‘Whitchurch Silk Mill’ Project Y2S2

A More Detailed Document of the Processes not Relating to the Programming/Building Processes

Daniel Wilkins

Contents

The Briefs

"Look, feel and creation of a working waterwheel 3D model for Whitchurch Silk Mill to contain information and visuals pertaining to the working 1890's waterwheel."

"Look, feel and creation of a 3D loom for Whitchurch Silk Mill to contain information and visuals pertaining to the operation of a loom, provided by Whitchurch Silk Mill"

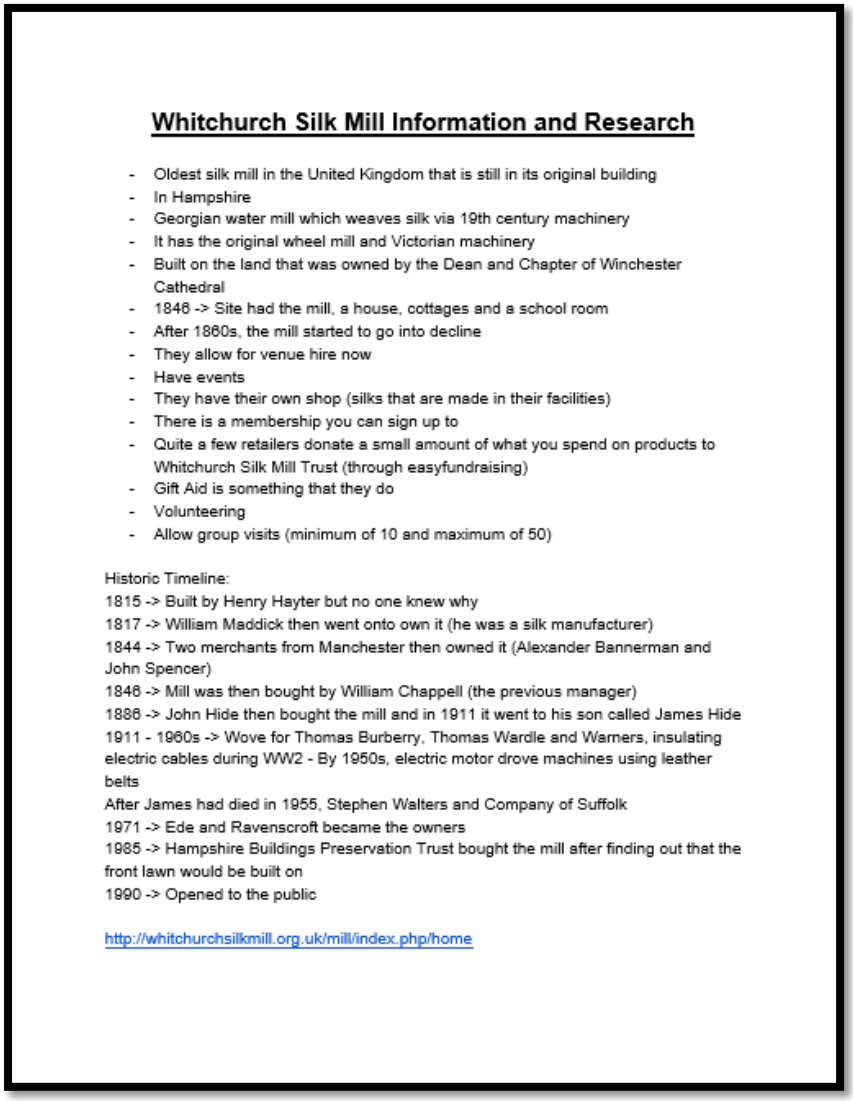
Before Deciding on a Brief

Viewing the Current Website

Introduction/Overview

Before deciding on a brief, I decided to undertake a few small tasks in order to prepare for when the client came into our lecture in week 2. I viewed the current website to gain some background knowledge to the silk mill but to also understand what services were provided by the business. This helped to understand the context of each brief.

The Collected Information and Research



Whitchurch Silk Mill Information and Research

- Oldest silk mill in the United Kingdom that is still in its original building
- In Hampshire
- Georgian water mill which weaves silk via 19th century machinery
- It has the original wheel mill and Victorian machinery
- Built on the land that was owned by the Dean and Chapter of Winchester Cathedral
- 1846 -> Site had the mill, a house, cottages and a school room
- After 1860s, the mill started to go into decline
- They allow for venue hire now
- Have events
- They have their own shop (silks that are made in their facilities)
- There is a membership you can sign up to
- Quite a few retailers donate a small amount of what you spend on products to Whitchurch Silk Mill Trust (through easyfundraising)
- Gift Aid is something that they do
- Volunteering
- Allow group visits (minimum of 10 and maximum of 50)

Historic Timeline:
1815 -> Built by Henry Hayter but no one knew why
1817 -> William Maddick then went onto own it (he was a silk manufacturer)
1844 -> Two merchants from Manchester then owned it (Alexander Bannerman and John Spencer)
1846 -> Mill was then bought by William Chappell (the previous manager)
1886 -> John Hide then bought the mill and in 1911 it went to his son called James Hide
1911 - 1960s -> Wove for Thomas Burberry, Thomas Wardle and Warners, insulating electric cables during WW2 - By 1950s, electric motor drove machines using leather belts
After James had died in 1955, Stephen Walters and Company of Suffolk
1971 -> Ede and Ravenscroft became the owners
1985 -> Hampshire Buildings Preservation Trust bought the mill after finding out that the front lawn would be built on
1990 -> Opened to the public

http://whitchurchsilkmill.org.uk/mill/index.php/home

(*Whitchurch Silk Mill,* 2011)

Creating a List of Questions

Introduction/Overview

I also thought of some questions to ask the client with regards to whether they wanted the website re-designing/re-developing but also for a couple of the briefs that the group as a whole was interested in. These were the 3D model briefs as shown previously in the briefs section.

The List of Questions

Questions for Whitchurch Silk Mill Client

Website Based Questions:

Would you be open to a redesigned/redeveloped website?

Are there any aspects of the website that you believe need improving either visually or from a functioning point of view?

Is the image you currently have at the top of each page the logo or is the logo the image placed on a couple of posters on the website e.g. on the volunteering page?

What Content Management System do you use if indeed you do use one?

Questions Based on other Briefs:

With regards to the 3D projects, would you be interested in them being placed on the website you have currently? (Might already be answered on brief?)

With regards to the 3D loom brief, would you be content with the model being placed on the website/app which could then be could be interacted with through clicking on different parts of the loom (have videos of part in action as well as description)?

Do you have any pictures of your looms?

What style would you like e.g. Victorian font, etc.?

Development Ideas

Introduction/Overview

As well as the previous, I thought of some ideas of how development/coding could have been implemented into the 3D modelling briefs and this can be seen below.

The Actual Ideas

Ideas for Developers with regards to 3D Projects

3D Loom - Look, feel and creation of a 3D loom for Whitchurch Silk Mill to contain information and visuals pertaining to the operation of a loom, provided by Whitchurch Silk Mill:

Create a web page or single page application that allows the user to click on a certain aspect of the loom and it takes them to it with pieces of information and perhaps a video of that part in action (JavaScript perhaps?)

Powered by Water - Look, feel and creation of a working waterwheel 3D model for Whitchurch Silk Mill to contain information and visuals pertaining to the working 1890's waterwheel.

Allow for a quiz that tests knowledge of how the waterwheel works and depending on how many are answered correctly results in the amount of times they are allowed to play with the waterwheel.

https://animagraffs.com/

Current Website Analysis

Introduction/Overview

Finally, if the client were to be open to a re-design/re-development of their current website, I produced a list of aspects which could have possibly been improved as well as listing a couple of competitors and seeing how their websites appeared.

I understood from the first competitor website that the information was structured in a clear and professional way with a simplistic and modern appearance. Likewise to the second competitor, this website structured the information in a clear and professional method with again a simplistic and modern appearance. The typography was clear and visually pleasing on the eye.

Analysing the Current Website and Listing Two Competitor Websites

How the Current Website can be Improved

- Website could be designed to fill the whole page rather than being central
- Not fully responsive (fits on a mobile device but is quite small)
- Have a different style to represent its industrial heritage
- Or the style could be more modern with elements of industrial heritage
- Content could be rearranged
- Headings and paragraphs are the same fonts, maybe this could be changed to have a particular font for a heading and then another font for the main content (this breaks up the content?)
- Have their logo on there (think this is seen on a poster on this page of the website - http://whitchurchsilkmill.org.uk/mill/index.php/volunteering)
- Have a map which shows directions as well as text (visual representation)
- Have a dropdown menu on each section rather than clicking on a section and then having the separate links down the side (more user friendly?)
- Sometimes question mark symbols are on the page (maybe some special character that isn't appearing?)
- Contact Us page could have a contact form
- 'Find us on Facebook' -> Could have Facebook logo placed in the footer (or somewhere similar)
- Some pictures are quite small (maybe make them bigger?)
- Some pages haven't been updated recently (unless there is nothing new to add)
- Maybe remove the 'last updated on...' on each page?

Possible Competitors (Looking at historic attractions and their websites):
http://www.trowbridgemuseum.co.uk/
http://www.iwm.org.uk/

The Actual Competitors Listed

Competitor 1 – Trowbridge Museum

Competitor 2 – Imperial War Museum

Initial Ideas/Research

Introduction/Overview

After listening to the client in a guest lecture, our group soon understood that the website was already in the process of being updated. Therefore, as a group, we decided to choose the two 3D projects of which we had to create models both for a loom and a waterwheel.

Undertaking Visual Research

Existing Examples of Interaction with 3D Models/Activities

Introduction/Overview

To begin the project, I decided to undertake visual research on ideas which already existed with regards to the interaction of 3D models and activities.

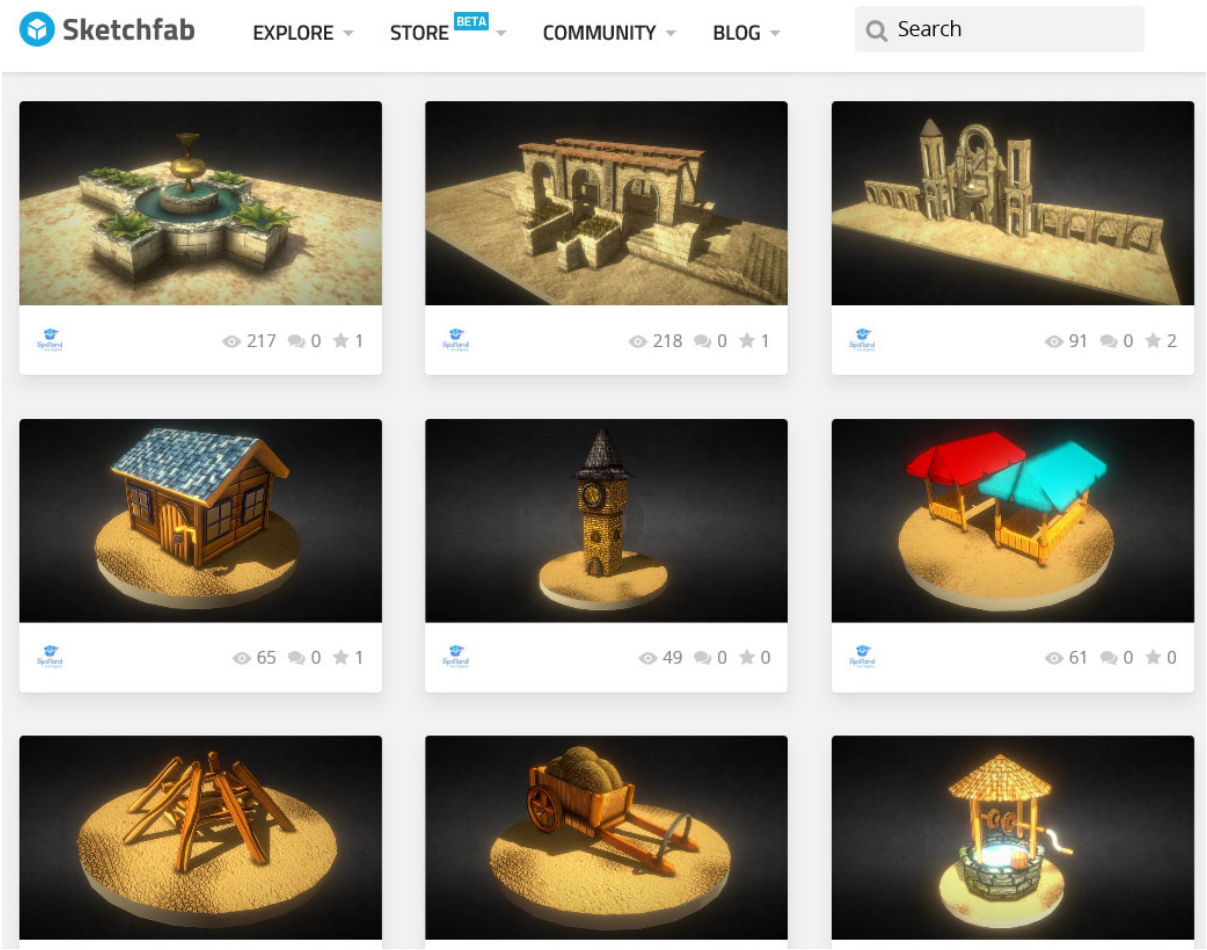
'Sketchfab'

Introduction/Overview

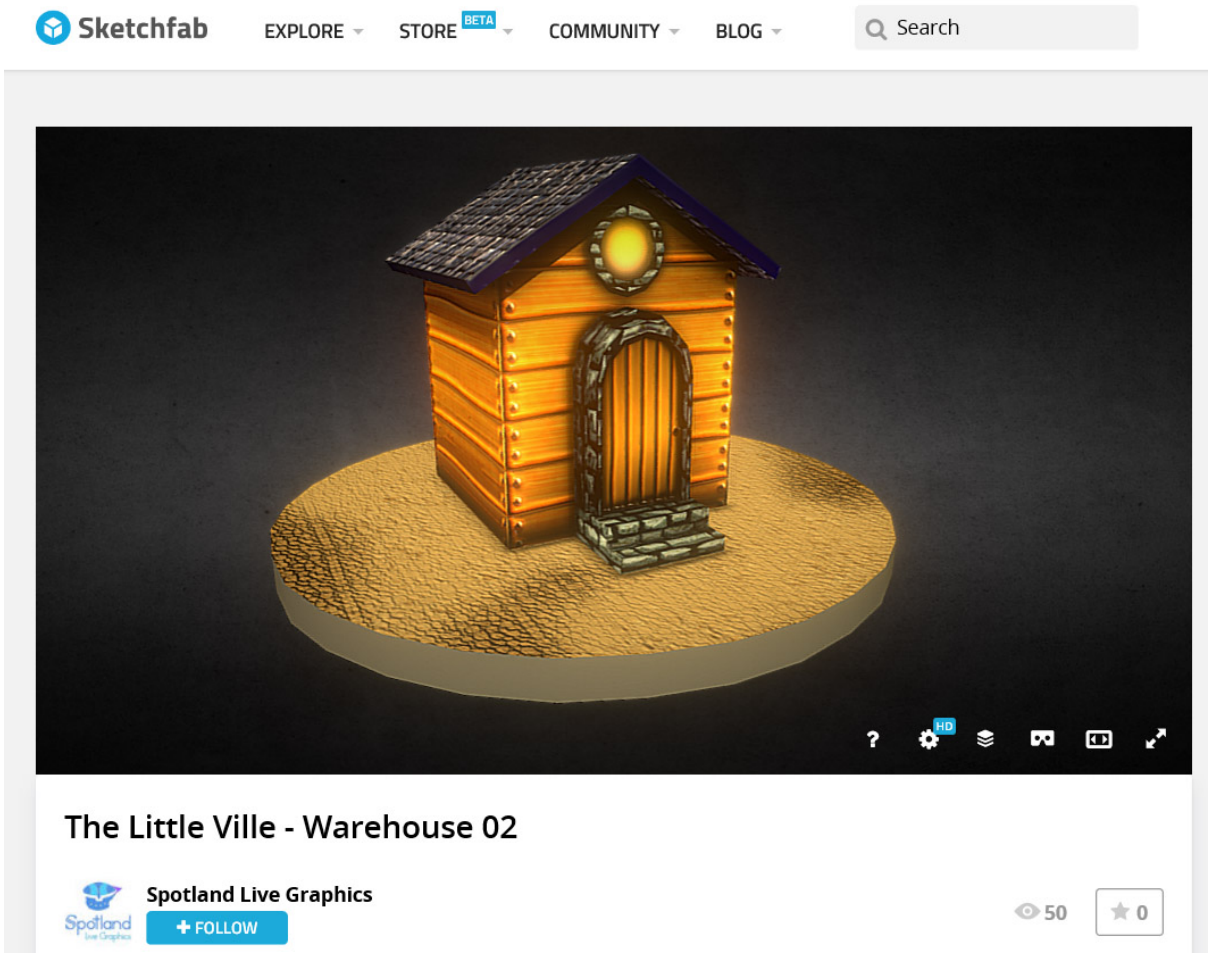
I found that with 'Sketchfab', there were 3D models which could have been rotated with the mouse allowing for viewing from several different angles.

