# Happy Hapai: Evaluating the Usability of a Pregnancy and Childbirth Preparation Website

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**Abstract:**  Pregnancy and childbirth is a wonderful experience for many women, and even their partners. During this period of gestation, there is a strong focus on the mother and child's overall wellness and planning for the birth of her child(ren). For individuals living on O`ahu, there are many resources available; however, it can be a tiresome process to find all of the information expecting families need and want. In addition to speaking to medical professionals and reading informational books, many find themselves seeking answers on the Internet. Therefore, a need for a location-based, comprehensive online resource was identified. The purpose of this usability study was to evaluate the functionality, navigability, and ease of use of an O`ahu-based pregnancy and birth preparation website and the participants' satisfaction with the content and design. The website was developed using WiX, a cloud-based development platform, and contains useful, relevant, and location-based information to help expecting parents make informed decisions about their pregnancy and delivery. The usability study recruited nine participants who gauged the navigability of the website and their satisfaction with the design and content. Feedback and data analysis from the study indicated that participants agreed that the website was easy to use and were satisfied with the available resources.

**Introduction**

For many individuals who are expecting or planning to have a child, it is an exciting, yet daunting experience for which to prepare. Most mothers- and fathers-to-be go through an exhausting process of preparing for their child's birth. This process requires parents-to-be to gather information and make informed decisions based on their unique needs. Examples of these decisions include, but are not limited to, birth preparation classes, location of birth, and birthing methods. Expecting parents want to make sure they are doing what needs to be done in order to be properly prepared, and taking the appropriate precautions for the well-being of their child. For the purpose of this study, the term *expecting parents* will equate to individuals who are expecting or planning to have a child. Being mentally, physically, and psychologically prepared for the experience of childbirth is critical to the well-being and overall experience for mother and newborn alike (Koehn, 2008). Cook and

Loomis (2012) report that having a sense of choice and control creates a positive impact on women's overall childbirth experience. Having an active voice and making decisions regarding prenatal care and childbirth enables expecting parents to develop a sense of security and feel in control of the given situation.

**Statement of the Problem**

In today's day and age, most individuals looking for information will resort to the Internet to conduct their research. This is no different for expecting parents. While reliable information may be available from physicians, obstetricians, midwives, and such, the Internet makes for a quick source of information. With the click of a mouse, information is readily available at your fingertips. Therefore, having access to a comprehensive resource that has relevant, accurate information would enable these individuals to make informed decisions regarding pregnancy and the birth of their child. While nine months may seem like a lot of time to make informed decisions, there are countless factors that play in as well. Most expecting parents have things going on outside the world of their pregnancy, such as career and family. Having a single resource to refer to makes the decision-making process easier, quicker, and more intuitive.

According to the Hawaii State Department of Health Office of Health Status Monitoring, there were 17,027 births in the state of Hawaii in 2018. Of those, 12,559 births, or 74%, took place on the island of O`ahu. With this significant percentage, there are, in fact, many O`ahu-based resources, programs, and facilities tailored toward helping expecting parents prepare for pregnancy and childbirth. However, there is a need for a comprehensive resource of information available online. Being prepared and educated on this topic is important for both baby and mother in terms of health and well-being. Knowing all the available options gives expecting parents a sense of choice and control, which will improve the overall experience. It's important for expecting parents to have a sense of security and control during this time.

In order to address this problem, the researcher created a "one-stop-shop" website that includes a complete source of pregnancy and childbirth information for expecting parents on O`ahu. These individuals can visit this site to find useful information and answer any questions they may have throughout their journey.

**Literature Review**

Having access to relevant information about pregnancy and childbirth benefits both mother and child. This information includes, but is not limited to, wellness, preparation courses, birth location, delivery method, and birthing techniques. In a recent study, Ferraro, Gaudet, & Adamo (2012), found that appropriate nutrition and regular physical exercise during pregnancy not only benefit the health of the mother, but have long-term health benefits for the child as well. Resources to local exercise regimens and nutrition information will be readily available for users. Additionally, other decisions such as preparation courses, birth location, delivery method, and birthing techniques, give women a strong sense of choice

and control over their pregnancy and childbirth experience. According to Regan, McElroy, & Moore (2013), a woman's choices during pregnancy play an overwhelming factor in her overall experience. Being able to make choices based on preferences and needs allows for a strong sense of security.

In today's society, being educated on the various aspects of pregnancy and childbirth, is often seen as an important step in the process. In a recent study, Perceived Benefits of Childbirth Education on Future Health-Care Decision Making (Leach, J., et al., 2017), participants reported developing themes of self-advocacy, new skills, anticipatory guidance, control, informed consent, and trust after learning more about their condition. Therefore, providing women and their partners with a reliable source of information has immense benefits.

In another study conducted by Lagan, Sinclair, and Kernohan (2010), roughly 97 percent of pregnant women used online search engines to access pregnancy related information. The perceived benefits of conducting an online search were accessibility and speed, with which one can get answers. Additionally, of that initial percentage, 83 percent reported using the Internet to influence their decision making in regards to pregnancy-related matters. With these large percentages, pregnancy and childbirth resources are everywhere on the Internet. However, some pregnant women tend to go down a "rabbit hole" when conducting research; they just keep searching for answers (Prescott, J., & Mackie, L., 2017). One O`ahu-based website that provides relevant and reliable resources of information and answers the questions of expecting parents would meet the needs of these busy, unfamiliar individuals.

Conducting a usability study of this website enabled future users to have an efficient and reliable source of information available whenever they need it. According to Donahue, Weinschenk, & Nowicki (1999), website users tend to be more productive using usability engineered systems. They also stated that satisfaction significantly improves when the systems match user needs. Visitors who have difficulty with navigation can quickly become frustrated and leave the site. Usable websites enhance user experiences, which makes them likely to stay on the site longer and return.

**Methodology**

**Research Questions/Goals**. The goal of this usability study was to evaluate the usability of an O`ahu-based birth preparation website. More specifically, the study evaluated the site's functionality, navigability, and ease of use, as well as the users' satisfaction with the content as they navigated through task-based scenarios.

The study addressed the following research questions:

1. How easy is it for participants to identify the purpose of the website?
2. How easy is it for participants to effectively navigate the website and find information that best fits his or her needs?

3. How satisfied are participants with the website's overall content in regards to making choices about childbirth?

Participants were asked to complete five tasks and one pre-task.

*Pre-Task.* Based on the look and content of the landing page, what is the purpose of the website?

*Task 1.* Based on your needs and interests, search for ways for you or your partner to take care of yourself or herself during pregnancy.

*Task 2.* Based on your needs and interests, search for a class that you and/or your partner would be interested in taking.

*Task 3.* Based on your needs and interests, search for information about your preferred birth location.

*Task 4.* Based on your needs, search for information about your preferred delivery method.

*Task 5.* Determine how you would create a birth plan, and if writing one is something you want to do.

**Content Analysis**. The Happy Hapai website is a comprehensive source of information that provides users with relevant sources to make informed decisions regarding childbirth preparation and prenatal care. It was created with the intent to help expecting parents know and understand their options, and be prepared in all aspects of pregnancy and childbirth. It was also created to give expecting parents the knowledge to have a positive childbirth experience.

The content of the website includes information from and about O`ahu-based programs, resources, and facilities. The website was broken down into five main categories: Health, Classes, Delivery Locations, Birthing Methods, and Baby's Arrival. These categories were determined by the researcher's personal experience, ocular reconnaissance, and interviews with previously pregnant women. Each of the main categories were broken down into subcategories that give specific information for each topic. All of the resources provided were chosen specifically by the researcher mainly based on their accuracy. The resources were again determined by the researcher's personal experience, ocular reconnaissance, and interviews with previously pregnant women. However, they were also based on location, reputation, and reviews. Expecting parents will navigate through the tabs to search for information based on their unique needs and interests.

Being that expecting parents need to gather and learn new information, the development of this website primarily focused on the cognitive domain of learning. However, since much of the decision-making is based on the needs of a future child, expecting parents may be making decisions based on emotion, thus the affective domain of learning was an additional focus throughout the development.

*Wireframe*. Prior to creating the website, a wireframe was created using NinjaMock, a free online tool to create mockups of websites. This wireframe included the website's overall layout, design, and content (See Appendix A). Creating a wireframe was an integral part of the design process because it allowed the researcher to visualize and organize the design and content prior to creating the prototype. The researcher used this layout to help guide further instruction during the cognitive walkthrough process.

*Website Prototype*. Once the feedback and suggestions from the cognitive walkthrough were received, the researcher began building the prototype based on the wireframe and appropriate feedback. This website prototype was created on WiX, a free website builder that allows the user to customize and design most of the content. The prototype was utilized for the usability study, with revisions to the site made between each iteration of the study based on participant feedback.

**Participants.** There were a total of nine participants in this study. They were recruited from a pool of the researcher's family, friends, and acquaintances. Participants were initially asked to participate via email (See Appendix B). Confirmation and follow up communication took place through phone calls or text messages. Before participating in the study, individuals were asked to fill out a consent form, giving their permission to have their screen and voice recorded (See Appendix C). The participants ranged in gender, age, education level, employment, number of children, and years spent on O`ahu (See Table 1).

Table 1.

*Participants Demographic Data,  n = 9*

| Characteristic | Number | Percent |
|---|---|---|
| **Gender** | | |
| Female | 6 | 67% |
| Male | 3 | 33% |
| **Age** | | |
| 21-30 | 6 | 67% |
| 31-35 | 2 | 22% |
| 36-40 | 1 | 11% |
| **Education** | | |
| High School | 1 | 11% |
| Associate's | 1 | 11% |
| Bachelor's | 4 | 45% |
| Master's | 3 | 33% |
| **Employment** | | |
| Part-time | 1 | 11% |
| Full-time | 8 | 89% |
| **Children** | | |
| 0 | 6 | 67% |
| 1 | 2 | 22% |
| 2 | 1 | 11% |
| **Years on O`ahu** | | |
| 11-20 yr. | 2 | 22% |
| 21+ yr. | 7 | 78% |

Before engaging in the usability study, participants were asked to gauge their initial feelings on the importance of gathering information on pregnancy and childbirth. Figure 1 illustrates that seven out of nine participants felt it was very important, while the remaining two felt that it was important.
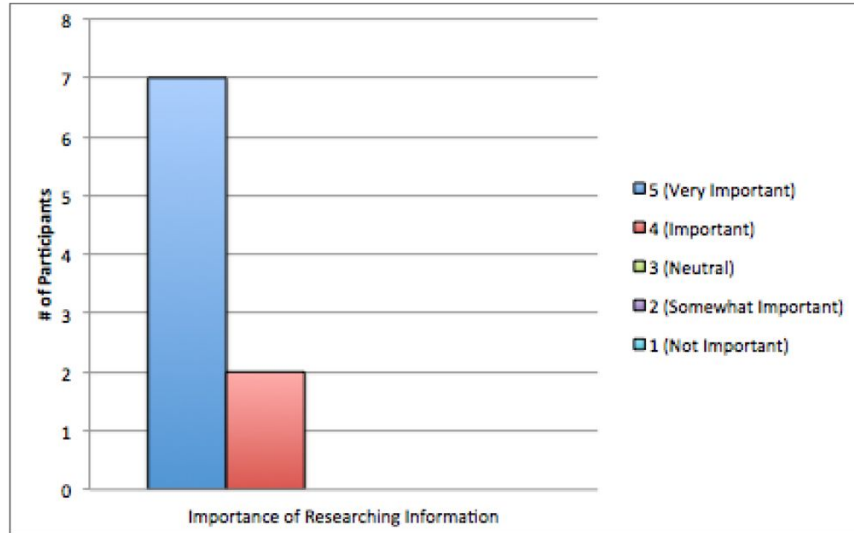


*Figure 1*. Participants' *(n = 9)* initial feelings on the importance of researching information on pregnancy and childbirth.

