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Interaction design for retention.

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Interaction Design for Retention

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Interaction Design for Retention

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Lay Summary

Graphic design is sometimes also referred to as communication design. The field primarily deals with the visual presentation and organization of information to an audience, with special consideration for aesthetic qualities in relation to the user's ease of taking in information. With the arrival of the information age and the prevalence of technology in our society, the way people interact with this technology is a major concern. Interaction design, a discipline within graphic design that deals with the way humans interact with technology through visual and physical means, is an emerging field that has not been well-studied. Interaction design, also called UI (User Interface) or UX (User Experience) design, is usually thought of in regard to making technology easier to use. However, like all design, interaction design also has implications for mood, action, and argued by this thesis: retention of information. For this creative thesis, the artwork created was a website, based on research into design methods that might make information more memorable. Gathering complete data on the success of such a website to increase retention is beyond the scope of the project. However, some standards in website design, like the use of analytics to collect information such as how long people are using a website, provide some insight into the effectiveness of such a project. Based on this creative thesis, it seems further, more scientific studies are warranted, and that the worlds of web design and interaction design have potential to positively benefit the users they are serving.

Creative Website URL: https://susanpallmann.github.io/onward-together/

Abstract

UI/UX design, or interaction design, is still relatively new as a discipline and has not been well-studied. Interaction design is typically geared towards facilitating ease of use of technology for the person using it, also called the user. However, interaction design and digital media in general have great potential to impact emotion, action, and retention of information. This creative thesis develops several design principles that govern a resulting conceptual website and the design process behind it. The website brings the user interactively through a narrative and aims to make an otherwise unremarkable story more memorable. Although empirical data was not collected, early evaluations from users and website analytic data suggest that the website succeeded in being memorable. Further exploration of interaction design and its potential for retention should be done in more conventional studies.

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1. Introduction

Interaction design, also called User Interface (UI) and User Experience (UX) design, is an emerging field within graphic design that deals with the way people interact with technology. Although information technology is certainly very prevalent in society today, UI/UX design is rarely noticed, and as such, not well studied. Despite the fact that most users of websites and applications do not think about the interaction design they are experiencing, nearly half of an application's code and development time is dedicated to the user interface (Ruiz et al. 2753). Interaction design is a major and widespread part of website and application industries.

With the popularization of software and the internet a visual method of using the program better serves the person using the software, also called the user, and this became common in the 1970s following the introduction of screens and graphics to personal computers (Fox 84). However, UI/UX design does not only allow for easier use of the software it is designed for. With interaction, a program or website can evoke emotion or change the actions of a user. This effect is not exclusive to when the design is intentional in its appeal to emotion either. Perhaps the best examples of how interaction design impacts the user's emotions are when a UI is poorly (or confusingly) made. An inconsiderately-made user experience is frustrating (Fox 86) and may cause users to leave the website or application altogether (Cyr 7), thus impacting both emotion and action. When a UI is said to be successful, it is instead easy to use, builds trust and loyalty, and makes the user more likely to return to the website or app again (Cyr 5).

This creative thesis aims to examine if web design and interaction design can affect the user's retention of the information being presented through the website. Based on research into methods of making written information more memorable, an experimental and conceptual website was designed and developed to interactively bring the user through a narrative and

demonstrate that interaction design can enhance a story. The purpose of this creative work is to demonstrate some design principles that improve retention in a conceptual work that people can interact with. Although empirical data is not collected, some preliminary insights can be gained from the use of website analytics and users' experiences. Although this work is conceptual in nature, it is hoped that it represents methods that can be simplified and used in more practical applications in experience design.

2. Need for Study

Although the internet and the many apps that exist for the world's devices are often understood to be for entertainment, there is also a wealth of information being spread, added, and adapted. Information recall in relation to online reading has serious implications for online news websites, which primarily use text-based methods to spread information. Findings show that news and media have significant socio-political power in our society (Van Aelst and Walgrave 509-511). For this reason, the importance of understanding how websites and applications convey information cannot be understated. Some studies show that reader retention is worse in online reading than print equivalents (Neijens and Voorveld 10, Clinton 32), and with the many capabilities of digital media there should be room to close this gap, if not surpass print media altogether. Interaction design should be considered here too, as in print, most of the user's interaction is simply reading or turning the page. In digital works, there is room to convey information in more dynamic ways, and to encourage more physical movement from the reader. Studies on varying forms of digital interaction design may be able to bring about a better way of informing readers than has ever been done before. Finally, since UI/UX design is still a relatively

new industry, there is much room to expand the global knowledge of user interface design, and how it can impact people in positive ways.