The 3D Models

An Example of a List to Select from



An Example of Interacting with a Selected 3D Model



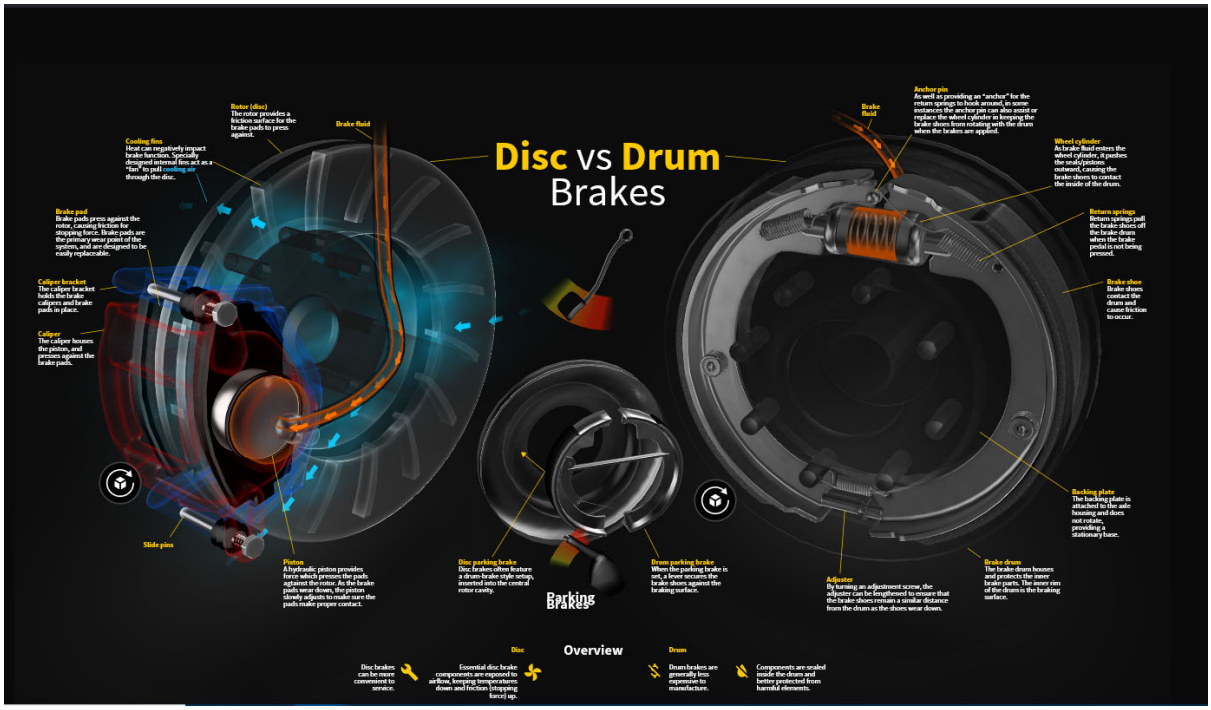
'Animagraffs'

Introduction/Overview

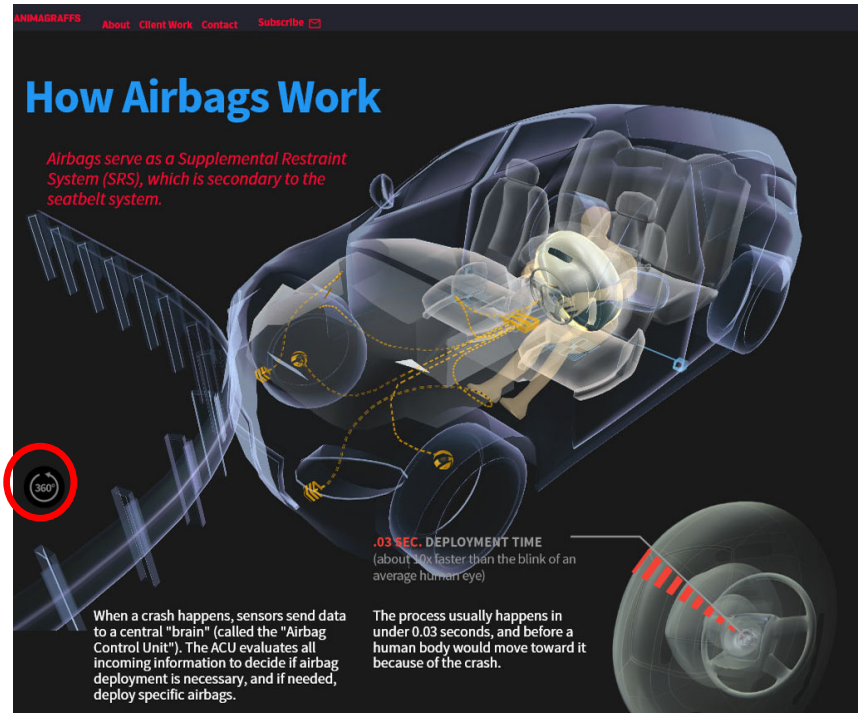
'Animagraffs' was another example which had 3D models that animated alongside annotation explaining different aspects of the models. There were also buttons to click on (highlighted in a red circle on the second image) which would have then allowed the user to have rotated each model. This research was influenced by advice from lecturers.

The 3D Models

Example 1



Example 2



'Jigsaw Planet'

Introduction/Overview

As well as viewing how 3D models could have been interacted with on a web page, I also thought it would have been beneficial to view how interaction could have worked in general. As is evident below, the user on 'Jigsaw Planet' could have selected a puzzle and then they would have had to have dragged and dropped the pieces into place to complete the puzzle under a time limit.

An Example of a Puzzle to Complete in a Time Limit

'STEAM' Museum Activity

Introduction/Overview

From previous experience of visiting the 'STEAM' museum in Swindon, there was an activity where the user would have been assigned the task of completing a puzzle to put different parts of a train together under a time limit. This was digital and it had to be done in a specific order.

The 'STEAM' Museum's Website

Current Technologies Examples

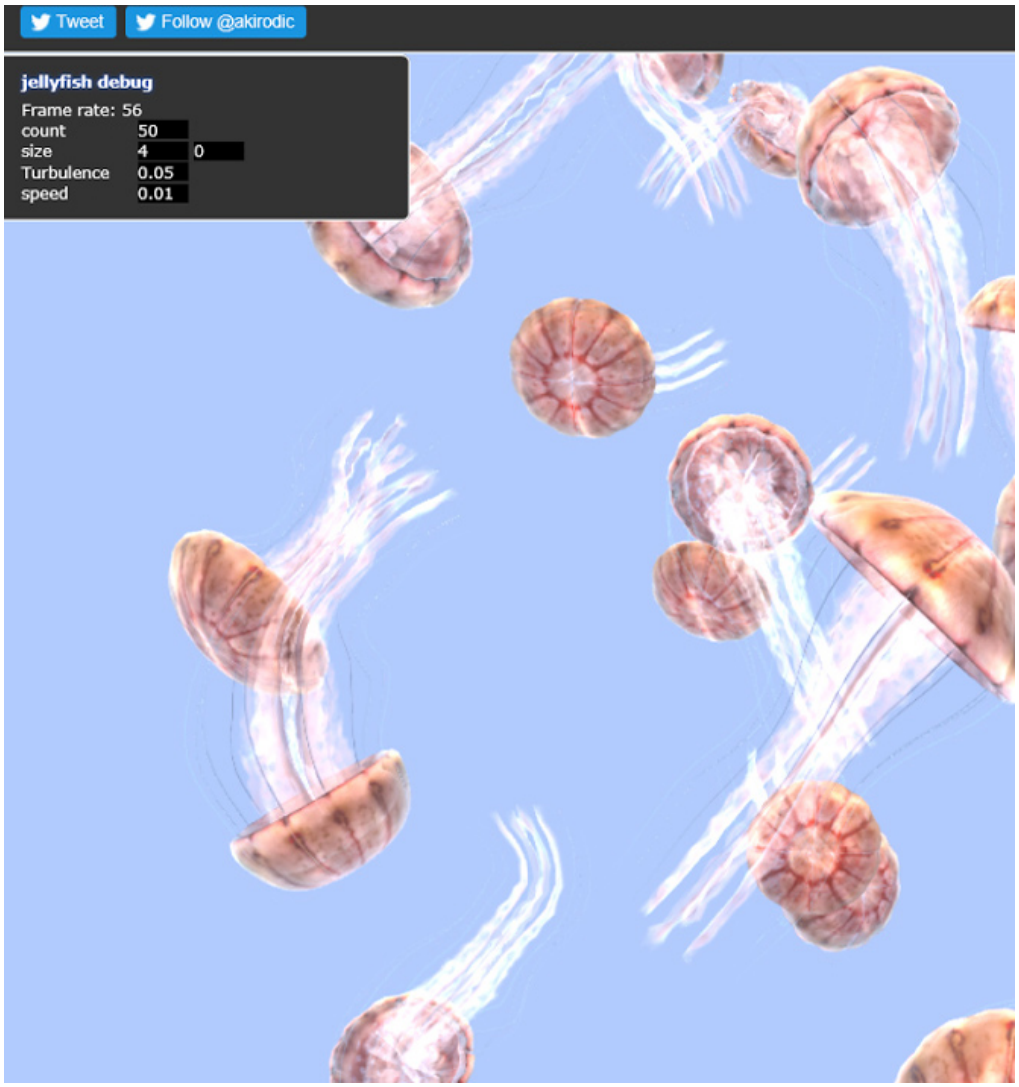
'WebGL' Examples

Introduction/Overview

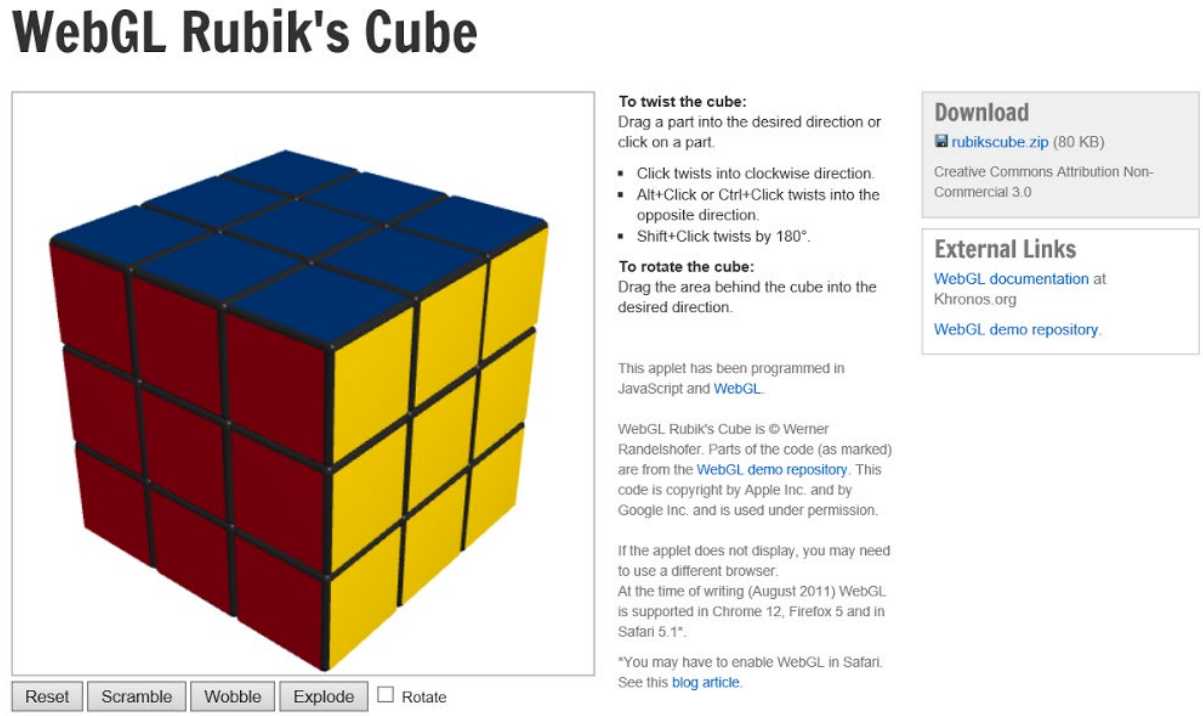
I also researched into some examples of 'WebGL' and the types of outcomes it could have produced whilst exploring different possible technologies.

Examples of the Outcomes with 'WebGL'

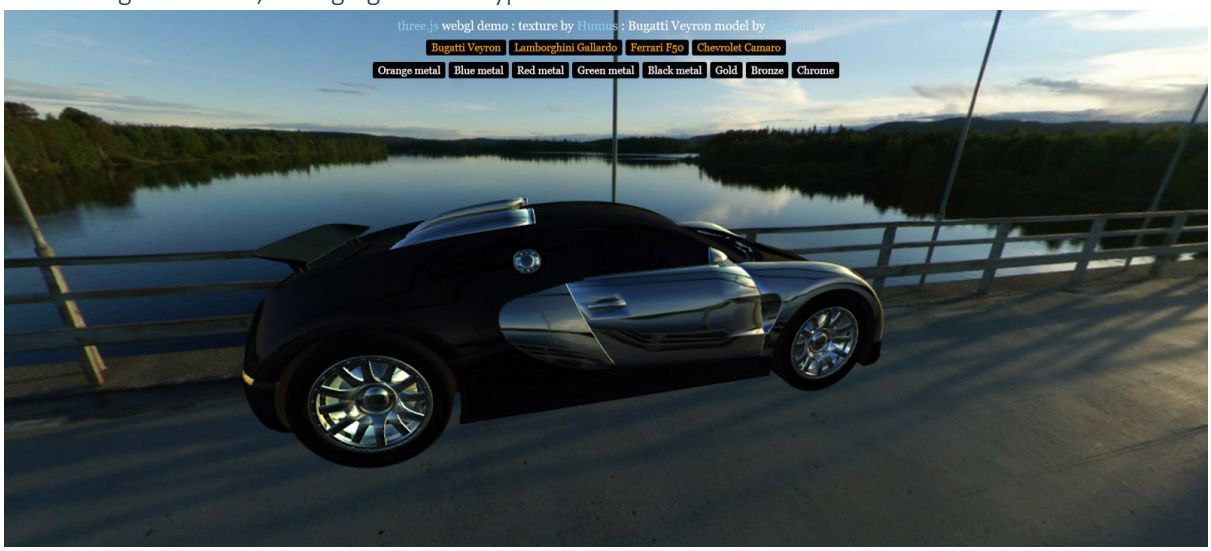
Typing a Quantity of Jelly Fish to Appear on a Web Page



Interacting with a Rubik's Cube



Interacting with a Car, Changing the Car Type and its Colour



Creating Initial Ideas

Introduction/Overview

After undertaking the research previously, I then continued sketching some ideas of what the group could have produced to have satisfied each brief. I created three sketches for each project.