Participants were also asked to provide input on how they would go about gathering information on the given topic. Figure 2 illustrates that while all participants would seek the advice of medical professionals, they would all also visit informational websites. Additionally, seven out of nine participants would visit social media sites and use mobile applications to gather information.
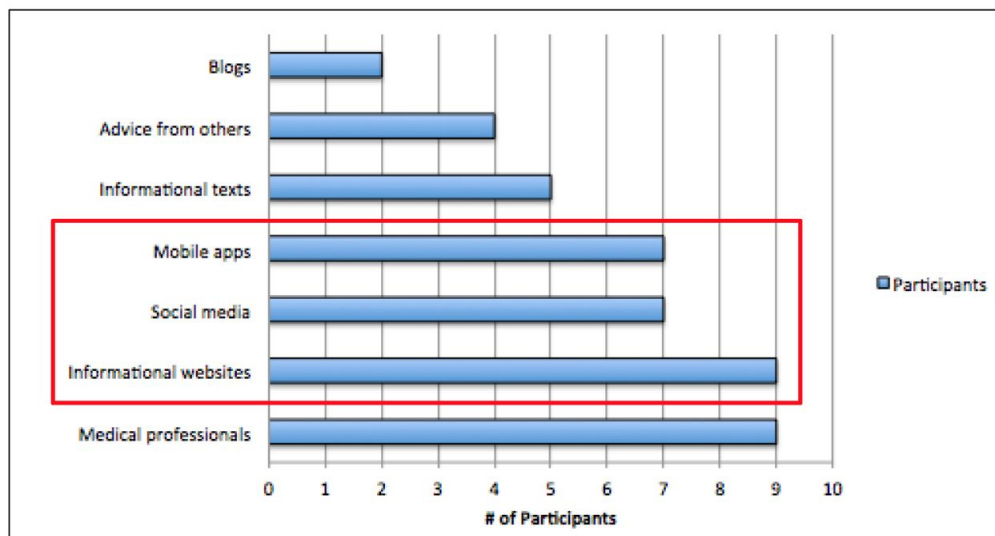


*Figure 2*. Participants' *(n = 9)* initial input on how they would gather information on pregnancy and childbirth.

At the time of the study, participants were expecting a child or planning to have a child in the near future. Being that the research conducted included pregnant women, it should be noted that there were no direct safety concerns to the mother or fetus(es). Participants received no compensation for their participation, but gained access to a comprehensive website with useful information for their pregnancy and childbirth journey.

The target population of this website are male and female individuals of any age living on O`ahu, who are expecting a child or planning to have a child in the near future. Being that this population is seeking information on pregnancy and birth preparation, they will be aware of the importance of prenatal care. They will be decisive about their choices, yet open-minded with the understanding that not everything will always go as planned. These population characteristics imply that the content of the website should be comprehensive and include a vast range of information because expecting parents have different needs.

**Evaluation Instruments.** Data for the usability study was collected through synchronous online sessions. The majority of the data was collected by asking participants to fill out online surveys and conducting interviews while asking them to complete various tasks. These online sessions also captured data through screen and audio recordings. The recordings allowed the researcher to go back and review the steps participants made and verbal feedback.

Prior to conducting the usability study of the prototype, the researcher first conducted a cognitive walkthrough of the wireframe. During this process, the researcher recruited two participants to test her wireframe of the website. Through synchronous online sessions, the researcher asked the participants to engage in a think-aloud process as they navigated through the wireframe and completed different tasks based on Krug's Cognitive Walkthrough Protocol (See Appendix D). Here, with permission, the participants' screens and think alouds were recorded using Google Hangouts.

Before engaging in the usability study of the prototype, participants were asked to complete a quick, 2-minute pre-survey using Google Forms (See Appendix F). This survey collected demographic information, including age, gender, education, number of children, stage of pregnancy, years spent in Hawaii, and familiarity with pregnancy and childbirth resources in Hawaii. No identifying information, such as names or email addresses, were collected.

The usability study of the website prototype was conducted through synchronous online sessions using Google Hangouts on Air. Participants were asked to take part in an interview-like process, in which they were led through task-based scenarios based on Krug's Usability Protocol (See Appendix H). Throughout the process, they were also instructed to take part in a think-aloud process, which required the participants to verbally think out loud and comment on what they saw and thought as they navigated through the website. With permission, each session was recorded using Google Hangout on Air's screen-capturing system. The participants' screen and think-aloud process were recorded as they navigated through the website and completed the task-based scenarios.

Participants ended the session by taking another quick, 5-minute post-survey using Google Forms (See Appendix I). This survey collected the participants' satisfaction rating and perception of the website's content and visuals. Participants were also asked to answer a few short response questions, which gathered their opinions on the most and least useful information available, as well as suggestions to improve the website. Again, no identifying information was collected.

Using Nielsen's Severity Rating Scale, participants' feedback on the website's problems were rated and prioritized based on the severity of the usability issue (See Appendix J). The researcher rated the issues on a scale from 0 to 4, with 0 not being a usability issue and 4 being a usability catastrophe. Based on these ratings, the researcher prioritized the problems and brainstormed solutions to be made before the next iteration of the study.

**Project Design**. As previously mentioned, the wireframe for this website was created using NinjaMock, a free online wireframe and mockup tool (See Appendix A). An initial wireframe allowed the researcher to use a basic layout to help guide further instruction during the cognitive walkthrough process. Based on the feedback received, the design was transferred to WiX, a free website builder. The prototype created on WiX was utilized for the usability study (See Appendix E), with revisions to the site made between each iteration of the study (See Appendix K).

In order to create a mockup and prototype, the Analysis, Design, Develop, Implementation, and Evaluate model (ADDIE) was utilized as the instructional systems design framework. Peterson (2003), suggests that researchers use the five phases of this model to guide the instructional planning and implementation process. *Analysis* refers to understanding the target audience for the project. *Design* of the project primarily focuses on research and planning during this stage. *Development* refers to the construction of the product based on the previous two phases. *Implementation* includes conducting several iterations of evaluation and necessary revisions. *Evaluation* helps the researcher determine if the problem(s) have been solved, if the learning objectives have been met, the impact of the project, and the future necessary changes for better instruction. This model was utilized throughout the study as a guide to effective instructional planning and implementation.

Based on the ADDIE Model, the researcher made revisions to the prototype between each iteration (See Appendix K). The revisions were made based on usability issues brought up by the participants. After the first iteration, the researcher modified the layout of the homepage. It originally acted as a single page application (SPA) with all of the main categories of information. All of the information was reformatted into a slideshow so the user doesn't have to continuously scroll and can access the information they need on the navigation bar. The Wellness page layout was also changed so that it included more than just exercise and nutrition. Specific exercise and nutrition information, such as yoga and prenatal vitamins, were categorized into their respective sections. After the second iteration, the researcher changed the terminology on the navigation bar for several topics. The 'Wellness' page changed to 'Health' and the 'Locations' page changed to 'Birthing Locations'. The layout of the Classes and Locations page were also changed to maintain

consistency with the various pages of the website. The most significant change was changing the Birth Plans page, which included information solely about creating birth plans, to a Baby's Arrival page, which still included Birth Plans, but also included various topics around bringing a baby home, such as car seat selection, nursery setup, etc. Finally, after the third iteration, the researcher worked on creating a consistent layout throughout the website. She also plans to broaden the scope of the site by adding in resources for fertility treatment, adoption, and surrogacy.

The design process for this study used the ARCS-V Motivation Model (Keller, 2016). This updated model includes the original four categories of attention, relevance, confidence, and satisfaction. *Attention* refers to grabbing the audience's curiosity and interest in order to seek their attention. *Relevance* indicates that the learners' perceptions of the instructional tasks and content are consistent with their goals, compatible with their learning styles, and connected to their past experiences. *Confidence* refers to the effects of positive expectancies, experiences, and attributions of success. *Satisfaction* includes a mix of intrinsically and extrinsically rewarding outcomes that sustain desirable learning behaviors. This updated version now includes *Volition*, which is similar to self-regulation, and focuses on the learners' persistence as they work toward accomplishing learning goals. This model was utilized throughout the study as a guide to improve the learners' motivation to interact with the content and remain on the website.

The layout and organization utilized Gestalt theory's five design principles, (1) similarity, (2) continuation, (3) closure, (4) proximity, and lastly, (5) figure and ground. Due to the fact that pregnant women and their partners may be undergoing a lot of stress from balancing a hectic lifestyle of work, home life, and planning for baby, a serene and calming theme of Oʻahu's nature was used throughout the site. The visuals included free images from online websites, such as Pixabay and Pexels. Media included informational videos from YouTube, and other sites, with permission.

**Procedures**. The usability study was conducted after the researcher received her Collaborative Institutional Training Initiative **(**CITI) Certifications (See Appendix L) and approval from the Institutional Review Board (IRB).

Before conducting the study of the prototype, the researcher first conducted a cognitive walkthrough of the wireframe with two participants during the week of January 20, 2020. In an online synchronous format, the researcher asked the participants to engage in a think-aloud process as they navigated through the wireframe. A modified cognitive walkthrough script based on Krug's book (2010), Rocket Surgery Made Easy: The Do-It-Yourself Guide to Finding and Fixing Usability Problems, was used to standardize the information communicated to the participants while they completed the tasks (See Appendix D). In addition to the think aloud, participants were asked to rate their frustration level and provide feedback or suggestions to make the task easier. After each walkthrough, the researcher analyzed the data and reviewed the feedback. The feedback from this process allowed the researcher to better develop her website, in terms of terminology, content, visuals, and design.

Once the feedback and suggestions from the cognitive walkthrough were taken into consideration, the entire layout was transferred to WiX. When the prototype of the website was complete, the usability study took place during a month-long span from January 27, 2020 to February 28, 2020. The process took place in three iterations, with three participants in each. All sessions were conducted through an online synchronous format. In order for the researcher to collect accurate results, with permission, the participant's screen and verbal responses were recorded using Google Hangouts on Air. Participants were informed that the recordings would be labeled anonymously and only viewed by the researcher for research purposes and destroyed upon completion of the study.

Before beginning the process, participants were asked to complete a quick pre-survey, which collected demographic and background information (See Appendix F). Prior to engaging with the prototype, all participants were reminded of the project goals and that they could opt out or take breaks at any time during the study. Once the protocols were set in place, the participants were asked to complete five tasks on the website, rate their level of frustration for each task, and provide comments and/or suggestions for improvement. Again, a modified usability script based on Krug's book (2010), Rocket Surgery Made Easy: The Do-It-Yourself Guide to Finding and Fixing Usability Problems, was used to standardize the information communicated to the participants while they completed different tasks (See Appendix G). Throughout the process of completing the tasks, the researcher recorded verbal feedback and gauged the participants' level of frustration for each task, which was organized on a separate sheet (See Appendix H). After each iteration, the researcher analyzed the data and reviewed the feedback. These suggestions in the feedback were rated and prioritized based on Nielsen's Severity Rating Chart. Based on these ratings, appropriate revisions were made to the prototype before beginning the next iteration. After participants engaged in the tasks, they were thanked for their time and asked to complete the post survey, which asked them to rate their level of satisfaction of the site, decide what content was most useful, and provide additional feedback (See Appendix I). Figure 3 illustrates the study's development process.
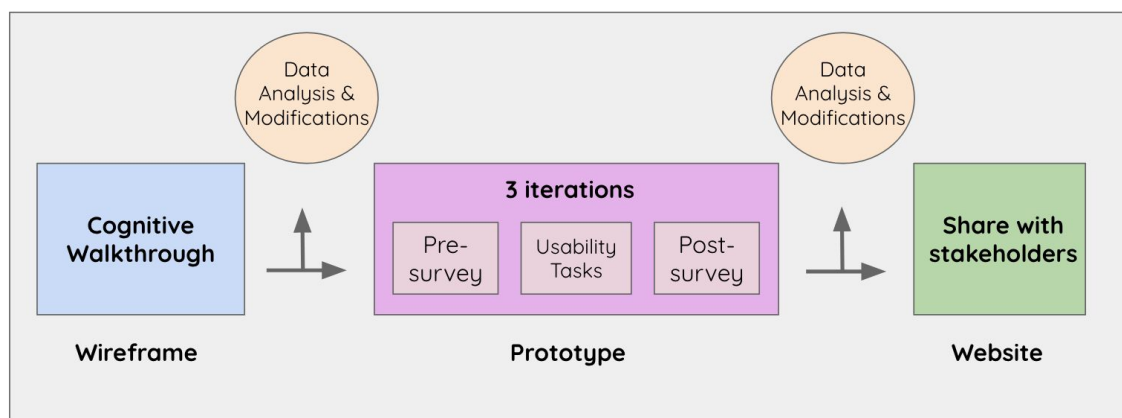


*Figure 3*. Project design and evaluation process.

