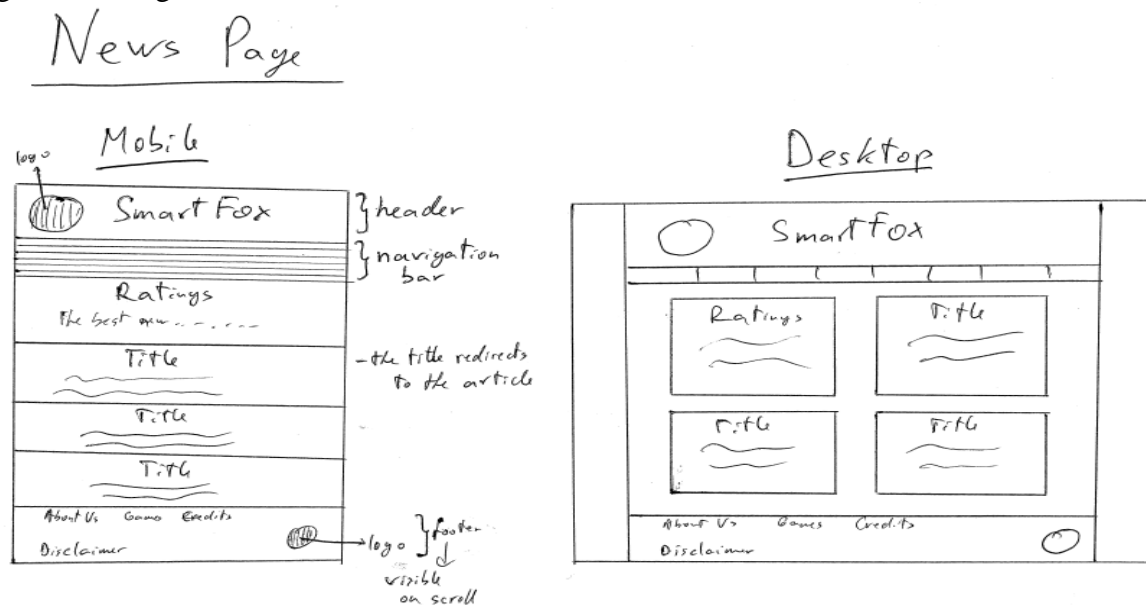


Figure 5 – Draft of the News Page

The only essential breakpoint is at 480px, the width of most smartphones. Once the browser size exceeds 480px, a portrait display is no longer enough to present the information efficiently, due to excess whitespace and perhaps misbehaving floating elements. Further breakpoints to be considered are at 700px and 1200px, the first considering tablets and perhaps tweaks of font size and the latter accommodating large desktop displays.

5. Menu System

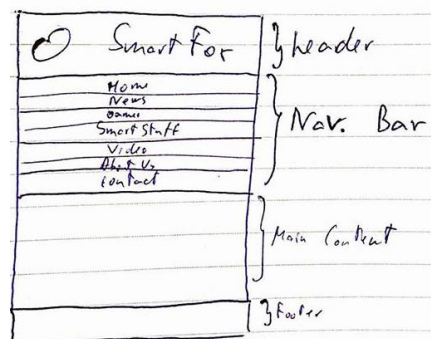


Figure 4 - Early Draft of Mobile Navigation

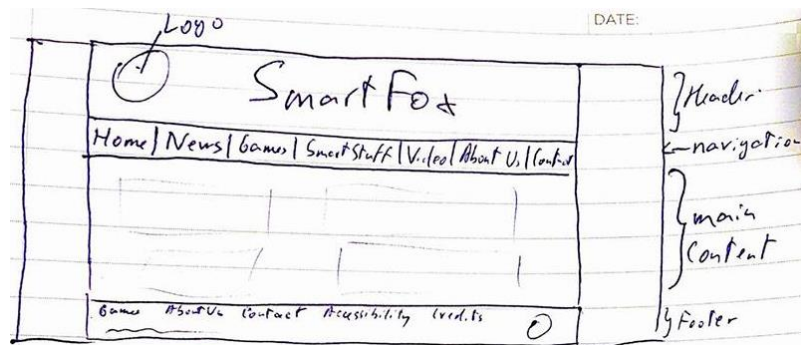


Figure 5 - Early Draft of Desktop Navigation

The navigation bar changes drastically past the 480px width, as it transforms from block to inline. An initial reference was Responsive Navigation's Do Nothing approach, enhanced by its current modified display. [5] Such a simple change fits with the scroll mentality of smartphone users and the requirement for complete visibility at all times of desktop users. The pages considered to be most important are listed there, with the special mention that additional links are provided in the footer.

6. Puzzle Game Design

The Matching Pairs game is one of the longest-lasting online games and for good reason, as the memory training it provides is efficient and enduring. On SmartFox, the game consists of 8 pairs of images, all displaying beautiful art of animals and nature.

To ensure its transferability from mobile to desktop, the width of the canvas will be under 480px, which keeps it comfortably visible on large screens and accessible on small ones.

The technical approach implies forming randomized arrays of references to each item of a pair (a number linked to the array of loaded pictures). Initially, the canvas displays 16 copies of the logo and, on each click, the picture connected to the mouse coordinates is drawn over the logo. If after two distinct clicks (clicks on different grid positions), the two pictures selected match (the references coincide), they remain displayed. Otherwise, the logo is drawn over them.

If necessary, developer.mozilla.org provides a detailed tutorial on advanced canvas manipulation, making for a great development resource. [6]

7. Conclusion

This document outlines the preliminary designs of the website *SmartFox*, as well as the technicalities of the Matching Pictures game. Implementation aims to follow the aforementioned

drafts and plans closely, however changes may occur and shall be discussed in the “Development and Testing” document.

Further work is still required to ensure the style is consistent across pages and that the game will work flawlessly. Finally, the website must be optimized, secured from possible attacks and tested across various browsers.

References

- [1] "W3C's Accessibility Guidelines," [Online]. Available: <https://www.w3.org/TR/WCAG10-HTML-TECHS/>.
- [2] "Basics of Website Design and accessibility," [Online]. Available: <http://www.studygs.net/accessibility.htm>.
- [3] "W3School - Global Accesskey," [Online]. Available: http://www.w3schools.com/tags/att_global_accesskey.asp.
- [4] "Smashing Magazine - Guidelines for Responsive Web Design," [Online]. Available: <https://www.smashingmagazine.com/2011/01/guidelines-for-responsive-web-design/>.
- [5] "Responsive Navigation - Do Nothing Approach," [Online]. Available: <http://responsivenavigation.net/examples/simple-padding/index.html>.
- [6] "developer.mozilla.org - Canvas API Tutorial," [Online]. Available: https://developer.mozilla.org/en-US/docs/Web/API/Canvas_API/Tutorial.