The 3D Loom Brief Ideas

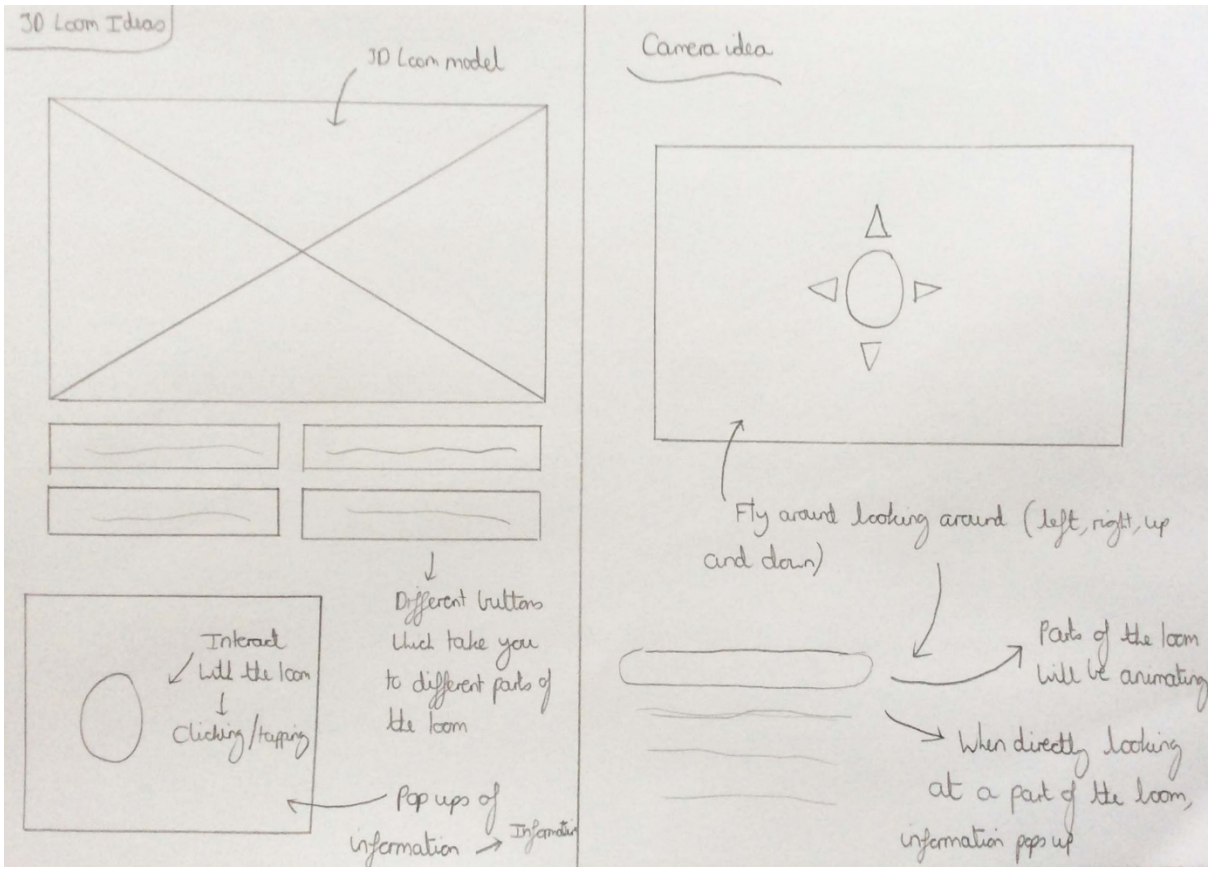
Ideas 1 and 2

Introduction/Overview

With the first idea, situated on the left, there would have been a 3D model of the loom on either a web page or application. The user would have been able to have interacted with the 3D model by clicking on buttons labelling different parts and this would have taken them to that specific part of the loom where they could have viewed a video, animation or have interacted with it as well as being able to read information about that part. This information would have popped up.

The second idea was the concept of the user being a camera which could have been controlled by using either keys on the keyboard for a web page or swiping with a finger on an application. Whilst navigating through the loom as the camera, the user would have seen constant animation of the loom and when the user would have looked directly at a part of the loom, information would have popped up about that part. This related to virtual reality but without the virtual headset.

The Sketches of Each Idea

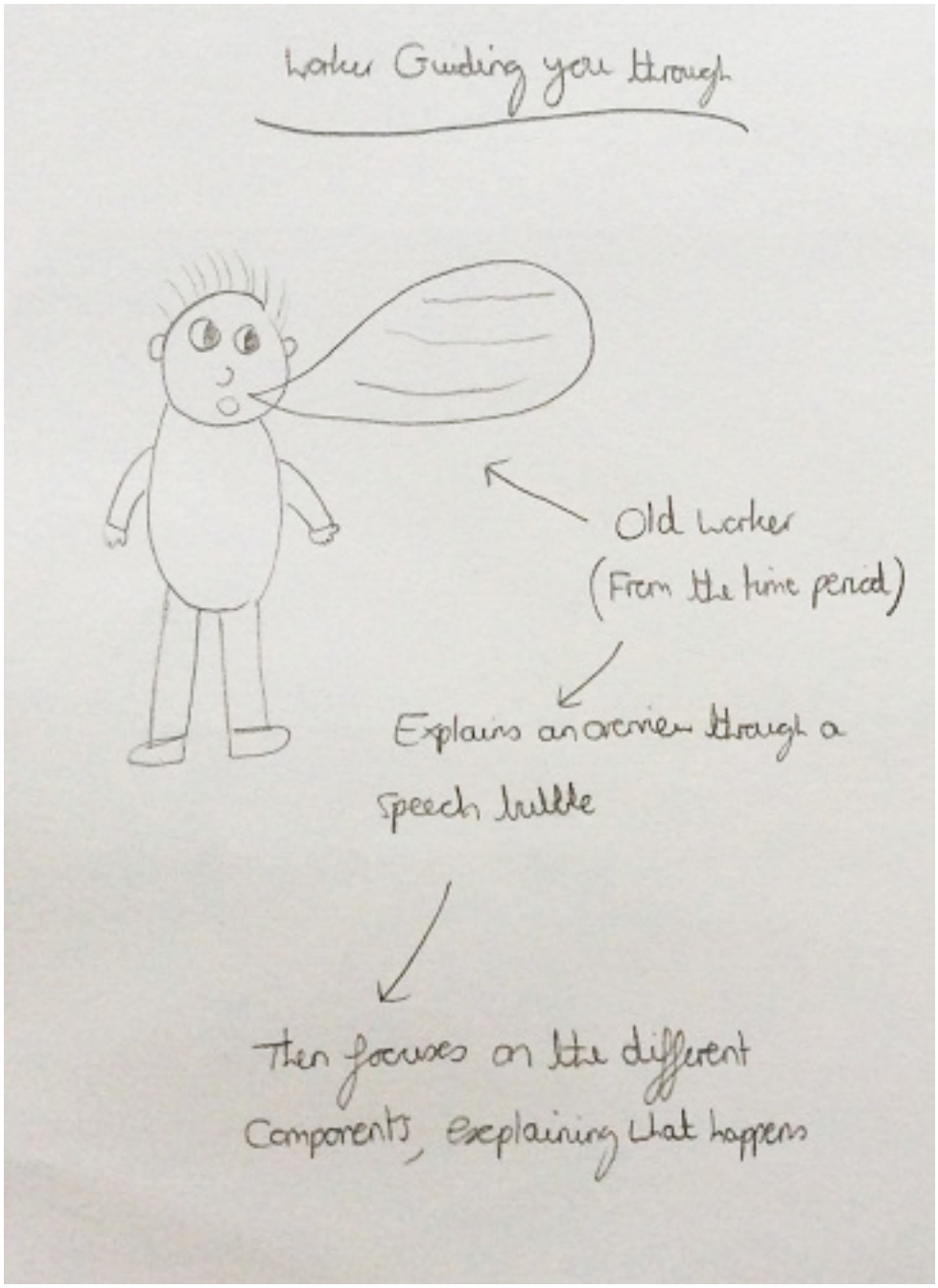


Idea 3

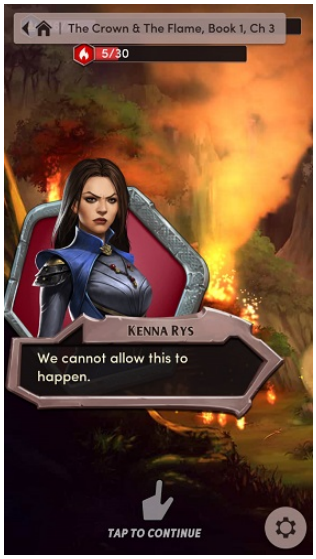
Introduction/Overview

The final idea for the 3D loom brief was that an old-fashioned worker of the mill would have guided the user through different aspects of the loom explaining what each part's function. This concept was inspired by characters I had seen in game and TV settings.

The Sketch of the Idea



The Inspiration for this Idea in Game Settings



Spherox

Spherox is lost in space, and he needs your help! Use your Maths, English and Science knowledge to help Spherox find his way home.

The Powered by Water Brief Ideas

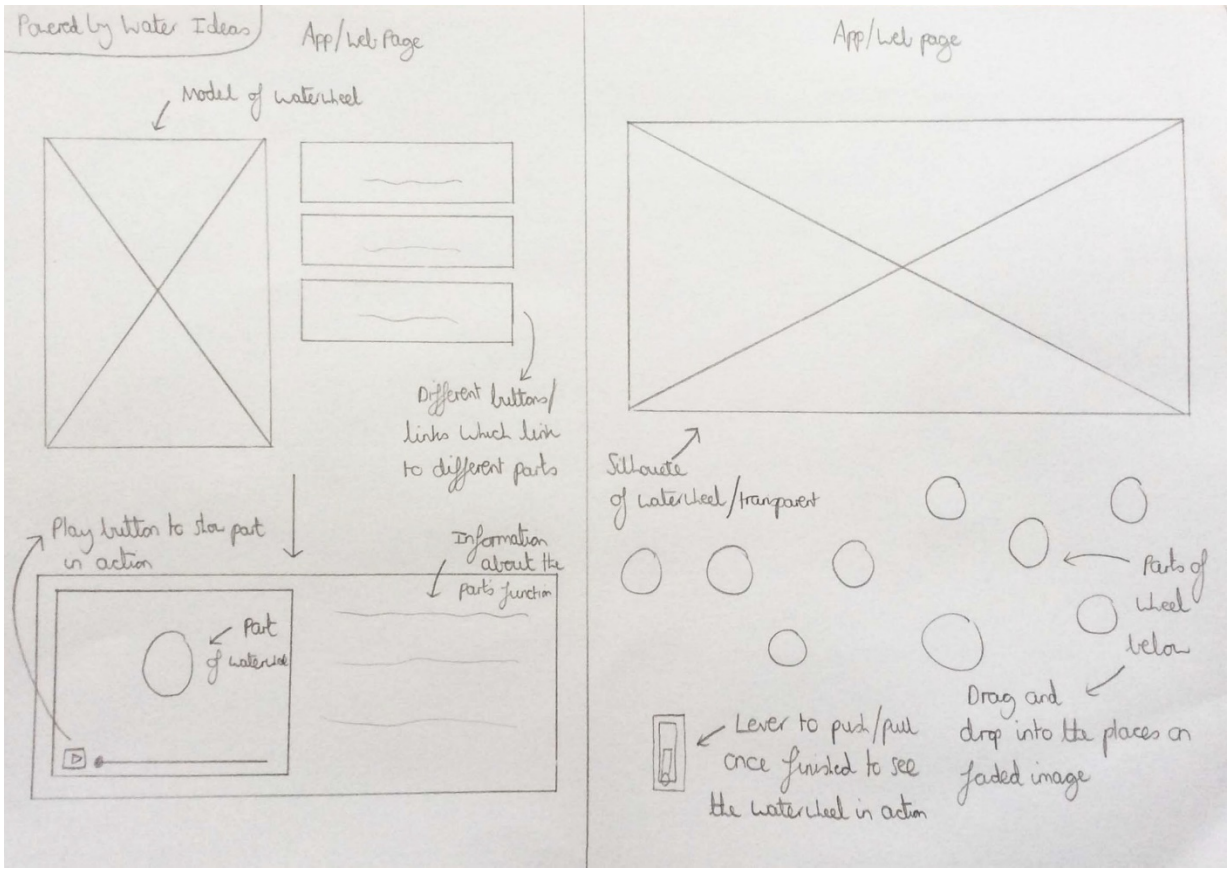
Ideas 1 and 2

Introduction/Overview

The first idea, situated on the left, was exactly the same concept as the first idea for the 3D loom. The user would have been able to have interacted with the 3D model by clicking on buttons labelling different parts and this would have taken them to that specific part of the waterwheel where they could have viewed a video, animation or have interacted with it as well as being able to have read information about that part.

The second idea was of a similar concept to that of the activity in the 'STEAM' museum, as previously mentioned. There would have been a transparent image of the waterwheel which the user would have had to have placed different parts of the waterwheel together on top of this transparent image. When hovering over each part, information would have appeared about it. Once the user would have been finished, they would have had the option to either have pushed a button or pulled a lever which would have operated the waterwheel, allowing them to understand how it animated and functioned.

The Sketches of Each Idea

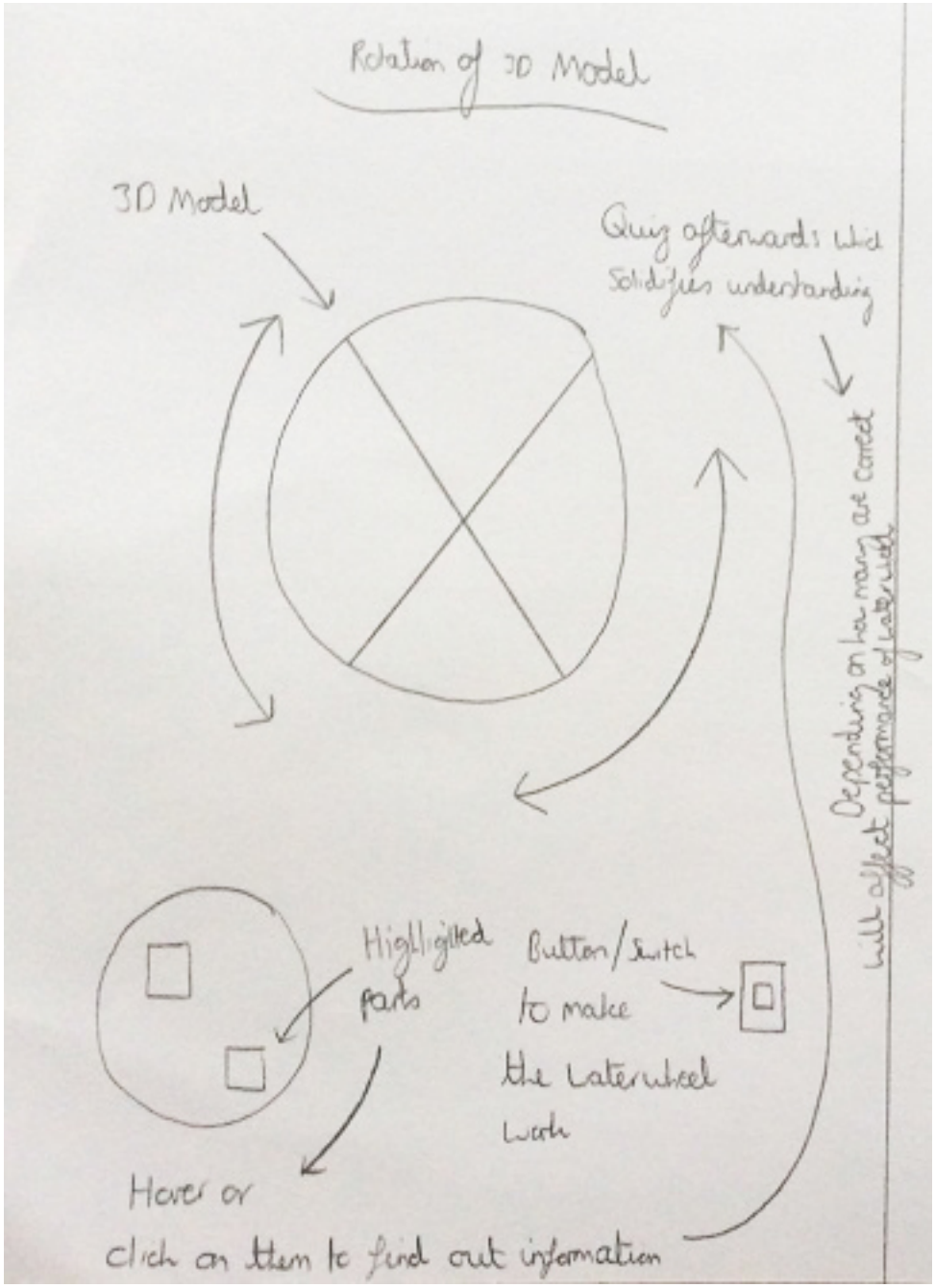


Idea 3

Introduction/Overview

The final idea for the 'Powered by Water' brief would have allowed the users to have rotated the 3D model and either have hovered or clicked on highlighted parts to read some information about their purpose/function. There would also have been a quiz afterwards which would have solidified understanding of how the waterwheel worked with the amount of correctly answered questions determining the performance of the waterwheel.