**Analysis & Results**

After completing the initial cognitive walkthrough and the successive usability study iterations, the data collected from the verbal and survey-based feedback were analyzed.

The verbal data, scribed by the researcher, consisted of feedback and suggestions. This information was organized in a chart aligned with Nielsen's severity ratings for usability problems, and how the researcher went about fixing the issues or addressing the feedback. The task-based data, again scribed by the researcher, included notes on the participants' ability to complete the tasks, frustration level, and feedback. This data was also organized in a chart, with an additional section on how the researcher went about addressing the feedback. The survey-based data was collected on Google Forms and then transferred to Google Sheets. From there, the data was organized into appropriate graphs and a brief written analysis was recorded.

The goal of the usability study was to evaluate the site's functionality, navigability, and ease of use, as well as the users' satisfaction with the content as they navigated through task-based scenarios. The study's research questions focused specifically on the purpose of the website, navigation, and participants' satisfaction. The following data analysis will be categorized based on these three areas of focus.

   **Purpose**. The pre-task interview required participants to provide their initial thoughts and identify the purpose of the website based solely on the landing page. With all three iterations of the study, 100 percent of participants were able to accurately determine the purpose of the website, which was to provide pregnancy and childbirth information to locals. Based on verbal feedback, the participants determined the purpose by looking at the title, content, and images of the landing page. When asked about the target audience, seven out of nine participants believed the website was intended only for women. Verbal feedback suggested that this was due to the images of women, topic, and color scheme. In order to reach the target audience in the future, the researcher will conduct further research before making modifications.

   **Navigation**. The usability protocol required participants to complete five tasks while navigating through the website. For each task, participants were asked to rate their level of frustration on a scale from 0 to 3, with 0 being zero frustration and 3 being high frustration. With Tasks 1, 2, 3, and 4, the level of frustration went from mixed feelings of frustration in the first iteration to feelings of low or zero frustration by the third iteration (See Appendix M). This decrease in frustration level was likely due to the researcher's modifications between iterations. However with Task 5, the level of frustration went up between Iteration 2 and 3 (See Figure 4). This change in frustration level could be attributed to a major revision of the content page for that specific task. Specifically, the researcher changed the page from birth plans information to infant's arrival information.
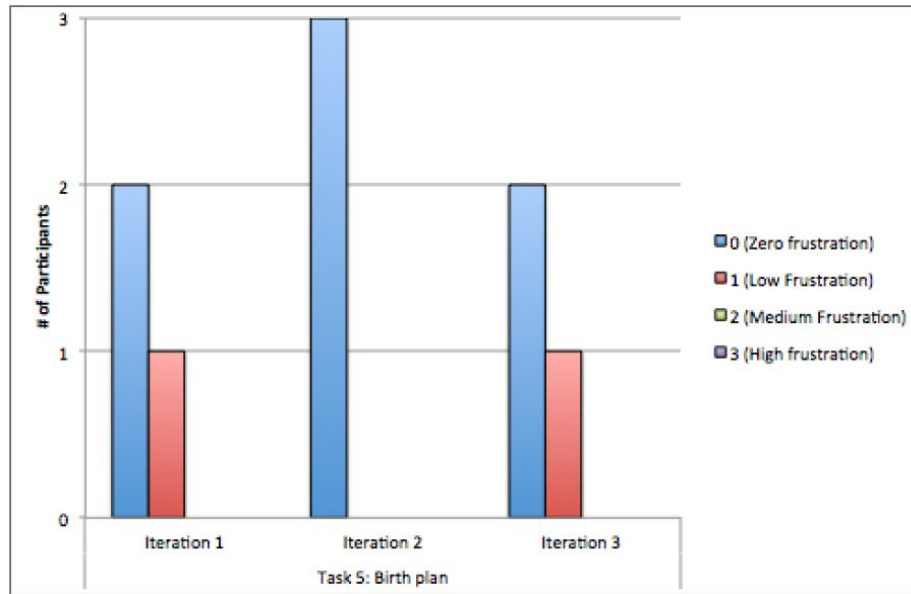
*Figure 4*. Participants' *(n = 9)* level of frustration from Iterations 1, 2, and 3 for Task 5: Birth Plan.

**Satisfaction**. Upon completion of the usability study, participants were asked to complete a post-survey, in which they rated their feelings of satisfaction with the website. These questions were provided on a five-point Likert scale, with 1 being Very Dissatisfied, 2 being Dissatisfied, 3 being Neutral, 4 being Satisfied, and 5 being Very Satisfied. Among successive iterations, participants' feelings of overall ease of use, usefulness, satisfaction with content, and satisfaction with design went up (See Figure 5).
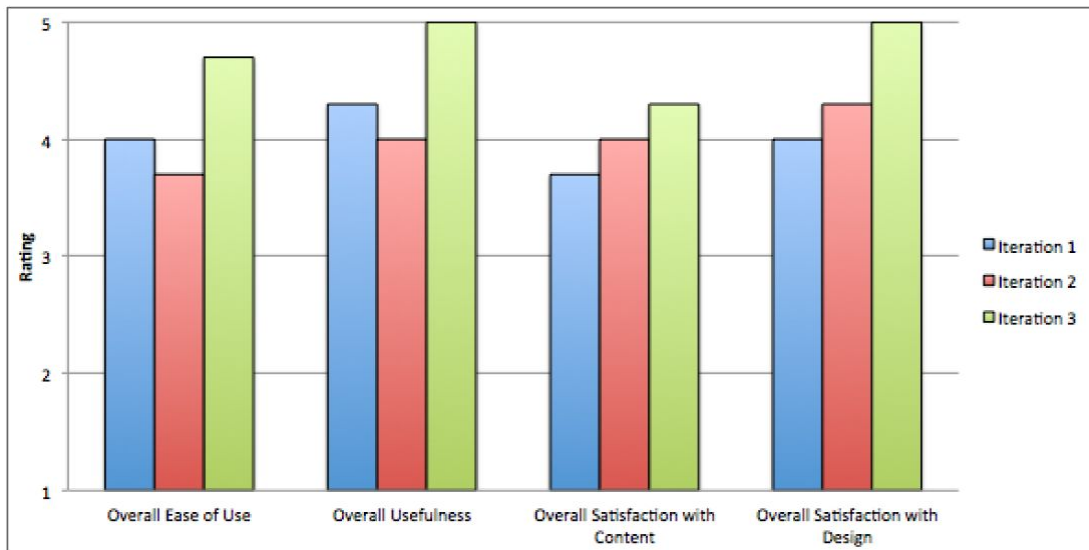


*Figure 5*. Participants' *(n = 9)* feelings of overall ease of use, usefulness, satisfaction with content, and satisfaction with design in Iterations 1, 2, and 3.

Additionally, using the same five-point Likert scale, participants were asked to rate the overall value of the website and their likeliness to recommend this website to others. Both ratings went up among successive iterations (See Figure 6). The upward trends in participant satisfaction can likely be attributed to the feedback from participants in preceding iterations. Addressing the usability issues between iterations provided a better user experience with each successive run-through.
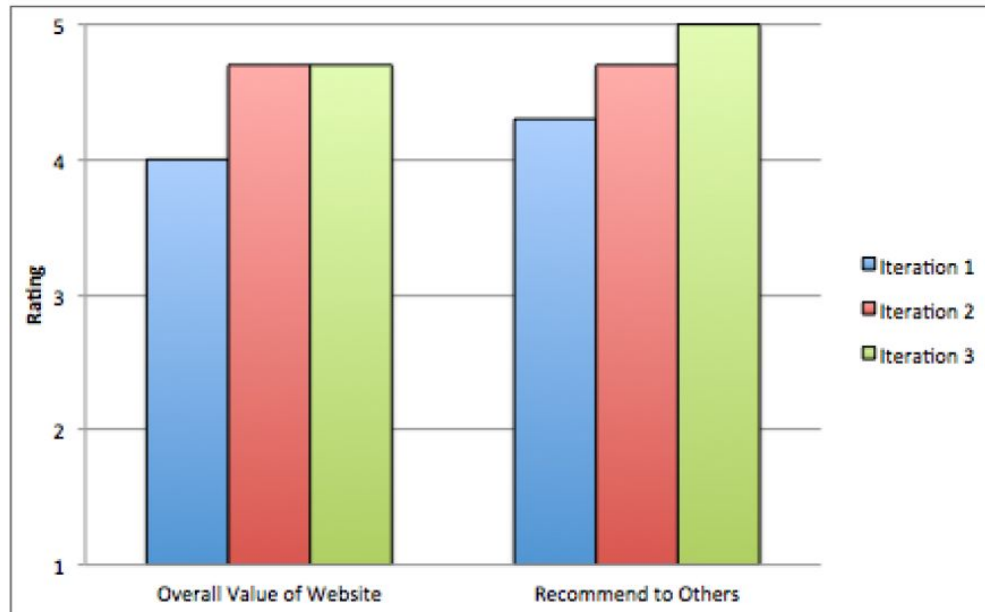


*Figure 6*. Participants' *(n = 9)* feelings of overall value of the website and their willingness to recommend the website to others in Iterations 1, 2, and 3.

Overall, participants were satisfied with the design and content of the Happy Hapai website. One participant described the site as an, "excellent resource for expecting couples and those planning to have a child." Another comment given was, "I really would've liked to have had access to this website years ago when I was pregnant. Awesome site to get all the important information you need!" Participants also noted the website's simplicity and consistency made it easy to use and navigate.

**Discussion**

The overall goal of the usability study was to evaluate the usability of an O`ahu-based birth preparation website. More specifically, the study evaluated the site's functionality, navigability, and ease of use, as well as the users' satisfaction with the content as they navigated through task-based scenarios. Based on the participants' overall feedback and willingness to recommend the site to others, the Happy Hapai website was successful in providing a comprehensive, location-based resource on pregnancy and childbirth.

While the site received successful reviews from participants, the challenges the researcher encountered during the usability study can be used to improve future design studies. For

example, some participants felt that the website's content wasn't all-inclusive, meaning certain groups were left out and would not find the information useful. Therefore, the future of the Happy Hapai website will include making further front- and back-end revisions, as well as broadening the scope of the content. The researcher would like to include a wider audience by including local resources and information on fertility treatment, surrogacy, and adoption. Further down the line, the researcher would like to work on creating a mobile friendly version of the site and a Happy Hapai mobile application.  In order to share this website with stakeholders, the researcher would like to work on marketing and further develop her social media presence online. The future of this website would help many expecting parents.