3. Existing Literature

Although interaction design is still an emerging discipline, substantial research has been done into other ways graphic design makes an idea or image memorable. Arguably the best example of this is the application of Gestalt principles in design. Gestalt principles arose from an observation that people tend to group certain things together visually without being explicitly told there is any relationship. For example, if there is a paper with one dot on the left, and two dots close to each other on the right, the viewer will tend to assume that the two dots on the right are more related to each other than they are to the dot on the left. Ian Jackson further explained the notion in *International Journal of Art & Design Education* describing the principles as a relationship between parts and a whole, writing, "although the individual elements may contain some meaning, the coherent whole will have a greater meaning than the sum of the parts" (66). The emergence of both Gestalt psychology and graphic design within the Bauhaus took place in the 1920s, and the connection between the two is difficult to ignore (Moszkowicz 56). In graphic design practice today, Gestalt principles are still often applied to logo design and branding, which has the explicit goal of creating a memorable image that people learn to associate with a particular company. Using Gestalt methods creates memorable images because the viewer has to take an extra mental step to realize the whole picture from the parts, and the increase in meaning rewarding this extra effort resonates more strongly with the viewer's memory. Numerous studies have shown that Gestalt principles do increase visual working memory (Peterson and Berryhill 182) and may even have implications for touch-based learning rather than strictly the visual, or

equally established auditory (Gallace and Spence 538). Much like how text-based recall while learning is shown to improve retention later on (Rogalski et al. 381-382), the added step of recognizing the parts as a whole concept causes the viewer to realize consciously what they are viewing, and this makes it more memorable later on. Although there has been some limited study into how Gestalt principles might be applied to UI design, this is focused on making the UI easy to use, not on making the content it serves more memorable (Graham).

4. Design Principles

In order to strategically develop a conceptual website with the goal of improving retention, a number of design principles were used to inform the overall design of the website created. Each principle is based on research and intended to lengthen or enhance the amount of time the user is spending thinking about the experience similar to Gestalt principles, but also must be used within some cautions to prevent users from leaving the website before finishing the narrative.

4.1. Typography

There is evidence to suggest that typefaces that take longer or are harder to read improve user memory, based on several studies. In addition, typefaces with serifs tend to result in better memory than sans-serif typefaces (Gasser 185). Based on these findings, the website utilizes a scrawling handwritten-style font for headers, and a serif typeface for the smaller body copy. These choices also had to ensure a more mentally-strenuous website would not be so difficult that users give up and leave the website, so the more readable of the two fonts was chosen for the

body copy and the stylized script font reserved for headers. The script font also serves to make a website feel more organic and natural, which is continued stylistically by the rough illustrations.

4.2. Progressive Information

In graphic design, it is generally understood that users are less likely to read something if the text is visually long or not broken up by spacing. To avoid this "information overload," the narrative aspect of the website is given in smaller pieces, and total freedom is given to the user to click on to the next part when they feel ready. This also is intended to let the user take longer as they read, further solidifying the information being taken in. Each part of the story is separated into "stages," and as the user makes choices, the stage shown next is changed accordingly. The information is shown in short paragraphs throughout the narrative.

4.3. Art Style & Mood

Studies have shown that people remember emotional memories better and more vividly (Reisberg 4, 13). To serve this purpose, the art style was developed to support the experience in a few ways. The greyscale color palette and moody shading create a sense of mystery intended to draw the user in and create a sense of emersion. Although the drawings are emotive, the subject matter is often vague and the style very rough and gestural, encouraging the user to imagine more of the story on their own, again adding to the ways the user is thinking about what they are experiencing – informationally, imaginatively, and emotionally.

4.4. Variable Storylines

Some research suggests that the ability to access information can impact the retention. Due to the prevalence of websites like Google and Wikipedia, cognitive offloading of things people might otherwise try harder to remember has become very common (Risko 4). Cognitive offloading, in this context, is when the user relies on the internet source to always be present so that they do not need to remember the information found in the source. There is so much information to access, but much of it is readily available online. People do not try to remember as much of it due to how easily accessible and seemingly permanent it is. Although a website like this one is not absolutely permanent, it would be expected by the average user that one could navigate to it again in the future. To prevent this offloading, the website was designed so that the user can choose their own path through the story, changing the ending slightly. Overall there are 48 different paths the user can take, but four major endings. The story is replayable, so all endings can be explored, but to do so people must think about their existing choices in order to make different ones, as well as how each choice affected the story they saw. Offloading in this case would diminish the experience of the story, and make further exploration of possible endings more difficult.

4.5. Repeating Information

Some of the research done for this project suggested that reminding the person reading of what they learned, whether through quizzes or summaries, improved long-term retention (Rogalski et al. 381-382). To this end, the storyline of the website narrative includes “flashback” scenes that recall the choices the user made up until that point in the story. There is an added

benefit to the flashback scenes in that they also create a sense of cause and effect between the user's choices and the ending of the story, supporting the idea that one's choices alter the outcome. These flashbacks rephrase the earlier actions slightly, but do not contain new information.