The Sketch of the Idea



Analysing the Advantages and Disadvantages of Each Idea

Introduction/Overview

After producing some ideas, I then analysed each one to help understanding of which ideas could have been developed further.

Analysis of the Ideas for the 3D Loom Brief

Interaction with the 3D Loom (Different Buttons and Information Pop-ups)

Advantages

- Simple to use for the user
- Allows for interaction as well as learning
- Learn about the different parts of the loom through selecting different aspects
- It is an idea which would be realistic to complete in the timescale

Disadvantages

- There is a possibility it could be a bit boring after a while (no game element or fun element)
- May be too simple
- With regards to schools, clicking on a series of buttons and reading information could possibly become boring

Camera Idea with 3D Loom

Advantages

- Allow for the user to view different aspects in more detail/a flying camera is quite interesting to use as it allows the user to control it
- Constant animation of the loom will help the user visualise what each part does
- Good element where information pops up when looking at a specific part of the loom
- Interesting for everyone, especially children

Disadvantages

- Quite complex to make
- Possibly could be hard to utilise (camera may cause the user to become lost/possibly not be able to view all parts)

Old-fashioned Worker Guiding the User Through the Loom

Advantages

- Sets the setting of what 'Whitchurch Silk Mill' used to be like
- Makes the subject more interesting if characters are included
- This explains what each part does in good detail and allows you to see each part animating

Disadvantages

- Involves a lot of work (making the character(s), the 3D model and programming it to work)
- Could be complex to divide each part of the loom into different sections of the informational product

Analysis of the Ideas for the Powered by Water Brief

Interaction with the Waterwheel

Advantages

- Probably be simple to use for the user
- Allows for interaction as well as learning
- A short clip of the part in action can be played, allowing for users to visualise that aspect when working and what it contributes to the process
- Learn about the different parts of the waterwheel through selecting different aspects
- It is an idea which would be realistic to complete in the timescale

Disadvantages

- There is a possibility it could be a bit boring after a while (no game element or fun element)
- May be too simple
- With regards to schools, clicking on a series of buttons and reading information could possibly become boring

Puzzle Idea

Advantages

- Gamification aspect
- Helps understanding of which part of the waterwheel goes where
- Provides information about each part
- Fun as you want to finish putting the waterwheel together
- Pushing the button/pulling the lever at the end is rewarding as you get to view the waterwheel in action
- Can be a simple activity

Disadvantages

- Already something similar in another museum ('STEAM' in Swindon)
- Could be confusing for school children

Rotation of the 3D Model

Advantages

- Allows the user to rotate the model and look at it from different angles
- If the parts are highlighted, this will be easily identifiable as being clickable/interactive
- Having a button/lever to make the waterwheel work is good for interaction
- A quiz will solidify the understanding of how a waterwheel works

Disadvantages

- Quite a complex idea to fully finish in time
- Scope of the project may be too big
- The quiz could be too hard/boring for the school children

The Final Chosen Ideas

Introduction/Overview

Before choosing the final ideas, the client was first of all informed about the possibility of what each project would have been. The ideas suggested were the first ideas within each sketch shown previously. The idea was to have the same idea for both projects but from client feedback, it was realised that the waterwheel project needed to have more of a game element to it which would have allowed for children to place pieces together to understand how the waterwheel would have functioned with different gears and levers as it was mentioned that this was part of the science curriculum. However, for the 3D loom idea, the client liked this idea which was good. We needed to adapt the idea for the 3D waterwheel before deciding the final idea.

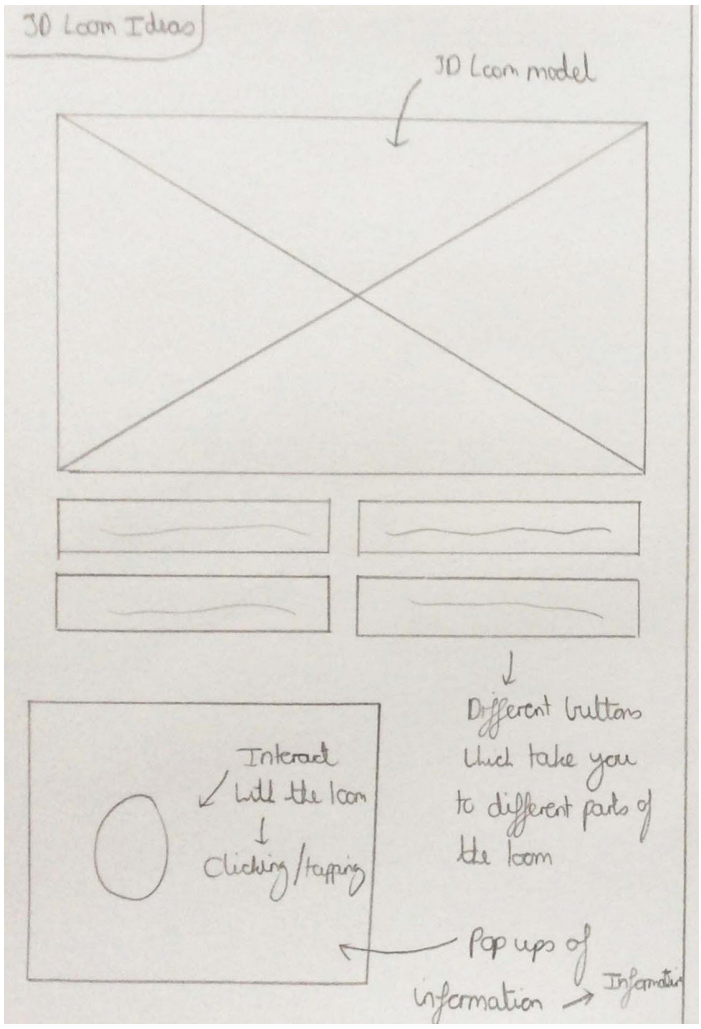
After seeking this advice from the client, it was then decided on the final ideas which can be viewed below.

The Final Idea for the 3D Loom Brief

Introduction/Overview

The final idea chosen was the first idea as can be seen below. We chose this idea because we believed it to be an idea that could have been achieved within the timescale for the project and something that would have been simplistic but effective.

The Sketch of the Final Idea



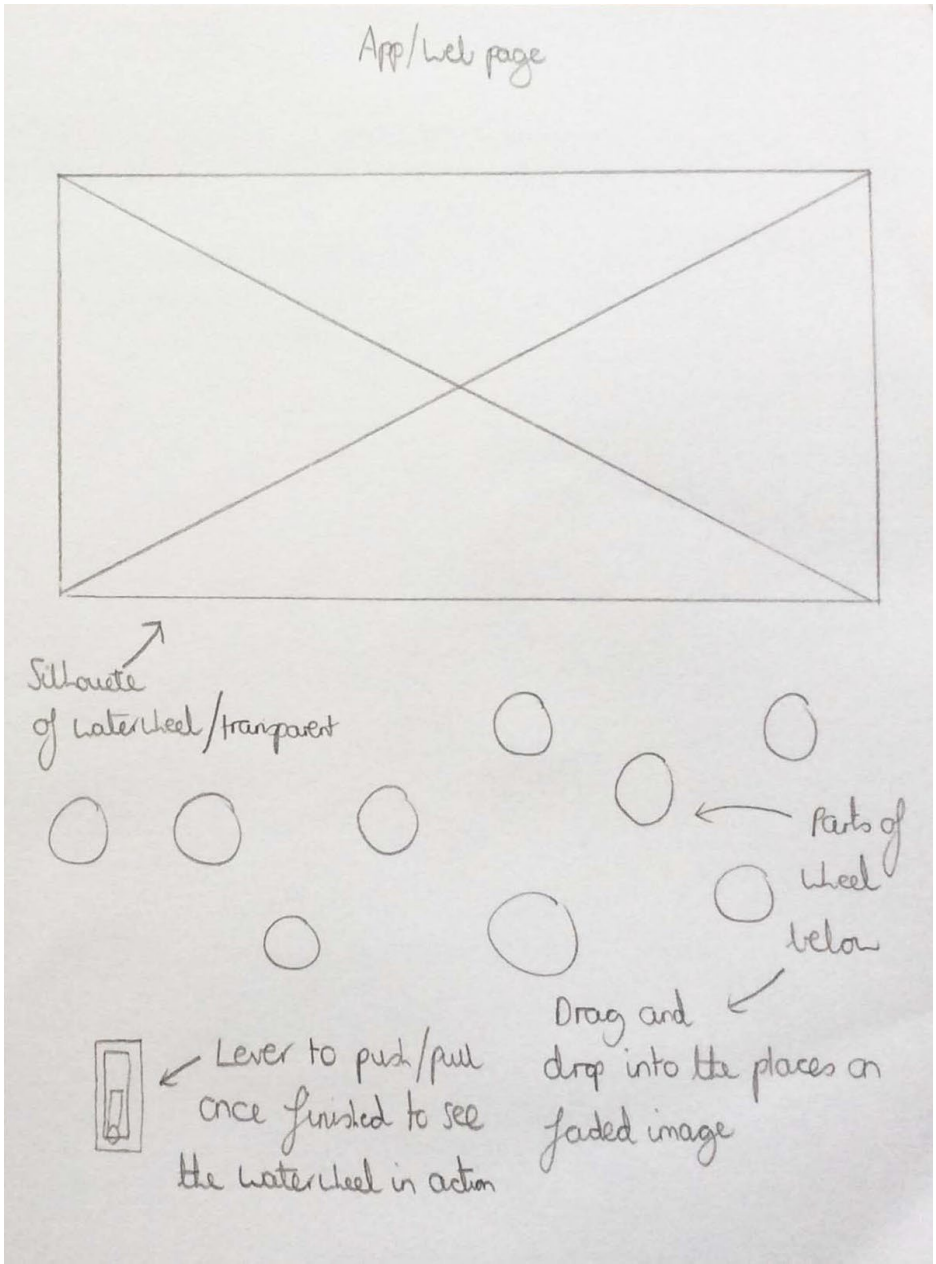
The Final Idea for the Powered by Water Brief

Introduction/Overview

The final chosen idea was the second idea as can be seen below. Likewise to the other idea, we believed it to be an idea that could have been achieved within the timescale for the project but also something which would have encouraged learning through gamification in a simple but effective way.

Please note: As the project developed further, the other developer adapted the idea above to suit the idea chosen for the 3D loom and also implemented a quiz aspect as well.

The Sketch of the Final Idea



Further Research

Introduction/Overview

After deciding which ideas we would have been developing, I then undertook further visual research to view how interaction could have been achieved with similar ideas to ours. This is viewable below.

The Collected Research

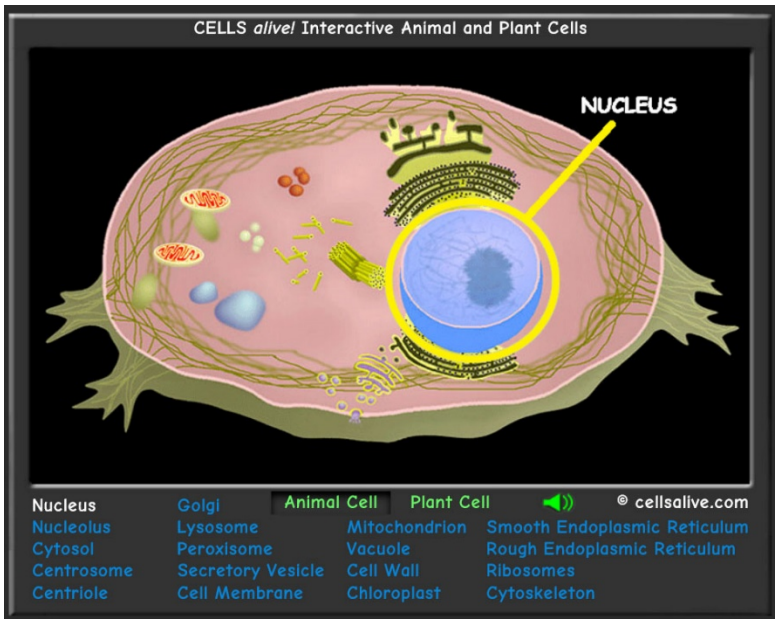
'Cells Alive'

Introduction/Overview

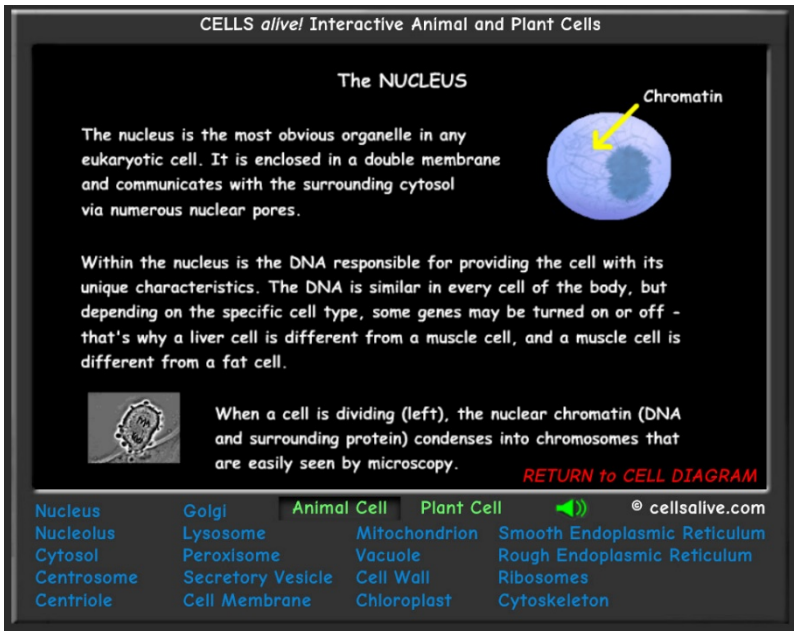
As can be seen below, the part of the animal cell was highlighted and then once selected, the website page navigated the user to read more information about the highlighted section.