Having an active voice and making decisions regarding prenatal care and childbirth enables expecting parents to develop a sense of security and feel in control of the given situation. Therefore, it is the hope that this website will provide expecting parents with access to relevant and informative resources specific to O`ahu in order to make informed decisions about their future pregnancy and childbirth experience.

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**APPENDICES**

APPENDIX A
**Wireframe**



*Figure A1.* Wireframe of Home Page.
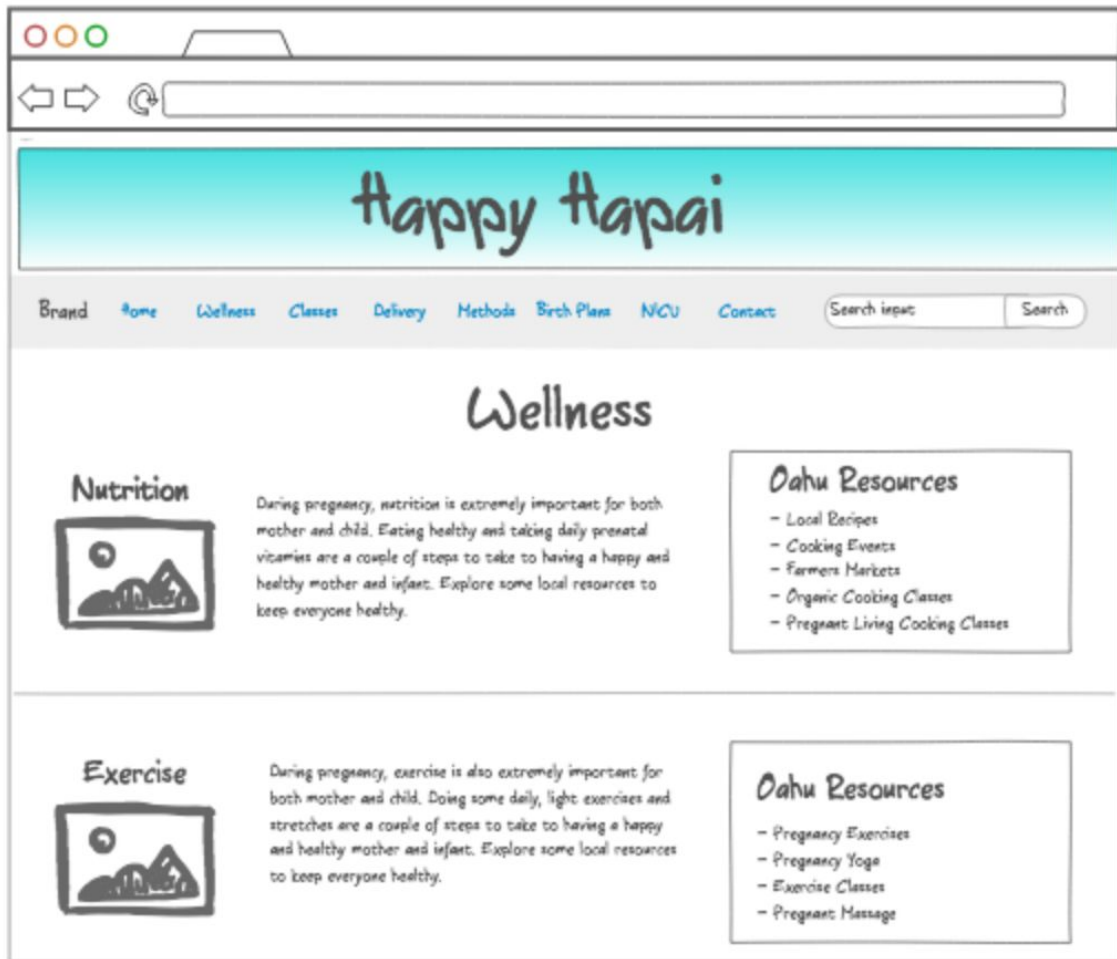
*Figure A2*. Wireframe of Wellness Page.
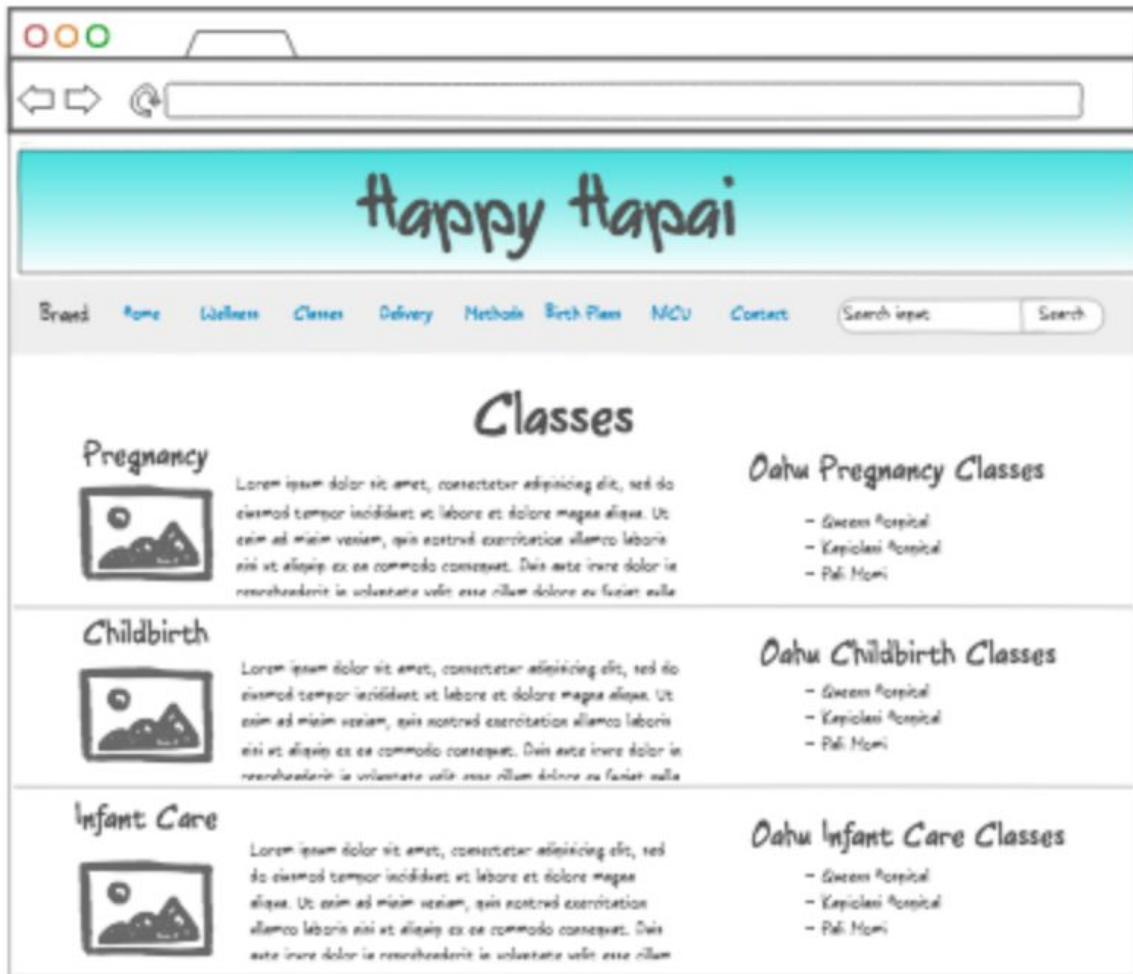
*Figure A3.* Wireframe of Classes Page.
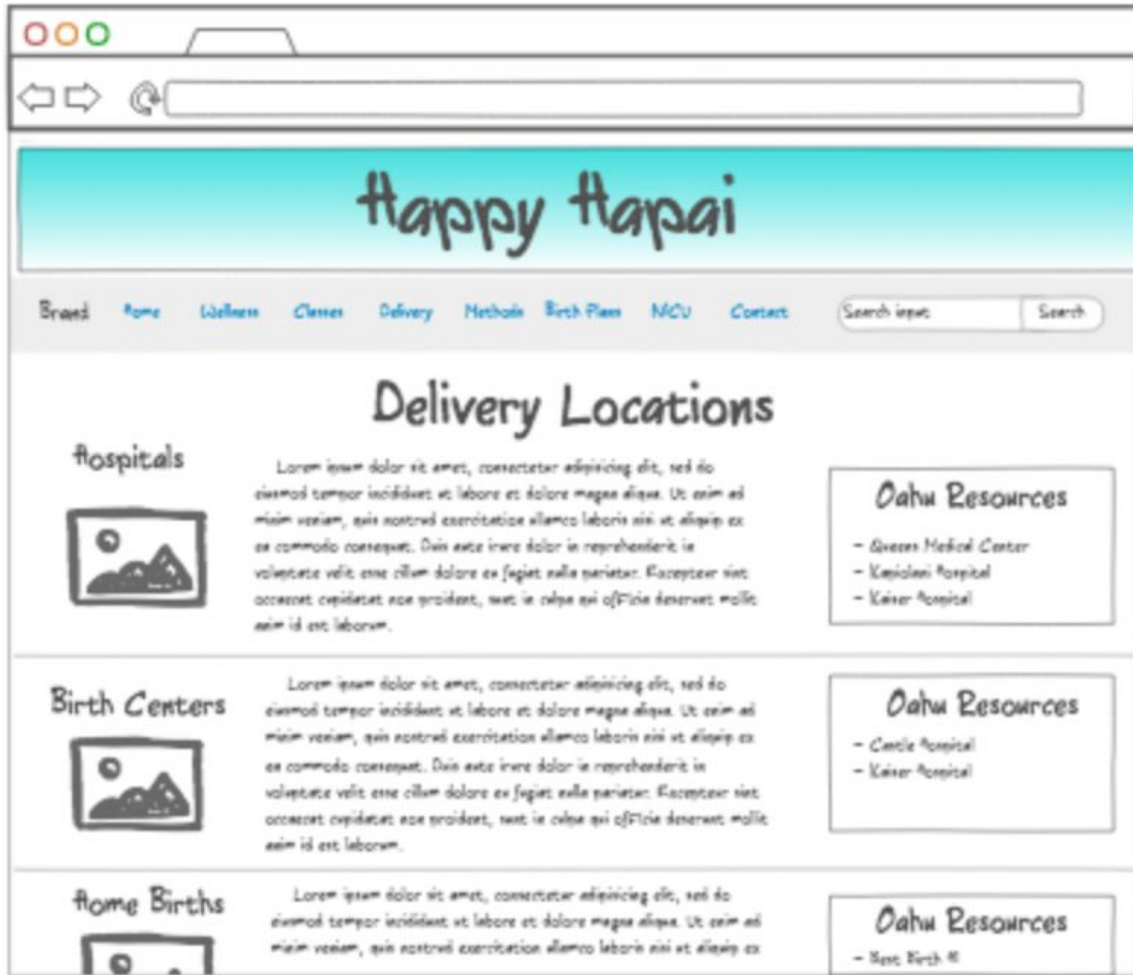
*Figure A4*. Wireframe of Delivery Locations Page.
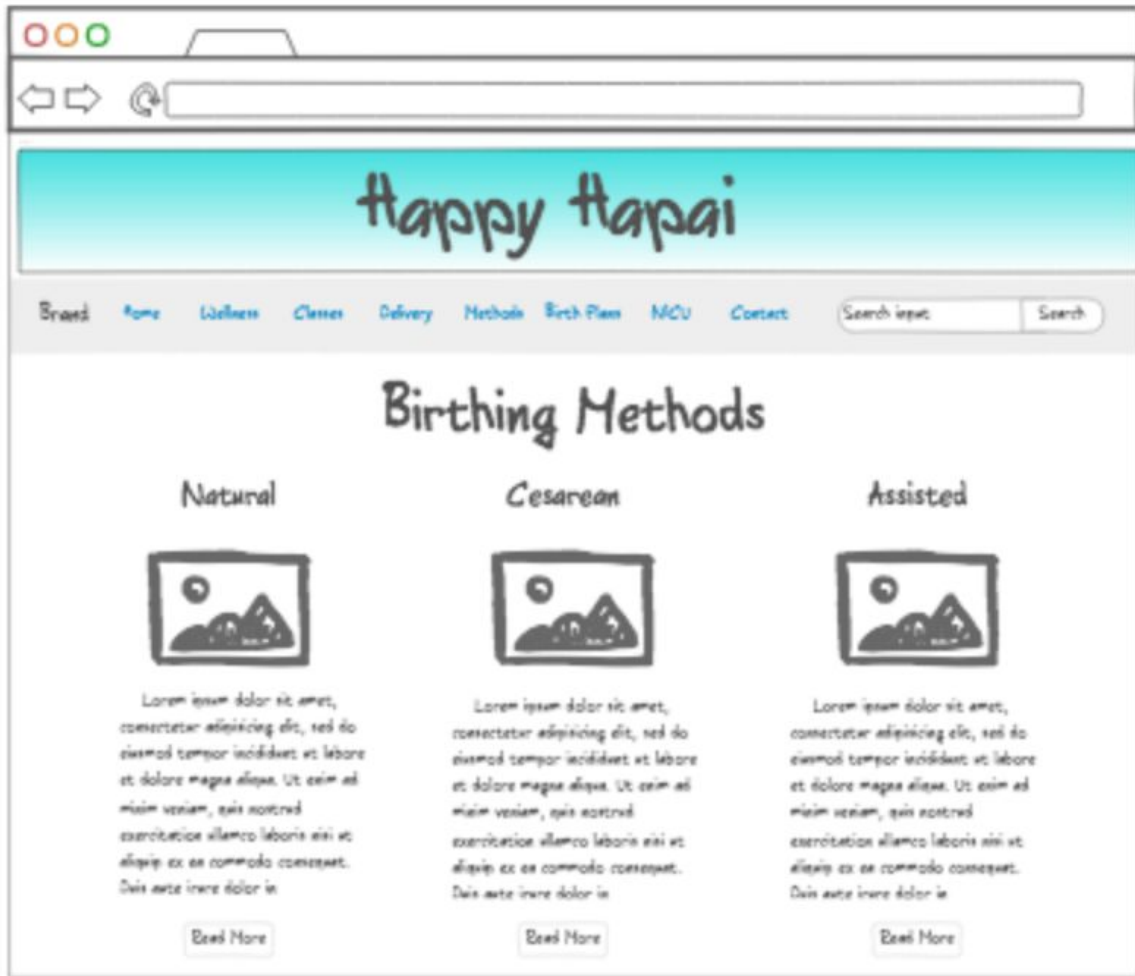
*Figure A5.* Wireframe of Birthing Methods Page.
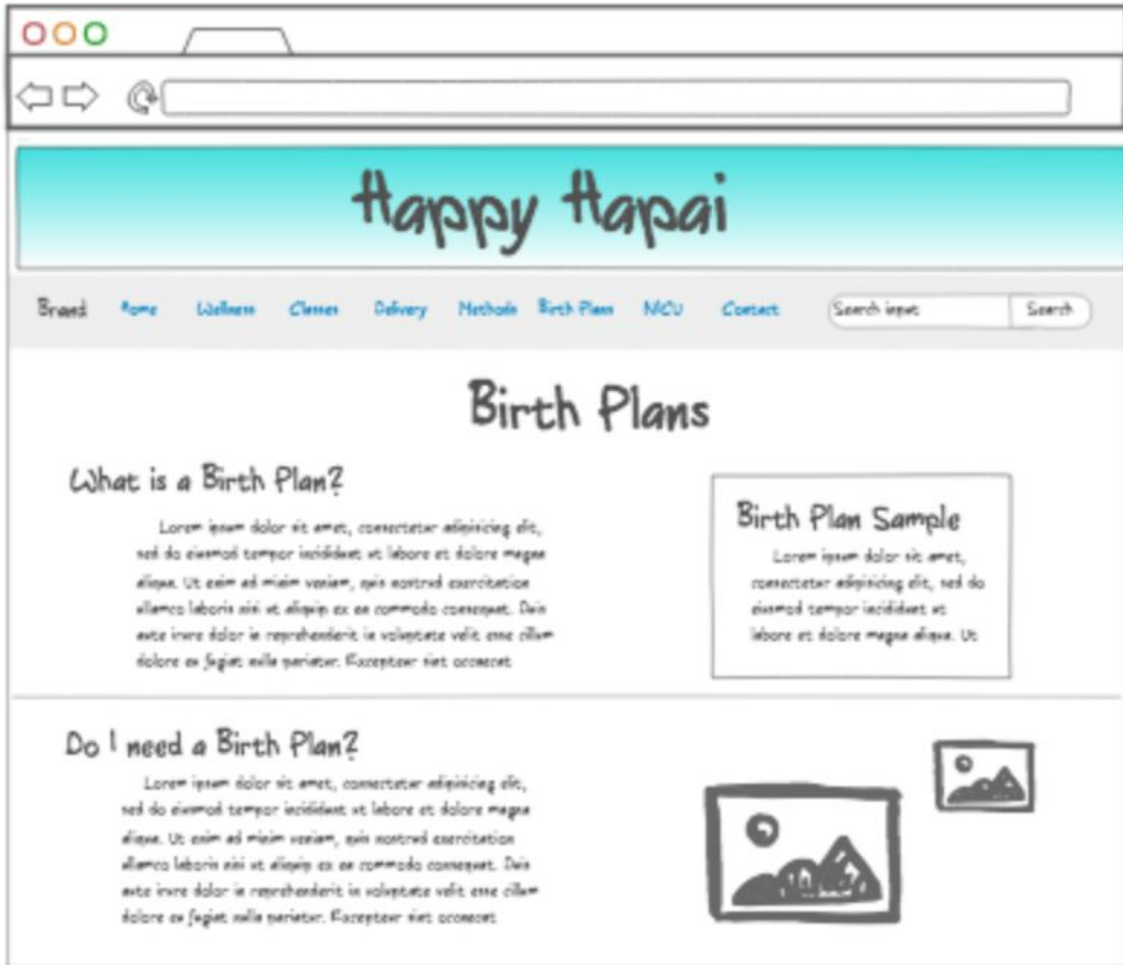
*Figure A6.* Wireframe of Birth Plans Page.