4.6. Multiplayer

Perhaps the most experimental interaction in this creative work is the use of multiplayer. The intention of this addition is to encourage the user to think about how their choices affect other people. The story begins with a first choice, asking the user "will you go alone or together?" Later in the story, the user can repeat this choice, potentially abandoning their partner, or, if they began the story alone, a chance to finish the story with someone else. Ultimately, choosing to play with another person leads to the "happier" ending of the story, which serves to remind the user to think beyond their own experience. In the end of the story, the user is shown the given name of the person they played with and given the opportunity to leave their name as well, adding to a sense of community.

5. Preserving Ease of Use

However interactive the website is, the goal of retention cannot be met if users are leaving the website before finishing the story. In order to avoid user frustration, the actual points of interaction were made very simple. All choice scenes present the user simply with two or three buttons to click. Scenes that don't require user choice simply require a single click for the user to continue. This allows the user to feel more comfortable experiencing an unconventional

website by focusing their actions on more conventional UI elements, such as buttons. The story itself takes place on a single page, reducing the likelihood of a user getting lost in navigation. Finally, the use of a “click to continue” progression lets the user read the story at their own pace, reducing the chance of the experience taking too long, or the user feeling too rushed.

6. Production Work and Methods

The creative work itself was created across four disciplines: creative writing, illustration, design, and website development based on the research done before.

The story itself is purposely written to be somewhat boring. It utilizes fantasy themes (such as dragons, monsters, and dungeons) that are likely to be familiar (if not cliché) to most viewers. In order for the experience design to noticeably improve the user’s reading in this conceptual work, the story should not be especially remarkable on its own. This way should users respond positively to the experience, it is likely due to the experience design and not the story itself. To account for the multiple options a user can choose from when reading, the story had varying chapters depending on which choice was made, and some paths crossed over each other to make the scope of the project more manageable in the timeframe provided.

The illustration process involved using Photoshop to draw and animate twenty-six illustrations. The art style was developed after researching concept artists and creating a mood board of their styles to inform the created work. The concept art style was chosen due to its ability to create a sense of place with very limited detail, which was appropriate for the goal of developing drawings that allow the user to imagine the story outside of the vague detail

provided. Image sizes also varied to create drama and reduce visual repetition from one stage to the next, which serves to maintain user attention.

Most other decisions following art style were informed by an overall design process. Decisions regarding typography, buttons, and transitional animations between each part of the story (such as causing elements to fade in) had to be designed with the goals of the project in mind. In addition, layouts needed to be considered for both desktop computer and mobile devices, since the user-base is made up of both. The design was left very minimal, both to create drama and to encourage the user to fill in the gaps mentally.

Finally, in order to allow widespread use and easier project completion, the entire project was developed for the internet, including coding, hosting, and setting up a database using Google Firebase Realtime Database. The full code was written using HTML5, CSS3, JavaScript, and jQuery 3.4.1, hosted on GitHub (Pallmann, “onward-together”). As the story has 48 possible paths, creating a design prototype of the website would have taken much longer, as every possible path would need to be designed and linked. Data would also have been more difficult to collect from a prototype, unlike the use of Google Analytics to collect user information like session duration.

7. Initial Response

The website was officially launched and experienced its first users (Pallmann, “Onward Together”). By nature of being a creative thesis, empirical data was not collected on the people using the website. However, Google Analytics and the information voluntarily saved to the database do provide some preliminary insights that might warrant further investigation in future

more empirical studies. Most users (60%) made the choice to work together with other players the first time the option was presented to them. However, the second time the option to go alone or together was presented, much more of the player-base (78%) decided to work together, which could suggest that the story and experience successfully altered users' actions. Google Analytics on the website show an average time spent on the page to be four minutes and sixteen seconds, suggesting that users are successfully reading the entire story without growing disinterested. Users generally gave positive reactions to having experienced the story, and many played more than once. Several users expressed that they enjoyed being able to see how other people chose to go through the story and talking about their experience to others who played as well. All of these responses, while not strictly empirical, suggest that users were remembering the story they experienced. Further research should be done to support these claims with more significant data.

8. Practical Application

This website was a conceptual expression of design principles based on research that may improve user retention. In everyday practice, website and interaction design is less free to be so experimental. However, the intention is that these methods can be used both independently of each other and more subtly in real-world applications. Perhaps not every website should be multiplayer, but maybe can a website bring more awareness of other readers to someone viewing. Current trends like the widespread use of sans-serif fonts online might be reconsidered. UI/UX design should undoubtedly be studied more, and in depth. It is clear that design for interaction can affect users in significant ways beyond the scope of the information it serves.

9. Conclusion

To conclude, this creative thesis took research on how to design for retention to develop some principles to guide the creative work. From these guidelines, an experimental website was created that brings the user through a narrative story interactively. Although more research needs to be done on the subject, the early findings suggest that these principles did improve retention, as well as make the experience more enjoyable to users. From this work and future studies, perhaps more innovative approaches to interaction design in practical websites and applications can be investigated, as it appears that the potential for digital media to improve how information is shared has not yet been reached. UI/UX is only just beginning to enhance the way information is remembered in the information age.

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