An Example of the Product in Use

Highlighting a Part of the Animal Cell



Being Navigated to a Separate Screen with Further Information About the Cell Part



'Amplifon'

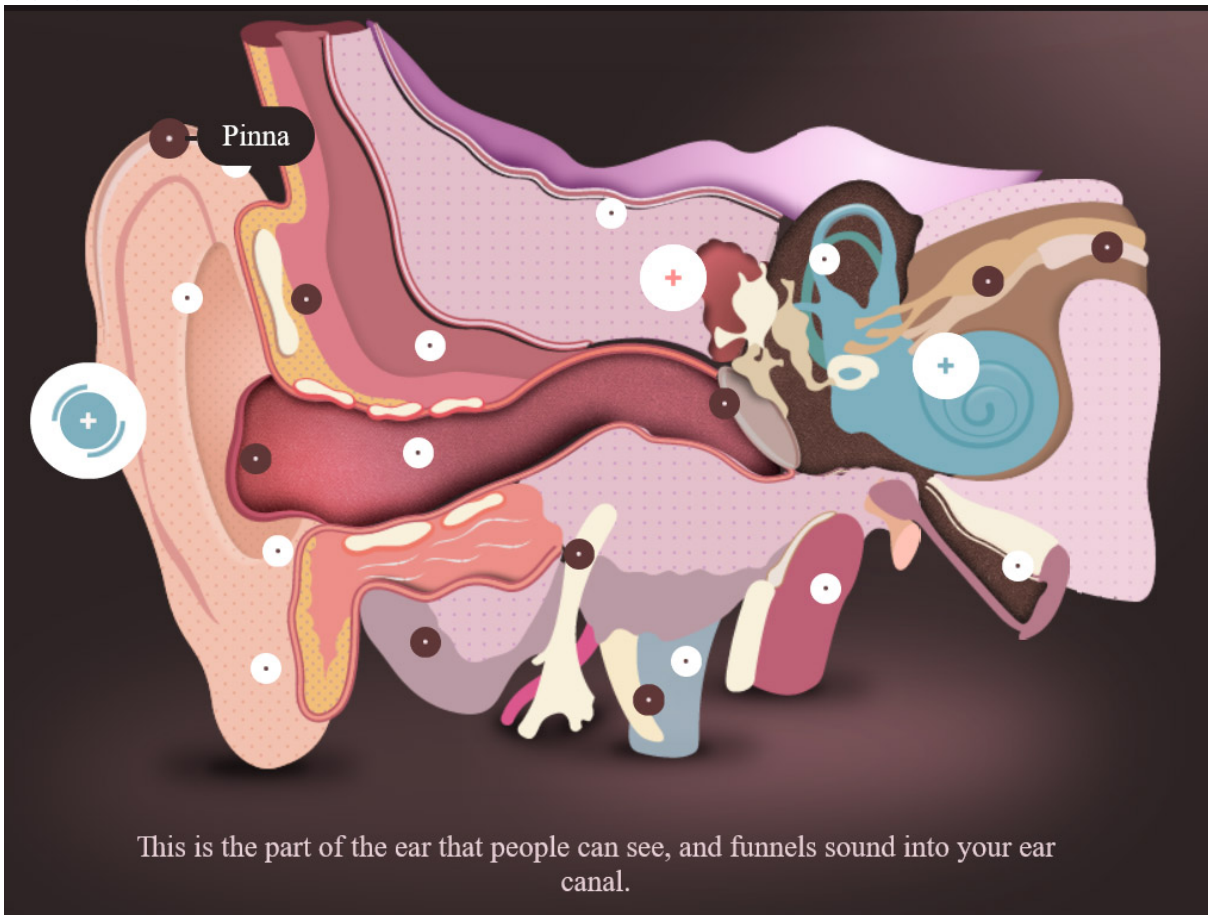
Introduction/Overview

With this example, this was an outer ear which allowed the user to interact with different parts by hovering over each element and information was then displayed underneath, describing to the user how each part functioned.

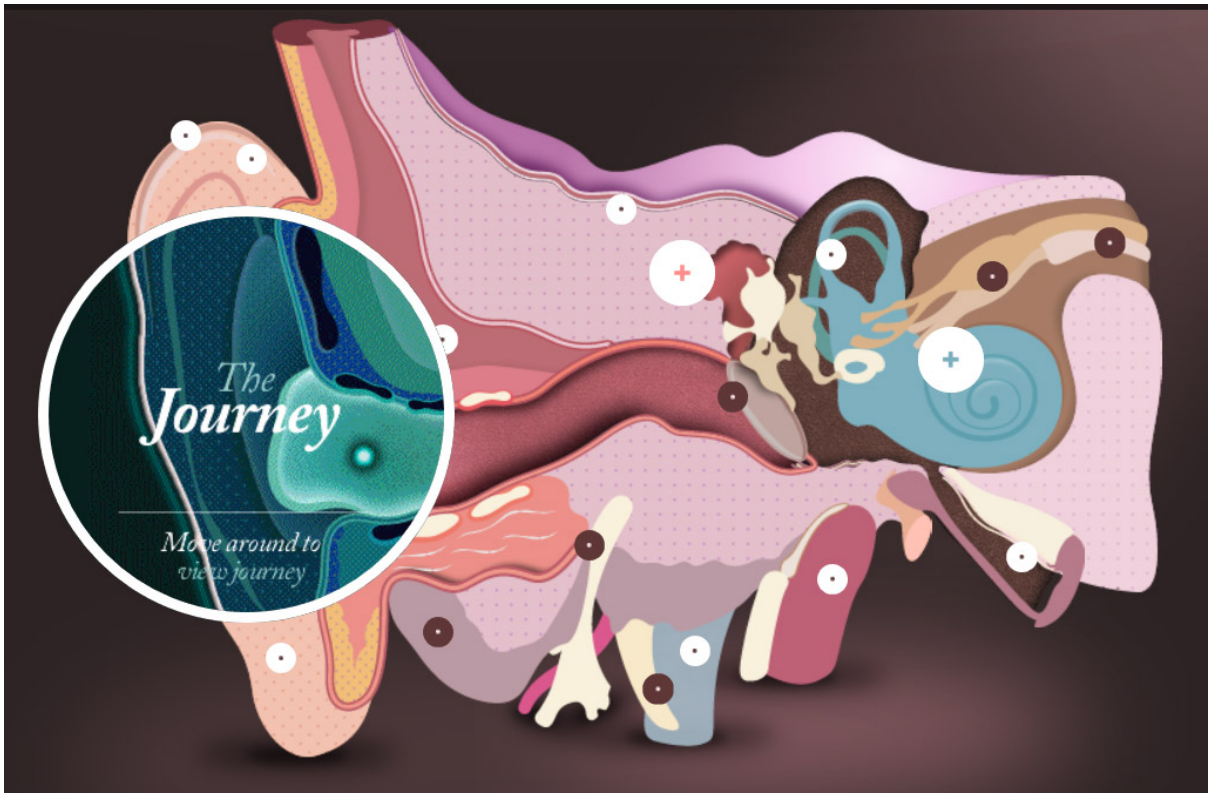
There was also an option to the user to view the inner ear and also the journey of how sound passed through the ear and into the brain. This contained animations along with different pieces of information as travelling along the different stages.

An Example of the Product in Use

Highlighting Part of the Ear with Information Placed Underneath



The Journey Example



It is worth noting that from this stage onwards, the group divided into two smaller groups of two where I would have been working to create the project outcome for the 3D loom brief.

Wireframes, Sitemaps and Flowcharts

Wireframes

Introduction/Overview

After undertaking previous research, I then decided to produce some wireframes for how the 3D loom page could have been structured. These can be viewed below.

Desktop Wireframes

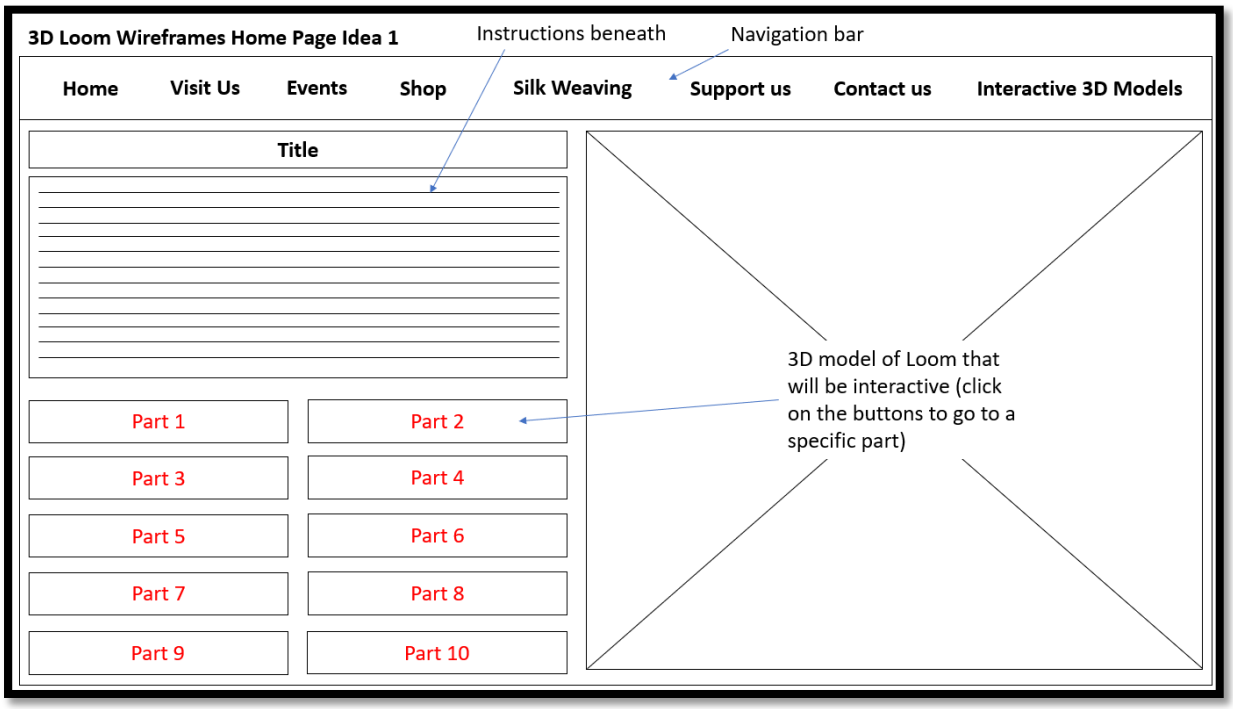
Home Page Wireframes

Idea 1

Introduction/Overview

This was the first idea of how the page could have appeared. There would have been the navigation situated across the top of the page with the title and instructions of what to do underneath. Then there would have been the interactive 3D model of the loom placed to the right-hand side of the page with buttons that the user would have selected to go to that specific part of the loom on the left.

The Actual Wireframe

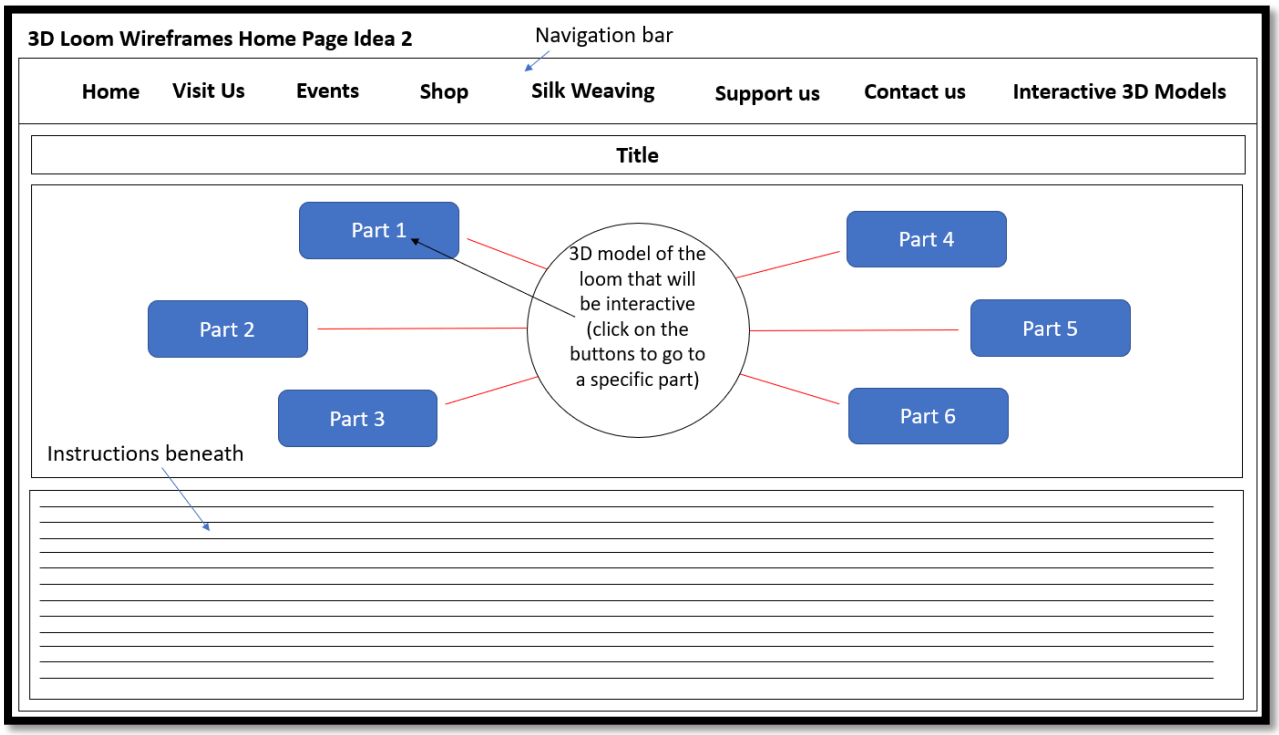


Idea 2

Introduction/Overview

This was the second idea for how the home page could have appeared. Again, the navigation bar would have been placed at the top of the page but this time the title with instructions and interactive 3D model with the buttons would have been placed underneath in a vertical format.

The Actual Wireframe



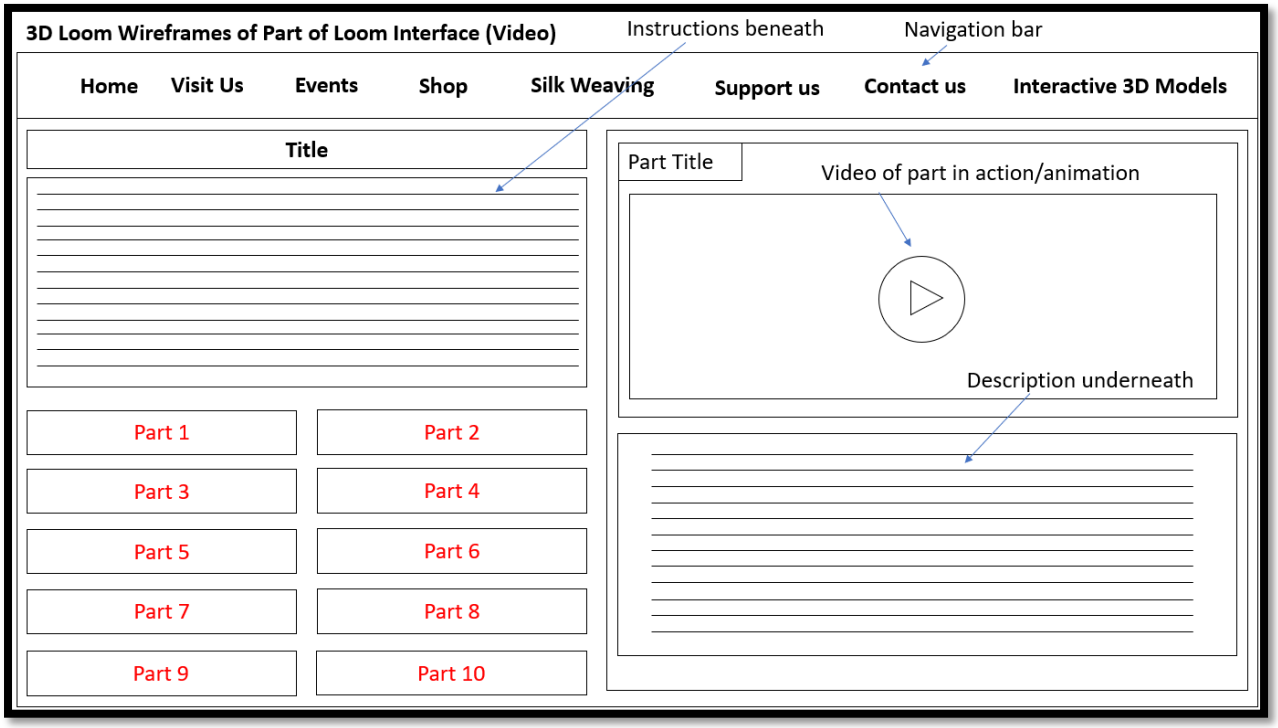
Part of Loom Interface Wireframes

Idea 1

Introduction/Overview

This wireframe showed the part selected by the user via the buttons situated on the left-hand side with a video/animation and a description placed underneath.