APPENDIX B
**Participant Recruitment Letter**

(Send out date)

**Participant Recruitment Letter**

Dear (Insert Participant's Name),

My name is Demi Yoshimoto. I am a graduate student at the University of Hawai'i at Mānoa in the Department of Learning Design and Technology (LTEC). As part of the requirements for earning my graduate degree, I am doing a usability study of a website, and you are invited to take part in a research study.

My project is an informational website that offers a comprehensive resource to help Oahu-based individuals and couples, who are expecting or planning to have a child, make decisions regarding prenatal care and birth based on their unique needs. The purpose of my project is to evaluate usability, specifically the functionality, navigability, and ease of use of the website and the participants' satisfaction with the content.

I am asking you to participate in this study because you fit the target population: an Oahu-based individual who is expecting or planning to have a child in the near future, and interested in making plans regarding prenatal care and birth.

The time commitment for the study will be 60-90 minutes in total, which includes taking two surveys and completing tasks while navigating through the website. There are minimal risks to taking part in this study. While browsing through the website and completing the various tasks, participants will be asked to gauge their level of frustration.

If you would like additional information about this study, please call Demi Yoshimoto at (808)-599-1843 or email dmkyoshi@hawaii.edu.

Please note that you are not obligated to participate in the study if you request additional information. Additionally, if you agree to participate in the study, you may opt out at any time without penalty.

Thank you for your time and consideration of this research opportunity.


Sincerely,

Demi Yoshimoto

*Figure B.* Participant Recruitment Letter.

APPENDIX C
**Participant Consent Form**

**University of Hawaiʻi**
**Consent to Participate in a Research Project**
Demi Yoshimoto, Principal Investigator
*Project title: Pregnancy and Birth Preparation on Oʻahu: A Usability Study*

Aloha! My name is Demi Yoshimoto and you are invited to take part in a research study. I am a graduate student at the University of Hawaiʻi at Mānoa in the Department of Learning Design and Technology (LTEC). As part of the requirements for earning my graduate degree, I am doing a research project.

*What am I being asked to do?*
If you participate in this project, you will be asked to take two surveys and navigate a website while completing scenario-based tasks.

*Taking part in this study is your choice.*
Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you.

*Why is this study being done?*
The purpose of this study is to evaluate the usability, specifically the functionality, navigability, and ease of use of an Oahu-based pregnancy and birth preparation website and the participants' satisfaction with the content. I am inviting you to participate in my project because you fall within the target audience.

*What will happen if I decide to take part in this study?*
The study will take about 60 to 75 minutes to complete. During this time you will complete a pre-survey, which will collect your demographic and background information. You will also be asked to browse through a website while completing various tasks. To conclude the study, you will be asked to complete a post survey, which will ask for your honest thoughts of the website's content and design.

With your permission, I will audio-record the interview so that I can later transcribe the interview and analyze the responses. I will also use a screen-capturing tool to record your computer screen so that I can analyze your navigation through the website.

*What are the risks and benefits of taking part in this study?*
I believe there is little risk to you in participating in this research project. You may become frustrated while completing the various tasks during the study. If you do become stressed, you can skip the question or take a break. You can also stop participating at any time.

There will be no direct benefit to you for participating in this study. The results of this project may help improve the Career Development and Counseling program.

*Privacy and Confidentiality:* I will keep all study data secure in a password protected computer. Only I will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawaiʻi Human Studies Program has the right to review research records for this study.

Consent Form – version 1

*Figure C1.* Participant Consent Form.

**University of Hawai'i**
**Consent to Participate in a Research Project**
Demi Yoshimoto, Principal Investigator
*Project title: Pregnancy and Birth Preparation on Oʻahu: A Usability Study*

After I analyze the data and transcribe the audio recordings, I will erase or destroy all of the data, including the surveys, and audio and screen recordings. When I report the results of my research project, I will not use your name. I will not use any other personal identifying information that can identify you. I will report my findings in a way that protects your privacy and confidentiality to the extent allowed by law.

*Compensation:*
You will receive no compensation for participating in this research project.

*Questions:*
If you have any questions about this study, please call or email me at 808-599-1843 or dmkyoshi@hawaii.edu. You may also contact my advisor, Dr. Daniel Hoffman, at 646-462-0017 or dan.hoffman@hawaii.edu. You may contact the UH Department of Learning Design and Technology at 808-956-7671 or ltec@hawaii.edu to discuss problems, concerns and questions; obtain information; or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit http://go.hawaii.edu/jRd for more information on your rights as a research participant.

If you agree to participate in this project, please sign and date the following signature page and return a scanned copy to: Demi Yoshimoto at dmkyoshi@hawaii.edu

Keep a copy of the informed consent for your records and reference.

**Signature(s) for Consent:**

I give permission to join the research project entitled, "*Pregnancy and Birth Preparation on Oʻahu: A Usability Study.*"

Please initial next to either "Yes" or "No" to the following:

_____ Yes        _____ No        I consent to be audio-recorded for the interview portion of this research.

_____ Yes        _____ No        I consent to have my screen recorded for the interview portion of this research.

**Name of Participant (Print):** _____

**Participant's Signature:** _____

**Signature of the Person Obtaining Consent:** _____

**Date:** _____

Consent Form – version 1

*Figure C2.* Participant Consent Form.