The Actual Wireframe

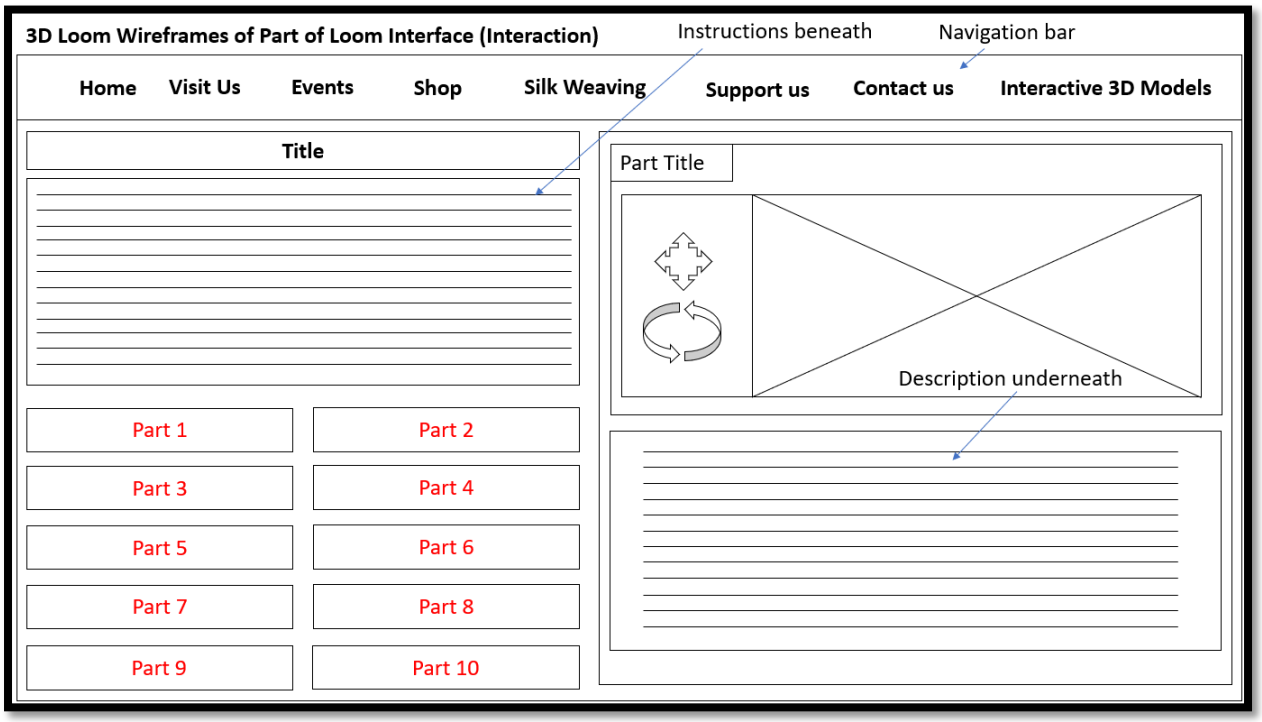


Idea 2

Introduction/Overview

This was similar to the previous wireframe. However, this one demonstrated the ability of interacting with the part of the 3D model. The user would have been able to have panned around as well as rotating the object as seen on previous research examples.

The Actual Wireframe

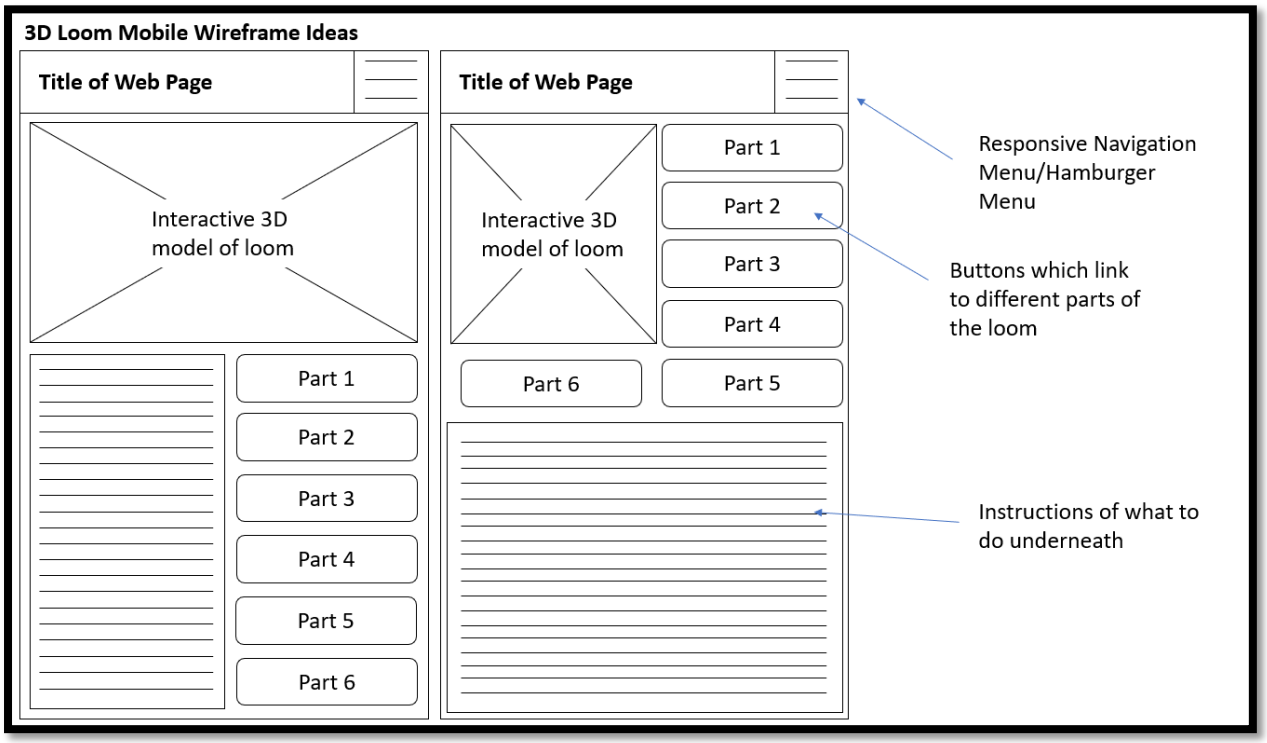


The Mobile Wireframes

Introduction/Overview

These wireframes demonstrated how the 3D loom page would have appeared on a mobile device. The first one showed the interactive 3D model with the instructions and buttons placed underneath. The second one displayed the 3D model to the left with the buttons surrounding it and the instructions beneath. As well as this, there was a responsive navigation menu placed in the top-right hand corner of the screen with the title of the web page to the left.

The Actual Wireframes

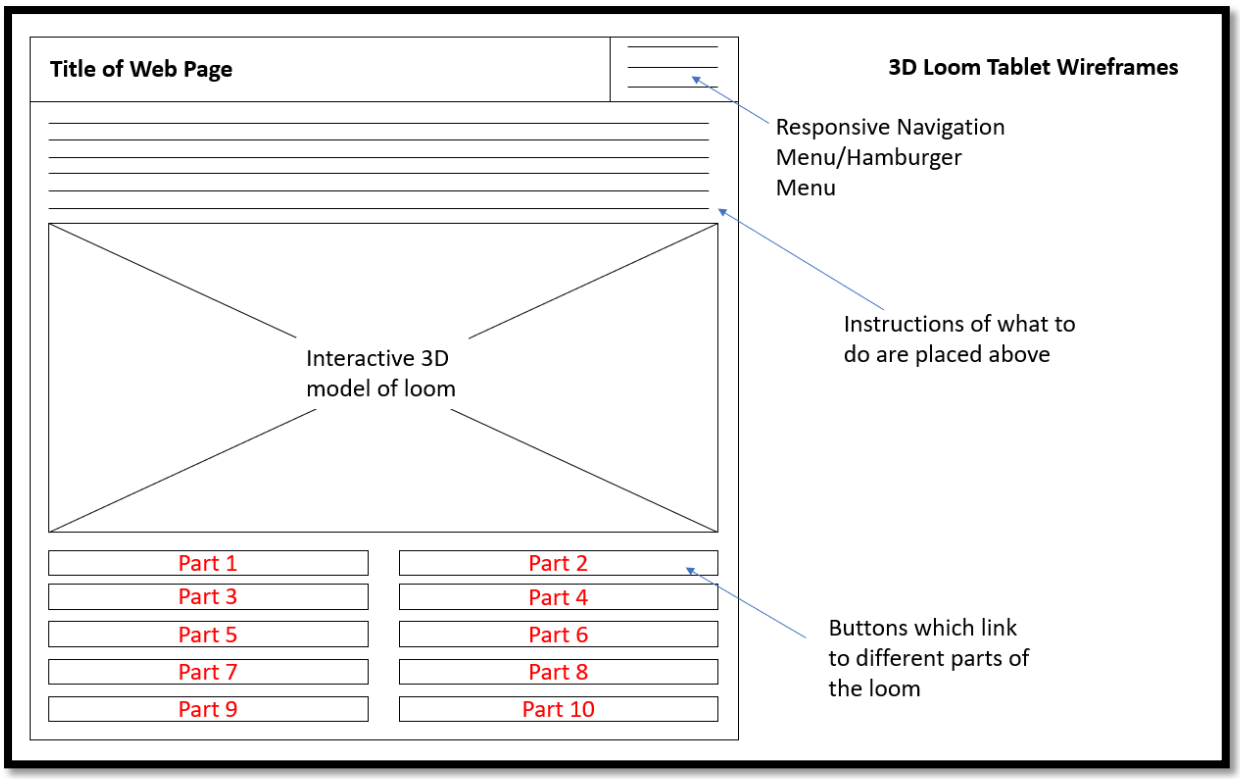


The Tablet Wireframes

Idea 1

Introduction/Overview

This wireframe demonstrated how the page would have appeared on a tablet device. Likewise to the mobile device, the responsive navigation menu would have been placed in the top-right of the screen with the title to the left. The instructions, however, would have been placed above the 3D model and the buttons would have been situated underneath next to each other.

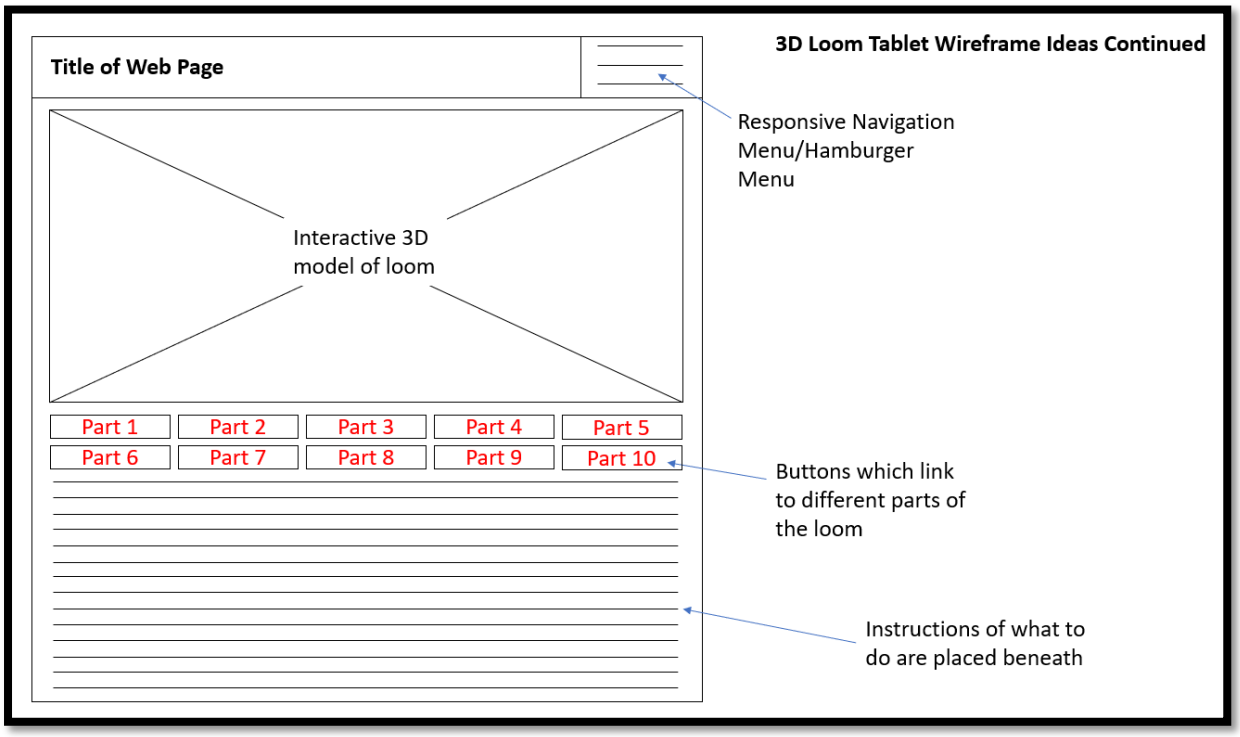


Idea 2

Introduction/Overview

The final wireframe demonstrated another manner in which the page could have been displayed on a tablet device. This was the same as the previous one except from the fact that the instructions and buttons were situated beneath the 3D model.

The Actual Wireframe



Sitemaps of Both the 3D Loom and Waterwheel Projects

Introduction/Overview

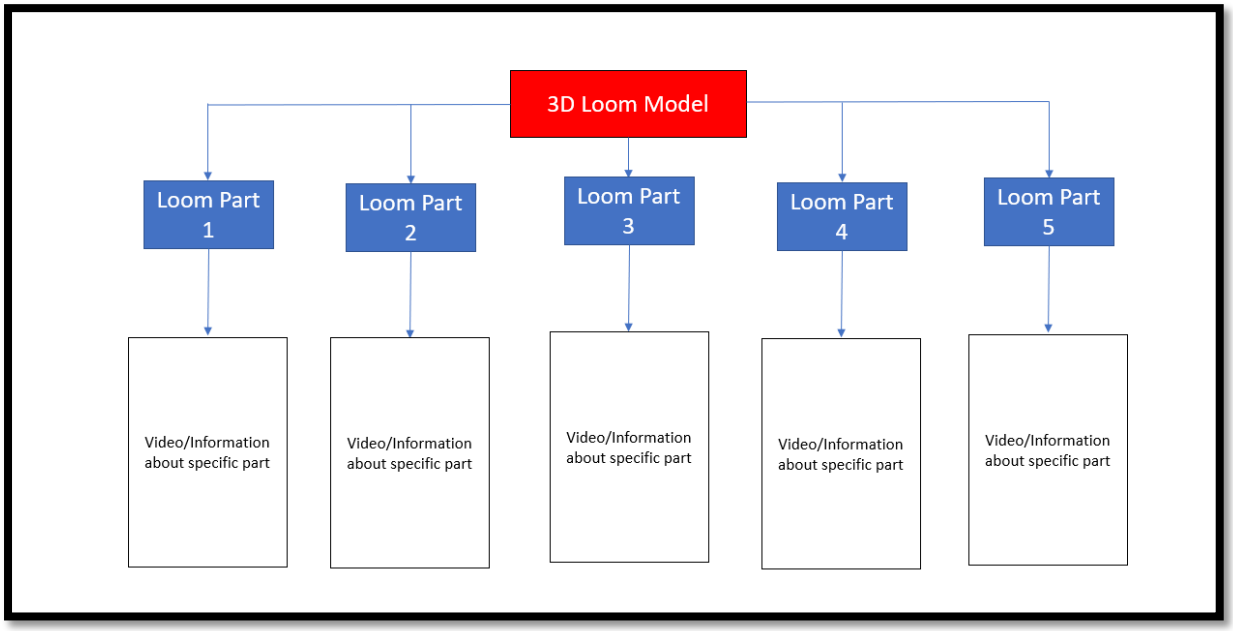
During the earlier stages of the project, I produced a couple of sitemaps for both projects and these can be viewed below. Although the ideas did change later on in the process, this was still beneficial. They were simplistic but because there wouldn't have been that many pages included, this was why.

The Sitemap for the 3D Loom Brief

Introduction/Overview

With this sitemap, the user would have navigated to the 3D loom page where they could have then selected any part to go to that specific part of the loom. Then they would have been able to have viewed a video/animation of that part with information to read as well. At this stage, interaction with the model hadn't been considered which is why it wasn't included.

The Actual Sitemap

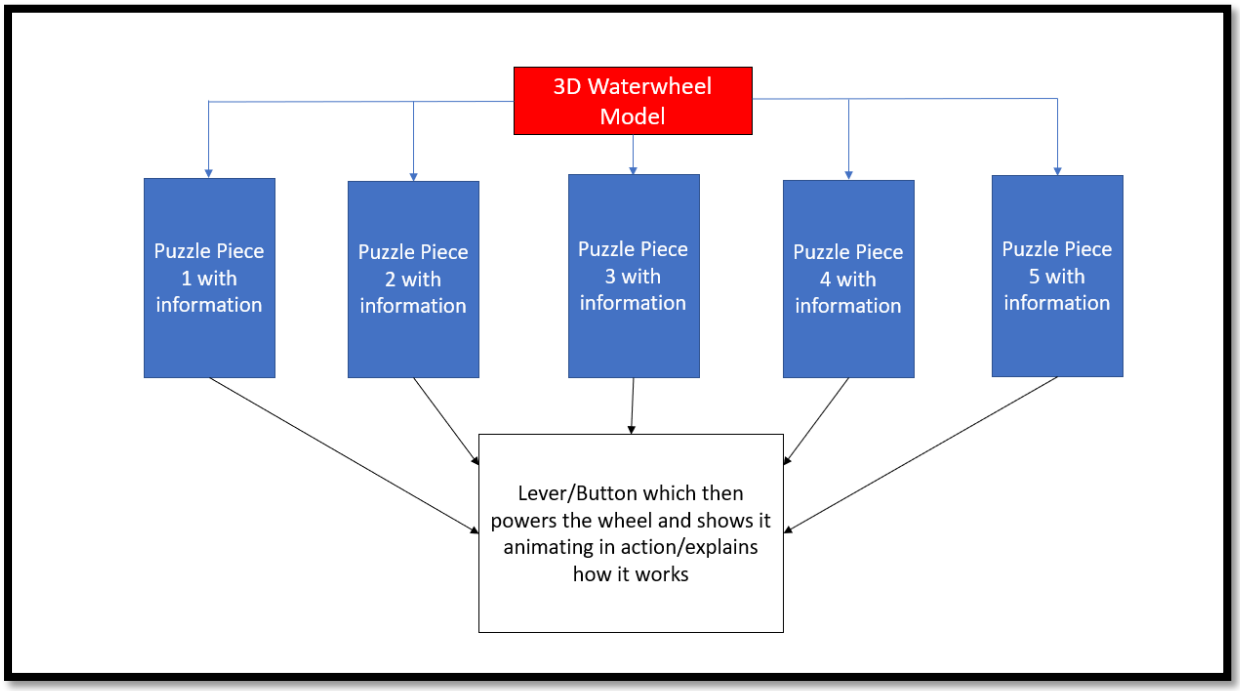


The Sitemap for the Powered by Water Brief

Introduction/Overview

With regards to this sitemap, the user would have navigated to the 3D waterwheel page where they could have then selected each piece of the wheel and have read information about that piece whilst placing the pieces together. Then once finished, the user would have selected either a lever or button which would have caused the wheel to animate it, explaining how it operated.

The Actual Sitemap



Flowcharts of the 3D Loom Model Web Page

Inspiration/Research

Introduction/Overview

To begin this task, I first of all viewed some inspiration via the Internet, gaining an understanding to what the best practices were in order to produce a fully professional flow diagram/chart. This can be viewed below.

This first piece helped myself to understand what each shape represented when producing a flowchart. I also viewed the second image below to further solidify my understanding of how to create a flowchart for the 3D loom project. Then I viewed an example of a flowchart to help myself understand how to structure the one I would have been making. There was also another diagram but unfortunately, I couldn't find this to integrate into this document and reference but it was similar to the one shown last.

The Collected Research

The First Piece of Research

Symbol	Purpose	Description
	Flow line	Used to indicate the flow of logic by connecting symbols.
	Terminal(Stop/Start)	Used to represent start and end of flowchart.
	Input/Output	Used for input and output operation.
	Processing	Used for airthmetic operations and data-manipulations.
	Desicion	Used to represent the operation in which there are two alternatives, true and false.
	On-page Connector	Used to join different flowline
	Off-page Connector	Used to connect flowchart portion on different page.
	Predefined Process/Function	Used to represent a group of statements performing one processing task.

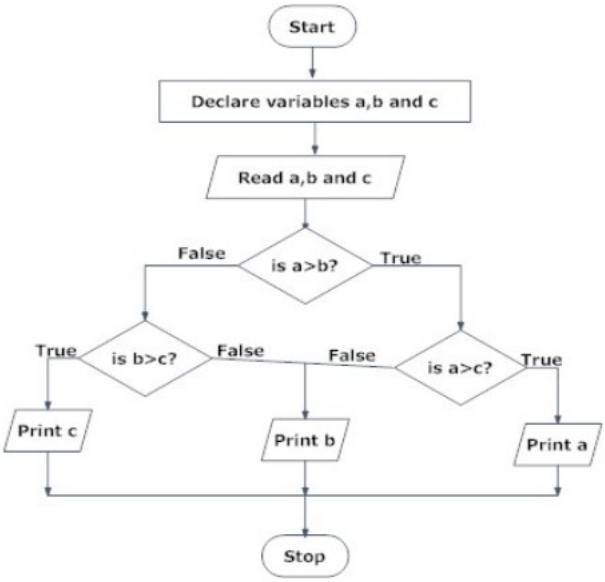
(*Programiz,* n.d.)

The Second Piece of Research

Symbol	Name	Function
	Start/end	An oval represents a start or end point
	Arrows	A line is a connector that shows relationships between the representative shapes
	Input/Output	A parallelogram represents input or output
	Process	A rectangle represents a process
	Decision	A diamond indicates a decision

(*smartdraw,* 1994)

The Third Piece of Research



(*Programiz,* n.d.)

The Created Flowcharts

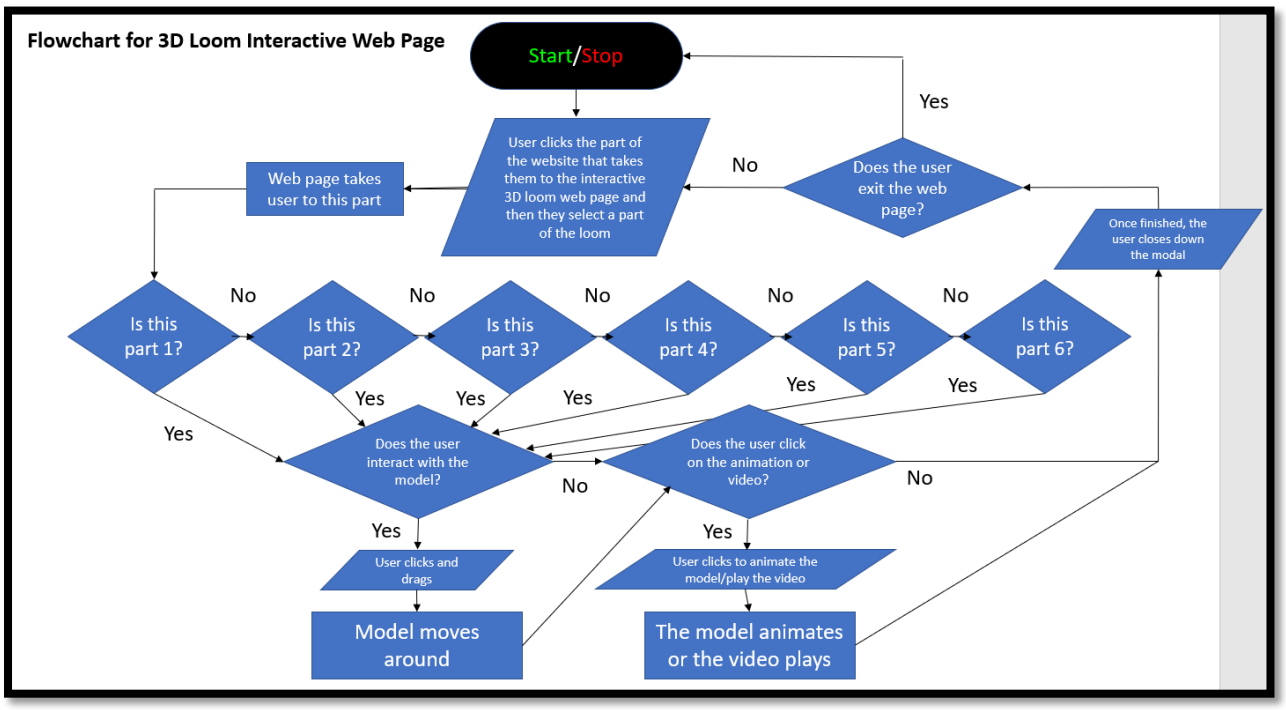
The Original Flowchart

Introduction/Overview

After viewing some inspiration, I then created the flowchart for the 3D loom page which can be viewed below.

As is evident below, the user would have first of all navigated to the 3D loom page and then they would have been taken to that page. After this, they would have then selected any part of the loom which they would have either interacted with or not. If they did interact with the model, they would have clicked and dragged which would have caused the model to have moved around. If not, they would either have then clicked on the animation or video or not. If they did, then they would have clicked to either animate the model or play the video, causing the model to animate or causing the video to play. Once finished, or indeed if they didn't click on the animation or video, they would have closed down the modal where this would have been situated and then have either exited the web page or have continued onto another part of the loom.

The Actual Flowchart



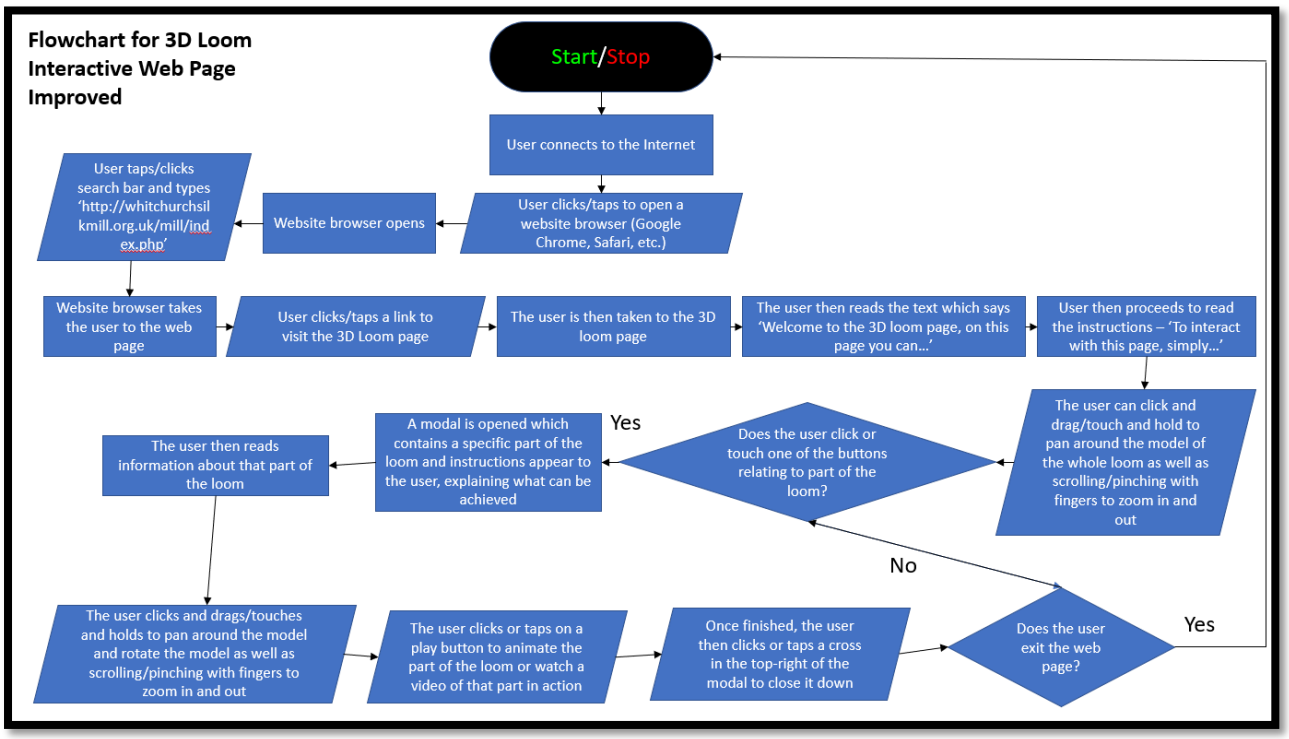
The Improved Flowchart

Introduction/Overview

However, after completing the previous flowchart, I then had a lecture which explained to myself how to create a flowchart which explained all of the user inputs and the user experience. From this, I then decided to make another flowchart which can be seen below.

As is evident below, this flowchart considered the user interaction and user journey more in order to help myself to develop an end product which would have been beneficial for the user and not for myself (Barker, 2018). It included more aspects such as connecting to the Internet, navigating to the actual website and reading the information on the web page.