APPENDIX D
**Cognitive Walkthrough Protocol**

**Cognitive Walkthrough Protocol**
**Pregnancy and Birth Preparation on Oʻahu: A Usability Study**
**Demi Yoshimoto**

*Modified from Usability Script- Rocket Surgery Made Easy © 2010 Steve Krug*

**Technology Set-Up Checklist (Facilitator Computer)**

1. Facilitator should set up his/her computer and attach all cords/peripherals - make sure to use a wired mouse
2. Plug in to a power outlet (don't trust the battery)
3. Make sure computer is connected to the Internet if you are using online resources
4. Prepare screencasting software (Google Hangouts on Air) and do a brief test to ensure
   a. Video of screen is captured
   b. Video from webcam is captured
   c. Audio is captured

After computer is set up:

1. Load your wireframes in whatever presentation software you choose to use.
2. Start the screencasting software

**Facilitator Script**

Hi, [insert participant's name]. My name is Demi, and I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

I'm asking people to take a look at some interface mock-ups, or wireframes, designed for my Learning Design and Technology Master's project. I would like to see what you think of them and how you think you would complete a few tasks with an interface like this. The session should take about 10 minutes.

The first thing I want to make clear right away is that we're testing the *wireframes*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you complete the tasks, I'm going to ask you as much as possible to try to *think out loud*: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to me.

*Figure D1*. Cognitive Walkthrough Protocol.

Also, please don't worry that you're going to hurt my feelings. I'm doing this to improve my designs, so I need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since I'm interested in how people do when they don't have someone who can help. But if you still have any questions when we're done I'll try to answer them then.

And if you need to take a break at any point, just let me know. Do you have any questions so far?

**Ask participant a few preliminary questions:**

OK. Before we look at the site, I'd like to ask you just a few quick questions about your experience as an online student.

1. How often do you use the Internet during the week?

2. What websites do you usually visit?

3. Do you have any favorite websites?

4. What features make websites easy-to-use and navigate?

OK, great. We're done with the questions, and we can start testing out the site.

**Have participants do a narrative of the wireframes' overall appearance for one or two minutes, at most:**

I'm going to ask you to look at this wireframe of the homepage and tell me what you make of it: what strikes you about it, whose site you think it is, what you can do here, and what it's for. Just look around and do a little narrative. You can scroll around if you need to.

**Ask participant to complete a few specific tasks (be sure to give the participant a handout of the scenarios):**

Thanks for doing that. You did a great job. Now I'm going to ask you to try doing some specific tasks. I'm going to read each one out loud. You should have received a copy of these before this study. Again, as much as possible, it will help if you can try to think out loud as you go along.

**Allow the user to proceed from one task to the next until you don't feel like it's producing any value or the user becomes very frustrated. Repeat for each task or until time runs out.**

*Figure D2.* Cognitive Walkthrough Protocol.

**Scenarios ("tasks") for Cognitive Walkthrough**

You are planning to have or expecting a child in the near future. Having a child takes a lot of preparation and planning, so you decide to visit a website that provides a comprehensive source of information about pregnancy and childbirth specific to the island of Oahu.

**Scenario 1**: You navigate to the website and see the landing page
1. What initially catches your attention?
2. How do you think this website applies to your current situation?
3. What do you think you are supposed to do with this information?
4. What information would you find most useful?
5. What would you do next?

**Scenario 2**: Now that you have browsed through the website's landing page, find a pregnancy or birth preparation course based on your needs and interests.

1. Explain how you got to this page.
2. Explain what you are seeing on this page.
3. What do you think you are supposed to do with this information?
4. What information would be helpful to you?
5. What would you do next?

**Scenario 3**: You now want to find information about the location of your child's delivery.

1. Explain how you got to this page.
2. Explain what you are seeing on this page.
3. What do you think you are supposed to do with this information?
4. What information would be helpful to you?
5. What would you do next?

Thanks, that was very helpful.

We are done with the main questions, but I have a few more general questions to ask you.

***Note:*** *If you ask yes/no, true-false, and ranking follow-up questions, be sure to follow up with questions about WHY. This is because design teams will ask, "Well, what was the cause? What exactly were they thinking when they answered this? How should the product design respond to this? Give us something we can use!"*

*Figure D3.* Cognitive Walkthrough Protocol.

1. On a scale from 1 to 5, with 1 representing very difficult and 5 representing very easy, how would you rate your experience during today's testing? Why?

2. Please think about other informational websites you have visited before. Have you ever needed to perform tasks like the ones you did in the usability test today? Compared to your prior experience, would you say that the tasks you performed today were easier or more difficult? Why?

3. After participating in this study, would you recommend this website to anyone? Why?

4. What, if any, specific features or content do you recommend adding?

That's the last question, Do you have any questions for me, now that we're done?

I want to thank you for your time and willingness to be a participant in this study.

- ***Stop the screencasting software***

### After the Session:

1. Save screencast to your desired location
2. Quickly scrub through the video to ensure the integrity of the audio and video
3. Ensure that the sharing option for the videos is set to "Private"

*Figure D4.* Cognitive Walkthrough Protocol.

APPENDIX E
**Initial Website Prototype**
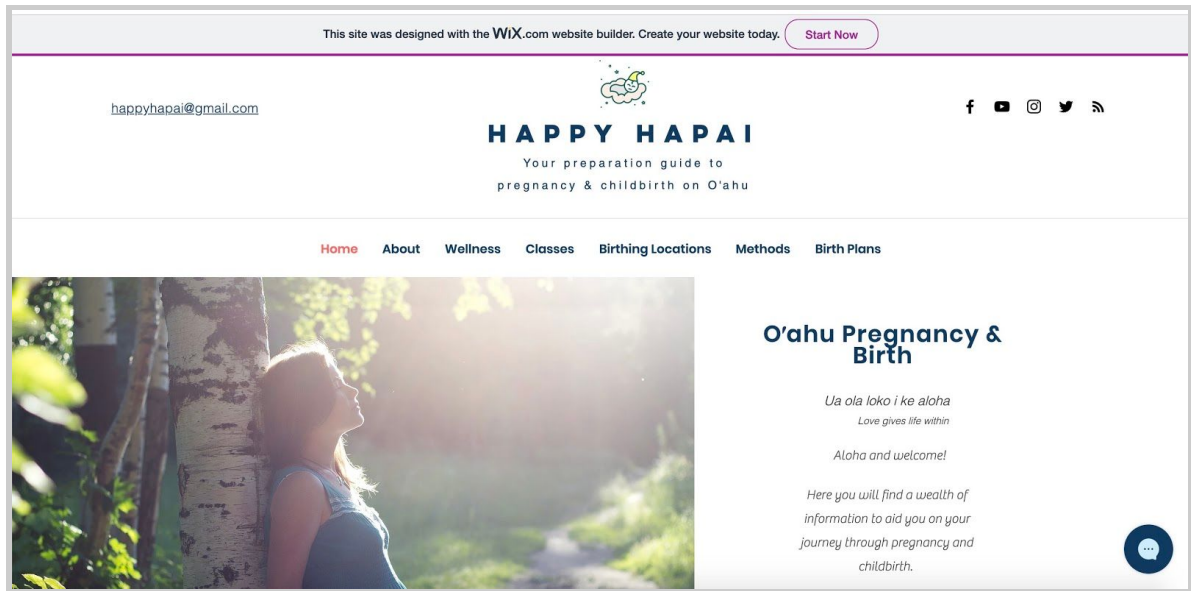


*Figure E1.* Initial Website Prototype Landing Page.
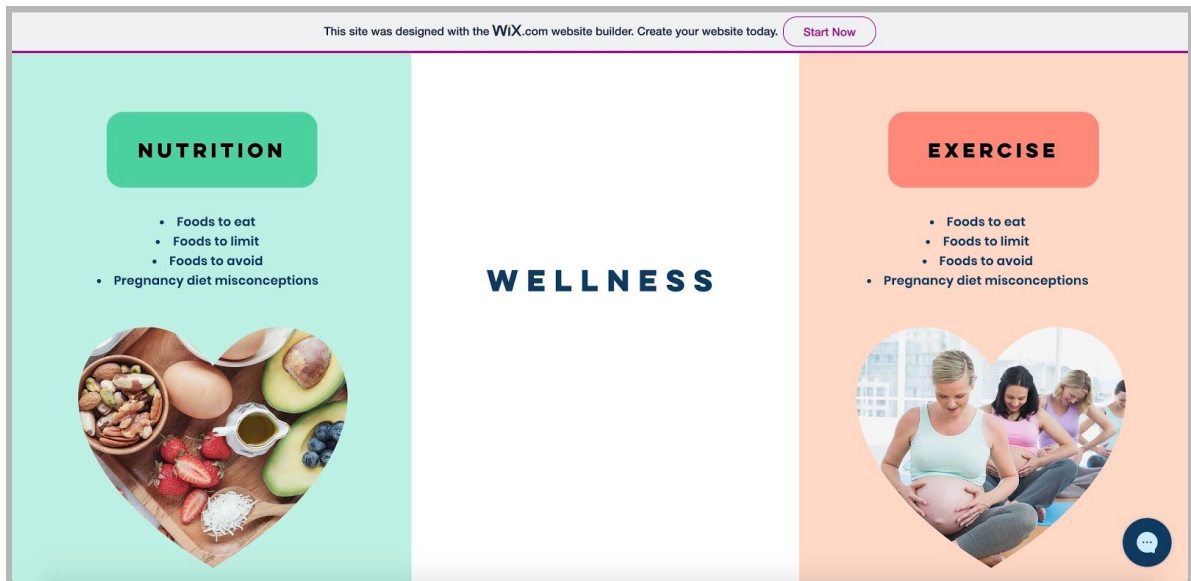