The Actual Flowchart



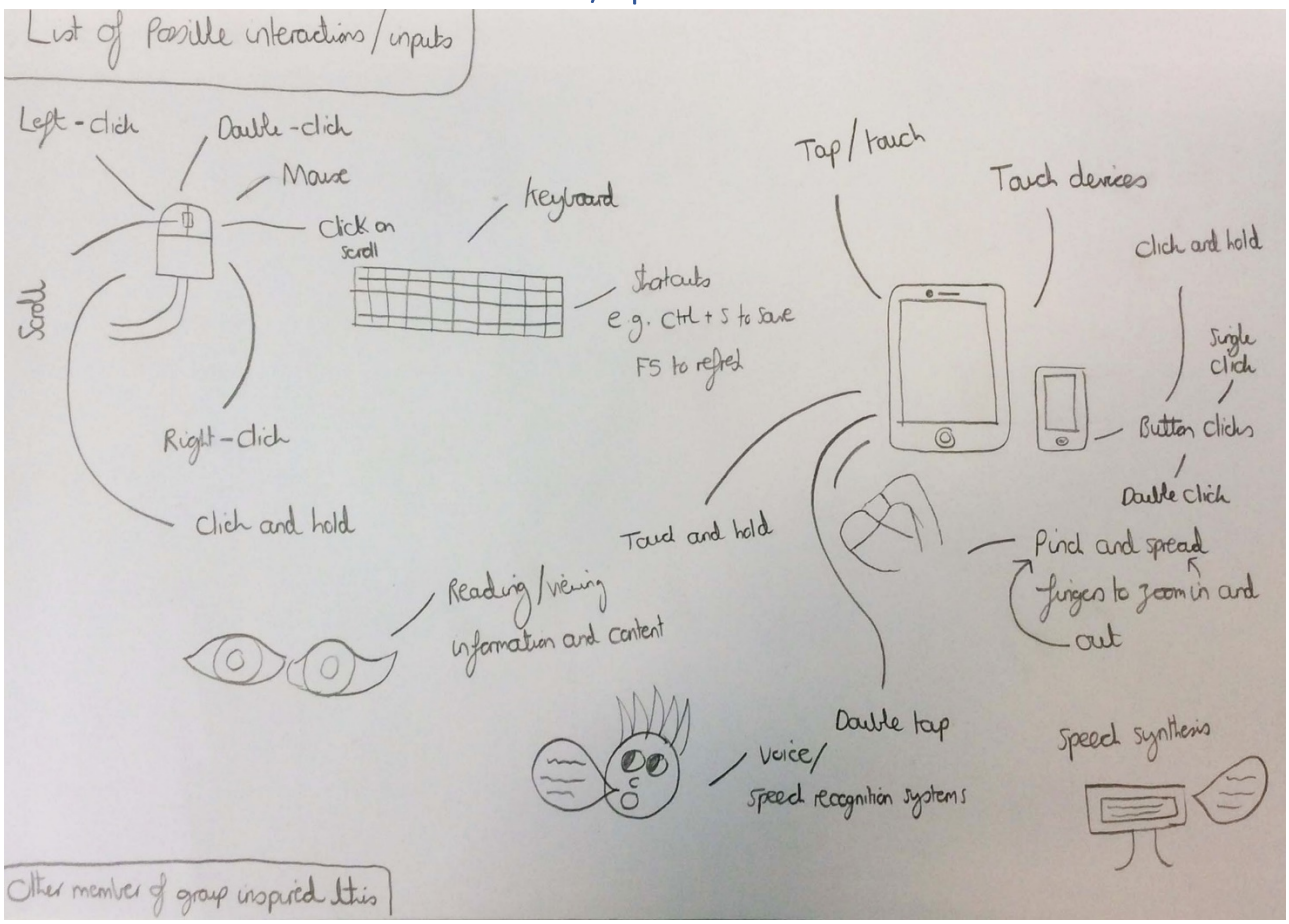
Types of User Inputs/Interactions

Introduction/Overview

After completing the flowcharts, I then created a brainstorm of sketches to examine the possible different ways in which the user could have interacted with the 3D loom page. This can be viewed below.

As is evident below, I considered multiple different approaches including interaction ranging from a mouse and keyboard to areas such as speech synthesis and voice recognition systems. Another member of the group had inspired this as I had seen that they had included interactions such as 'left click' in their flowcharts. It was also worth noting that some of the information was found in a book which has been referenced in this document (Barker, 2018) (Doyle, 2008).

The Sketches of Possible User Interactions/Inputs



'WCAG' 2.0 Research

Introduction/Overview

With regards to thinking of different users, as suggested by my lecturer, I also viewed the 'Web Content Accessibility Guidelines' ('WCAG') which explained how to make website content accessible for everyone. This can be viewed through the screenshots below.

From this research, there were several elements to consider but the main ones that appealed to myself were including 'alt' text with images and allowing for assistive technology to be utilised through the use of using code which enabled this (*GOV.UK,* 2017).

The Collected Research

WCAG 2.0 design principles

WCAG 2.0 is based on 4 design principles:

- perceivable
- operable
- understandable
- robust

By focusing on principles, not technology, they emphasise the need to think about the different ways that people interact with content. For example, users might:

- use a keyboard instead of a mouse
- change browser settings to make content easier to read
- use a screen reader to 'read' (speak) content out loud
- use a screen magnifier to enlarge part or all of a screen
- use voice commands to navigate a website

The principles apply to all aspects of your service (including code, content and interactions), which means all members of your team need to understand and consider them.

Principle 1: Perceivable

To meet WCAG 2.0 Principle 1: Perceivable you need to make sure users can recognise and use your service with the senses that are available to them.

This means you need to do things like:

- provide text alternatives ('alt text') for non-text content
- provide transcripts for audio and video
- provide captions for video
- make sure content is structured logically and can still be read if stylesheets are disabled
- use the proper markup for every feature
- not use colour as the only way to explain or distinguish something
- use text colours that show up clearly against the background colour
- make sure every feature can be used when text size is increased by 200%
- not use images of text

Principle 2: Operable

To meet WCAG 2.0 Principle 2: Operable, you have to make sure users can find and use your content, regardless of how they choose to access it (for example, using a keyboard or voice commands).

This means you need to do things like:

- make sure everything works with a keyboard
- let people play, pause and stop moving content
- not use blinking or flashing content
- provide a 'skip to content' link
- use descriptive titles for pages and frames
- make sure keyboard users can move through content in a way that makes sense
- use descriptive links so users know where a link will take them
- use meaningful headings and labels
- make it easy for keyboard users to see where they are on a page

Principle 3: Understandable

To meet WCAG 2.0 Principle 3: Understandable, you have to make sure people can understand your content and how the service works.

This means you need to do things like:

- use plain English
- keep sentences short
- not use words and phrases that people won't recognise - or provide an explanation if you can't avoid it
- explain all abbreviations and acronyms, unless they are well known and in common use - for example UK, EU, VAT
- make it clear what language the content is written in, and indicate if this changes
- make sure features look consistent and behave in predictable ways
- make sure all form fields have visible and meaningful labels
- make it easy for people to identify and correct errors in forms - you can find best practice for form design in GOV.UK elements

Principle 4: Robust

To meet WCAG 2.0 Principle 4: Robust, you must make sure your content can be interpreted reliably by a wide variety of user agents (including reasonably outdated, current and anticipated browsers and assistive technologies).

This means you need to do things like:

- use valid HTML so user agents, including assistive technologies, can accurately interpret and parse content
- make sure your code lets assistive technologies know what every feature is for and what state it's currently in

(*GOV.UK*, 2017)

Mobile Coverage and Broadband Width Research

Introduction/Overview

As suggested by the lecturer, I undertook some research on both the mobile coverage and broadband width within Whitchurch to understand how this would have impacted upon the outcomes produced.

Mobile Coverage Research

Introduction/Overview

From the research below, I understood that the mobile coverage was very good at the mill as it showed that there was good coverage for the majority of networks with the exception of '4G' for 'Three'. This meant that if the visitors wished to view the web page on a mobile device which provided either '3G' or '4G', they could have done effectively.

The Collected Research

RG287AL Mobile Signal Result

		Voice	3G	4G	
EE	Indoor	✓	✓	✓	See Coverage Map
	Outdoor	✓	✓	✓	
O2	Indoor	✓	✓	✓	See Coverage Map
	Outdoor	✓	✓	✓	
Three	Indoor	✓	✓	✗	See Coverage Map
	Outdoor	✓	✓	✓	
Vodafone	Indoor	✓	✓	✓	See Coverage Map
	Outdoor	✓	✓	✓	

✓ Good coverage ◯ You may experience problems ✗ No coverage

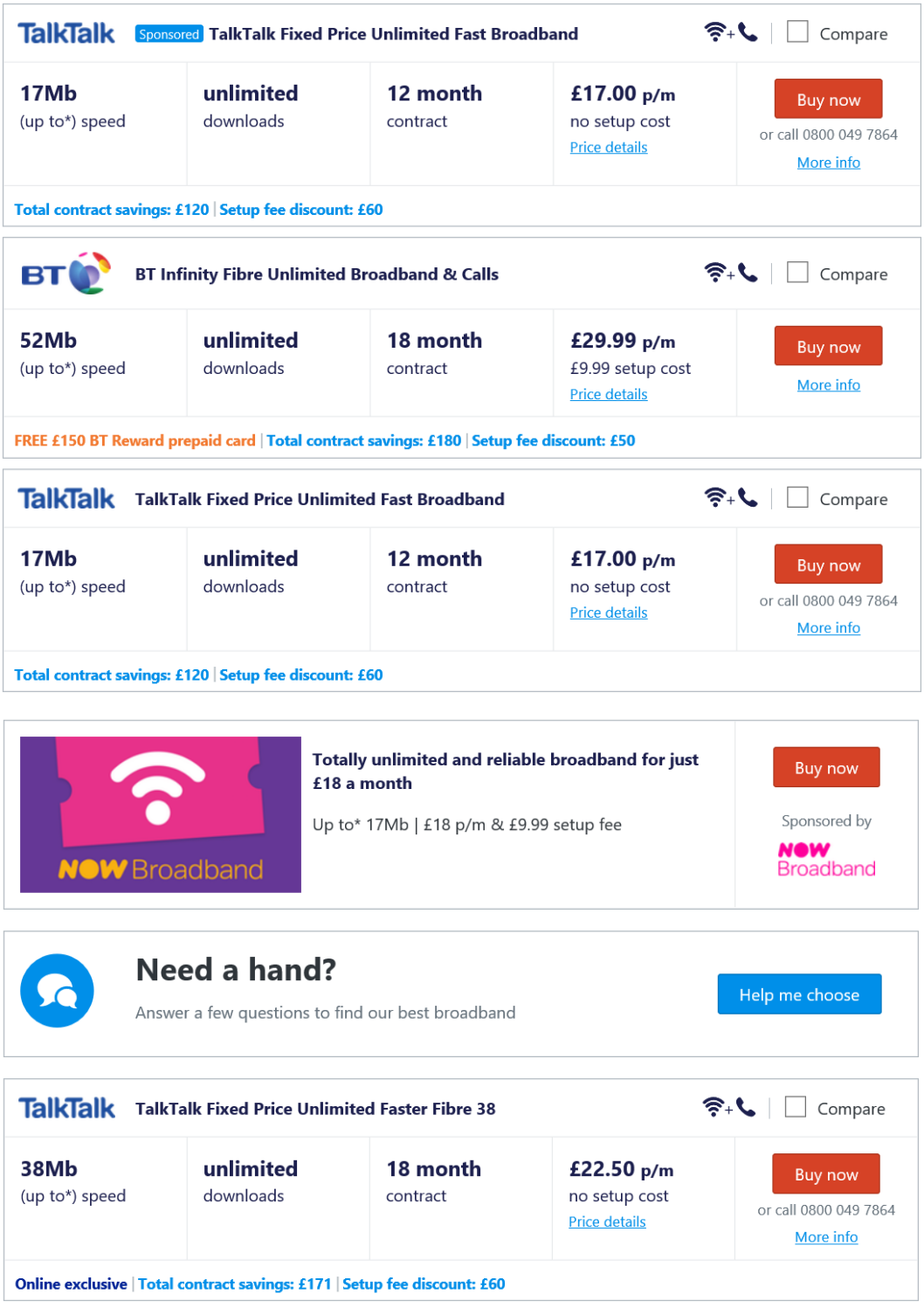
(*Signalchecker.co.uk,* n.d.)

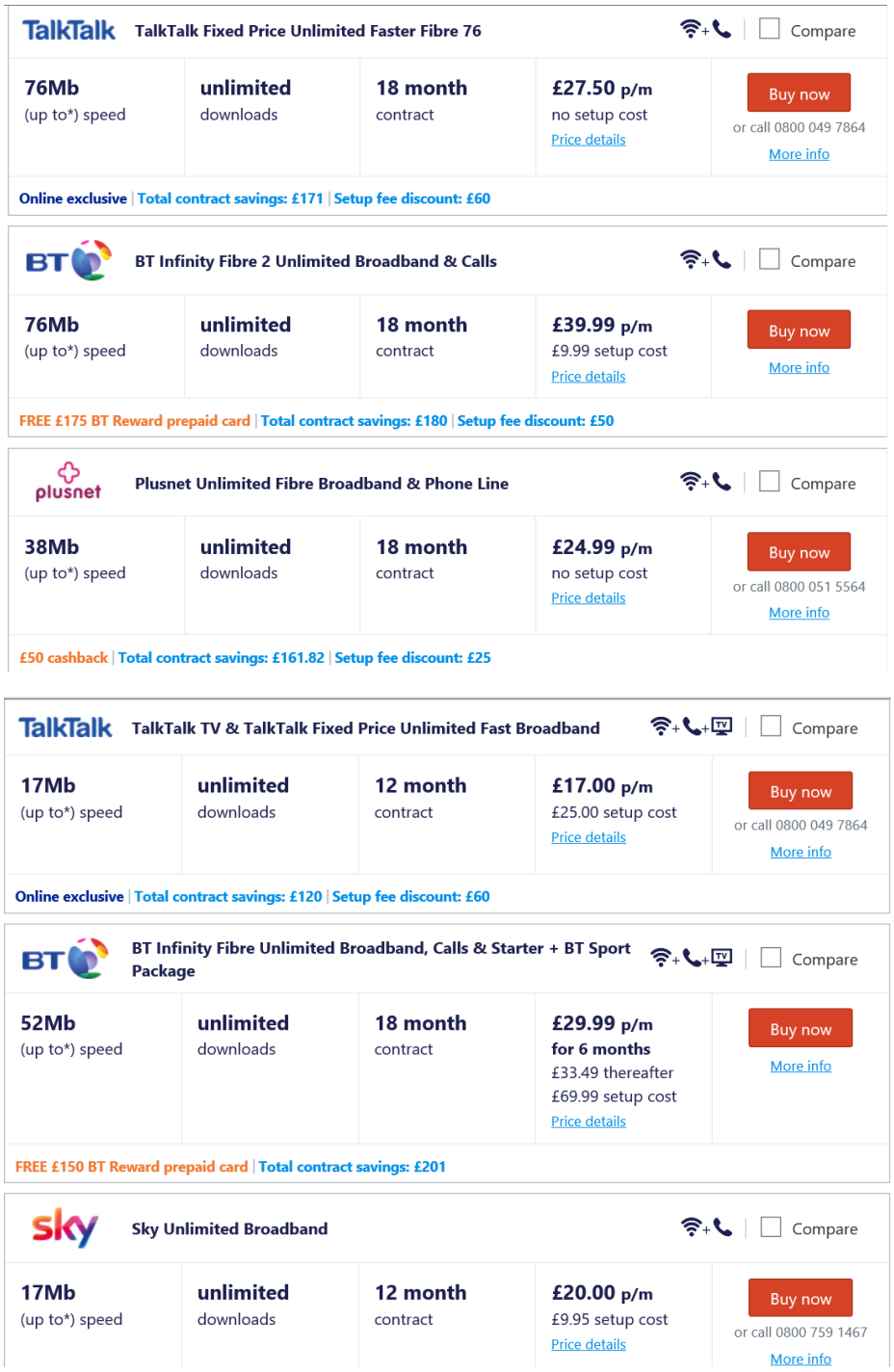
Broadband Width Research (Deals to Understand the Types of Speed Within the Area)

Introduction/Overview

From the broadband width research below, I understood that it depended on the package as to how much speed there would have been. However, some speeds were exceptionally good with 'BT' and 'TalkTalk' showing good examples. I understood that it depended on whether the silk mill had an Internet package and if so, to what speed would have been provided. This would have therefore had an effect on the overall loading time of the web pages both projects would have produced.

The Collected Research





(*uSwitch,* 2018)

Conclusion

This was now the end of the processes regarding areas not requiring development/programming in the second semester of my second year. The development/programming processes are available to view for this stage on the page of this project on my personal website under the 'Y2S2 PROCESSES' section.

Please Note: The ideas did change from this stage onwards to make some aspects easier within the development/programming process.

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Some of the code was provided by the other developer with regards to styling areas such as a couple of the buttons

The final 3D model included in my contribution before sending to the developer was provided by one of the designers

Some comments in the code aren't mine but are those that had come with the code used from other sources

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