*Figure E2.* Initial Website Prototype Wellness Page.
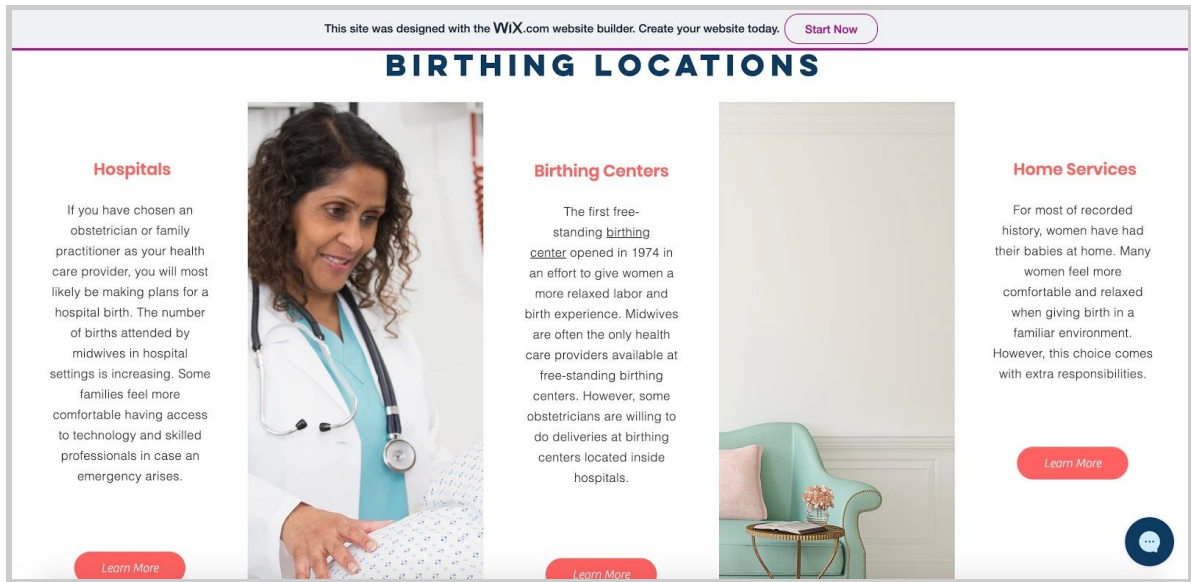
*Figure E3.* Initial Website Prototype Birthing Locations Page.
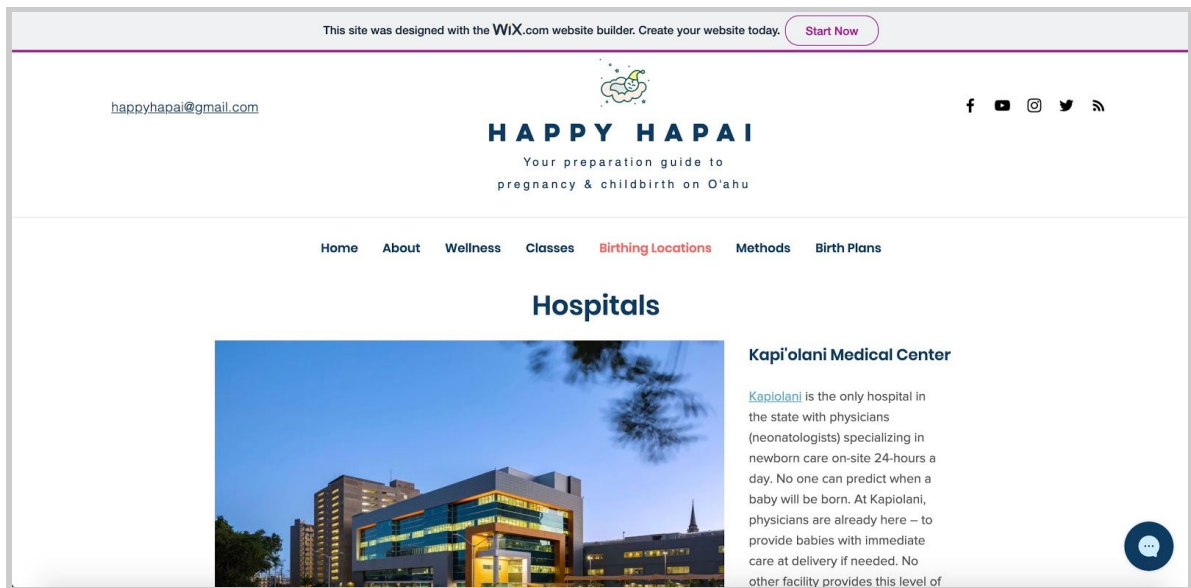


*Figure E4.* Initial Website Prototype Birthing Locations Subpage.
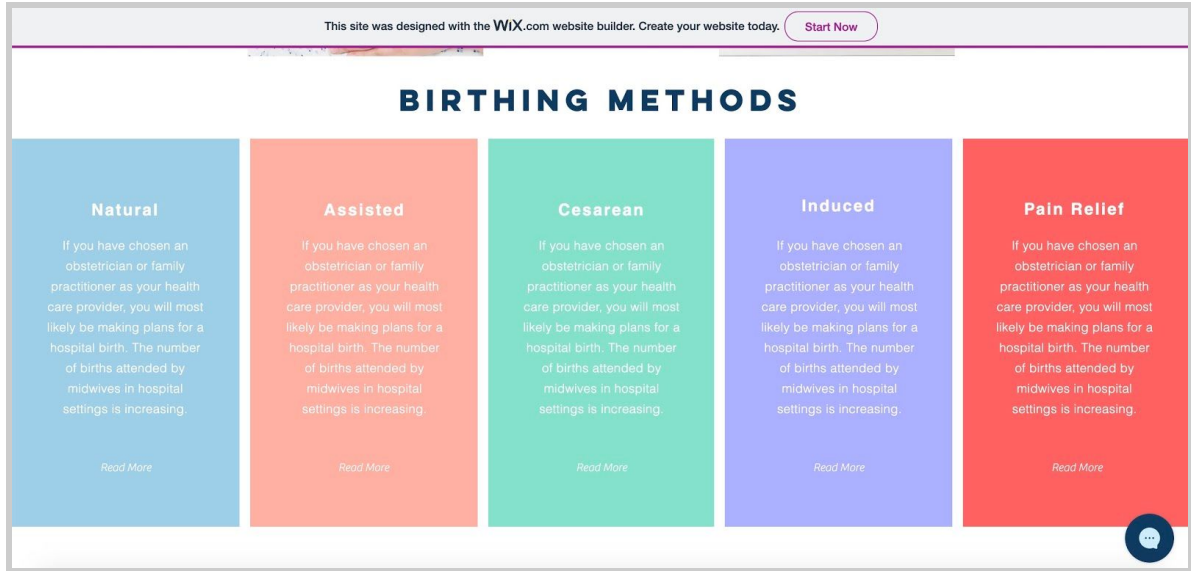
*Figure E5.* Initial Website Prototype Birthing Methods Page.
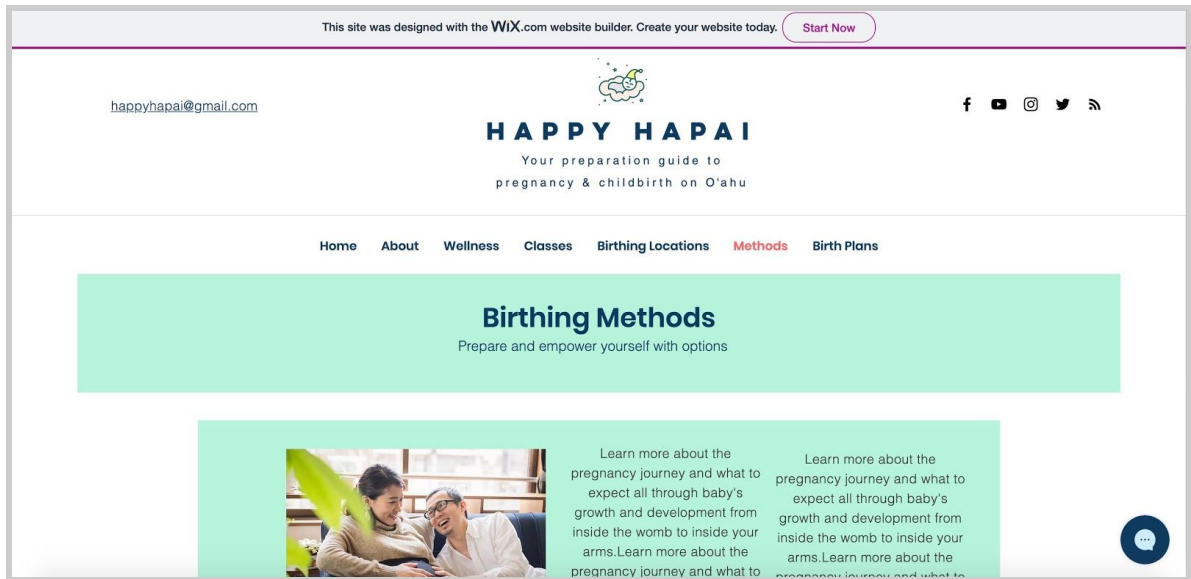


*Figure E6. Initial Website Prototype Birthing Methods Subage.*
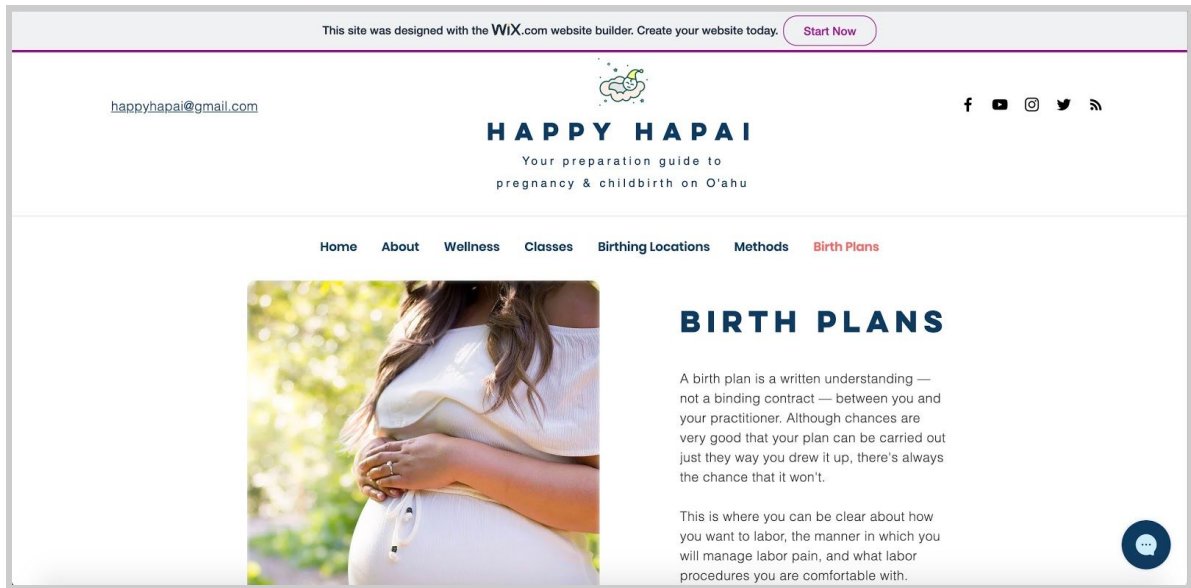
*Figure E7.* Initial Website Prototype Birth Plans Page.

APPENDIX F
**Pre-Survey**

## Pre-Survey

Thank you for participating in this usability study. Please complete this short survey prior to engaging in the study. In order to maintain anonymity, no identifying information will be collected.

* Required

1. *Mark only one oval.*

   ◯ Option 1

2. **1. Gender** *
   *Mark only one oval.*

   ◯ Male

   ◯ Female

   ◯ Prefer not to say

3. **2. Age:** *
   *Mark only one oval.*

   ◯ 21-30

   ◯ 41+

   ◯ 18-20

   ◯ 36-40

   ◯ 31-35

4. **3. Marital Status** *
   *Mark only one oval.*

   ◯ Single

   ◯ Married

   ◯ Domestic Partnership

   ◯ Separated or Divorced

   ◯ Other: _____

5. **4. Highest Level of Education** *
   *Mark only one oval.*

   ◯ High School

   ◯ Associate's Degree

   ◯ Bachelor's Degree

   ◯ Master's Degree

   ◯ Doctorate Degree

*Figure F1.* Pre-Survey Questions.

6. **5. Employment Status** *
   *Mark only one oval.*

   ( ) Full-time

   ( ) Part-time

   ( ) Unemployed

   ( ) Student

   ( ) Other: _____

7. **6. Current Number of Children** *
   *Mark only one oval.*

   ( ) 0

   ( ) 1

   ( ) 2

   ( ) 3+

8. **7. Stage of Pregnancy** *
   *Mark only one oval.*

   ( ) Planning

   ( ) 1st Trimester

   ( ) 2nd Trimester

   ( ) 3rd Trimester

   ( ) Other: _____

9. **8. How many years have you lived on Oahu?** *
   *Mark only one oval.*

   ( ) Less than a year

   ( ) 1-5 years

   ( ) 6-10 years

   ( ) 11-20 years

   ( ) 21+ years

*Figure F2.* Pre-Survey Questions.

10. **9. If you're currently pregnant, been pregnant in the past, or have just done research on the resources available to pregnant women, how do or did you obtain information on pregnancy and childbirth? Select all that apply.**
*Check all that apply.*

- [ ] Medical professionals (OB-GYN, nurse, etc.)
- [ ] Informational text (Books, magazines, etc.)
- [ ] Informational websites (whattoexpect.com, plannedparenthood.org, etc.)
- [ ] Online media (YouTube, pregnancy blogs, etc.)
- [ ] Mobile applications focused on pregnancy
- [ ] Social Media (Facebook, Twitter, Instagram, etc.)
- [ ] Word of mouth & advice from other people
- [ ] I did not obtain information on pregnancy and childbirth.
- [ ] Other: _____

11. **10. If you're currently pregnant, been pregnant in the past, or have just done research on the resources available to pregnant women, what website(s) have you visited? (i.e. whattoexpect.com, plannedparenthood.org, etc.)**

_____

_____

_____

_____

_____

12. **11. What information would you find useful on a website about pregnancy and childbirth? Select all that apply.**
*Check all that apply.*

- [ ] Wellness (exercise & diet)
- [ ] Pregnancy classes
- [ ] Childbirth classes (Lamaze, Bradley method, etc.)
- [ ] Infant care classes
- [ ] Delivery options (hospital choice, birth center, home)
- [ ] Birthing methods (natural, assisted, Cesarean, etc.)
- [ ] Creating birth plans
- [ ] Neonatal Intensive Care Unit (NICU) information
- [ ] Other: _____

13. **12. How important is it to obtain information on pregnancy and childbirth? (1=Not important, 2=Slightly important, 3=Neutral, 4=Important, 5=Very important)** *
*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Not important | ◯ | ◯ | ◯ | ◯ | ◯ | Very important |

*Figure F3.* Pre-Survey Questions.

12/1/2019                                                    Pre-Survey

14. **13. How likely are you to obtain information about pregnancy and childbirth from an online resource? (1=Not likely, 2=Somewhat likely, 3=Neutral, 4=Likely, 5=Very likely) ***

*Mark only one oval.*

|          | 1 | 2 | 3 | 4 | 5 |             |
|----------|---|---|---|---|---|-------------|
| Not likely | ◯ | ◯ | ◯ | ◯ | ◯ | Very likely |

15. **14. How valuable would you find a comprehensive website about pregnancy and childbirth for people living on Oahu? (1=Not valuable, 2=Somewhat valuable, 3=Neutral, 4=Valuable, 5=Very valuable) ***

*Mark only one oval.*

|            | 1 | 2 | 3 | 4 | 5 |               |
|------------|---|---|---|---|---|---------------|
| Not valuable | ◯ | ◯ | ◯ | ◯ | ◯ | Very valuable |

Powered by
Google Forms

*Figure F4.* Pre-Survey Questions.

APPENDIX G
**Usability Protocol**

**Usability Protocol**
**Pregnancy and Birth Preparation on Oʻahu: A Usability Study**
**Demi Yoshimoto**

*Modified from Usability Script- Rocket Surgery Made Easy © 2010 Steve Krug*

**Technology Set-Up Checklist (Facilitator Computer)**

1. Facilitator should set up his/her computer and attach all cords/peripherals - make sure to use a wired mouse
2. Plug in to a power outlet (don't trust the battery)
3. Make sure computer is connected to the Internet if you are using online resources
4. Set up audio and test - headset test
   a. Ensure the microphone is working
   b. Ensure the volume is at a reasonable level
5. Prepare videorecording (YouTube) and screencasting software (Google Hangouts on Air) and do a brief test to ensure
   a. Video of screen is captured
   b. Video from webcam is captured
   c. Audio is captured
6. Contact participant and ask if participant's computer is set up and participant is ready.

After Participant computer is set up:

7. Facilitator invites participant to a Google Hangout.
8. Facilitator can access Google Hangout through Google+ by clicking on the green quotations icon and enter your invitation to the participant.
9. Participant can test if Google Hangouts is working with his/her Gmail account:
   *a.* Starting from Gmail, ask participant to click on his/her photo icon next to his/her name in the chat area to see Google Hangout preferences. If participant is logged in, once he/she clicks picture, "Hangout Invites" should appear in the drop down menu below your photo. This is the invitation to participate in the study.
10. Run a test with Google Hangouts on Air and test video/audio and screenshare
   a. If it does not work, then review preparation of Facilitator's computer for Google Hangouts on Air and retest:
      i. Ensure that you are running the Chrome browser for best results
      ii. Ensure you have the current Google Voice and Video Setup

*Figure G1*. Usability Protocol.

plugin

   iii. Run a test broadcast in Google Hangouts on Air to link your YouTube account. You will need to provide your cell phone or email for verification.

**Technology Set-Up Checklist (Participant Computer)**

11. Participant sets up computer and attach all cords/peripherals - make sure to use a wired mouse
12. Plug in to a power outlet (don't trust the battery)
13. Make sure computer is connected to the Internet
14. Set up audio and test - headset test
    a. Ensure the microphone is working
    b. Ensure the volume is at a reasonable level
15. Login to **Participant Google account** (https://plus.google.com/)
16. Wait for facilitator to contact asking if ready
17. When contacted, facilitator will send invitation for Google Hangouts on Air
18. Accept invitation through Google Hangouts.
    a. How to test if Google Hangouts is working with your Gmail account:
        *i.* Starting from Gmail, click on your photo icon next to your name in the chat area to see your Google Hangout preferences. If you are logged in, once you click your picture, "Hangout Invites" should appear in the drop down menu below your photo. This is your invitation to participate in the study.
        *ii.* You can also access Google Hangout through Google+ by clicking on the green quotations icon and enter your invitation to the participant.
19. Run a test with Facilitator computer through Google Hangouts on Air.
    a. If it does not work, then review preparation of participant computer for Google Hangouts on Air and retest:
        i. Ensure that you are running the Chrome browser for best results
        ii. Ensure you have the current Google Voice and Video Setup plugin
        iii. Run a test broadcast in Google Hangouts on Air to link your Youtube account. You will need to provide your cell phone or email for verification.
20. Add bookmark for the URL of the website you are evaluating.

*Figure G2.* Usability Protocol.

**Facilitator Script**

❏ *START the Google Hangouts Air Session by clicking on the red button labeled "Start broadcast"*

Hi, [insert participant's name]. My name is Demi, and I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

I'm asking people to try using a website designed for my Learning Design and Technology Master's project. I would like to see if it works as intended. The session should take about 30 minutes.

The first thing I want to make clear right away is that we're testing the *site*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use the site, I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help.

Also, please don't worry that you're going to hurt my feelings. I'm doing this to improve the site, so I need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since I'm interested in how people do when they don't have someone who can help. But if you still have any questions when we're done I'll try to answer them then.

And if you need to take a break at any point, just let me know. Do you have any questions so far?

❏ *Ask participant a few preliminary questions:*

OK. Before we look at the site, I'd like to ask you just a few quick questions about your experience with using websites.

1. How often do you use the Internet during the week?

2. What websites do you usually visit?

3. Do you have any favorite websites?

4. What features make websites easy-to-use and navigate?

*Figure G3.* Usability Protocol.

OK, great. We're done with the questions, and we can start testing out the site. Before we begin, I want to verify that you have completed the pre-survey. If not, please click on this tab to take the survey.

❑ *Ask participant to take pre-survey (if not already completed)*

OK, thank you for taking the survey. We can now start testing out the website.

❑ *Send participant URL for website to be evaluated:*

Use the instant messaging feature of Google Hangouts or send your participant an email with the URL for the website to be evaluated. Ask participant to open URL.

❑ *Ask participant to begin the screenshare:*

Please start Screenshare by clicking on the 'Screenshare' link on your left-hand navigation in the Google Hangouts on Air window.

❑ *Have participants do a narrative of the website's overall appearance three or four minutes, at most:*

I'm going to ask you to look at this page and tell me what you make of it: what strikes you about it, whose site you think it is, what you can do here, and what it's for. Just look around and do a little narrative. You can scroll if you want to, but don't click on anything yet.

❑ *Ask participant to complete a few specific tasks based off of their scenarios sheet:*

Thanks for doing that. You did a great job. Now I'm going to ask you to try doing some specific tasks. I'm going to read each one out loud. You should have received a copy of these in your email before this study.

I'm also going to ask you to do these tasks without using any search features. We'll learn a lot more about how well the site works that way. And again, as much as possible, it will help us if you can try to think out loud as you go along.

***Allow the user to proceed from one task to the next until you don't feel like it's producing any value or the user becomes very frustrated. Repeat for each task or until time runs out.***

| Scenarios for Usability Study |
|---|
| |

*Figure G4.* Usability Protocol.

**Scenario**: You are planning to have or expecting a child in the near future. Having a child takes a lot of preparation and planning, so you decide to visit a website that provides a comprehensive source of information about pregnancy and childbirth specific to the island of Oahu.

**Pre-Task**: You navigate to the website and see the landing page.
1. What initially catches your attention?
2. What do you think the purpose of this website is?
3. How do you think this website applies to your current situation?
4. What do you think you are supposed to do with this information?
5. What information would you find most useful?

**Task 1**: Search for ways for you or your partner to take care of yourself or herself during pregnancy.

Verbal comments/feedback:

Rate level of frustration: 0-4
- ❏ 0 = zero frustration
- ❏ 1 = little frustration
- ❏ 2 = moderate frustration
- ❏ 3 = high frustration
- ❏ 4 = unable to complete task

**Task 2**: Search for a class that you and/or your partner would be interested in taking based on your needs and interests

Verbal comments/feedback:

Rate level of frustration: 0-4
- ❏ 0 = zero frustration
- ❏ 1 = little frustration
- ❏ 2 = moderate frustration
- ❏ 3 = high frustration
- ❏ 4 = unable to complete task

**Task 3**: Search for information about your preferred birth location based on your needs and interests.

Verbal comments/feedback:

*Figure G5.* Usability Protocol.

Rate level of frustration: 0-4
- ❏ 0 = zero frustration
- ❏ 1 = little frustration
- ❏ 2 = moderate frustration
- ❏ 3 = high frustration
- ❏ 4 = unable to complete task

**Task 4**: Search for information about your preferred delivery method based on your needs.

Verbal comments/feedback:

Rate level of frustration: 0-4
- ❏ 0 = zero frustration
- ❏ 1 = little frustration
- ❏ 2 = moderate frustration
- ❏ 3 = high frustration
- ❏ 4 = unable to complete task

**Task 5**: Determine how you would create a birth plan, and if writing one is something you want to do.

Verbal comments/feedback:

Rate level of frustration: 0-4
- ❏ 0 = zero frustration
- ❏ 1 = little frustration
- ❏ 2 = moderate frustration
- ❏ 3 = high frustration
- ❏ 4 = unable to complete task

Thanks, that was very helpful.

- ❏ *Request from the participant that they end their screenshare by clicking on the "Screenshare" link on their left-hand navigation in the Google Hangouts on Air window.*
- ❏ *Ask the observers' questions (if time permits).*

*Figure G6.* Usability Protocol.

We are done with the main questions, but I have a few more general questions to ask you.

**Note:** *If you ask yes/no, true-false, and ranking follow-up questions, be sure to follow up with questions about WHY. This is because design teams will ask, "Well, what was the cause? What exactly were they thinking when they answered this? How should the product design respond to this? Give us something we can use!"*

1. On a scale of 1 to 5, with 1 representing very difficult and 5 representing very easy, how would you rate your experience during today's testing?

2. Please think about other informational websites you have visited before. Have you ever needed to perform tasks like the ones you did in the usability test today? Compared to your prior experience, would you say that the tasks you performed today were easier or more difficult? Why?

3. After participating in this study, would you recommend this website to anyone? Why?

4. What, if any, specific features or content do you recommend adding?

That's the last question, Do you have any questions for me, now that we're done?

I want to thank you for your time and willingness to be a participant in this study.

❑ **Stop the Google Hangout Air Broadcast by clicking on the red button labeled, "end broadcast."**

**After the Session:**

1. Save screencast to your desired location
2. Quickly scrub through the video to ensure the integrity of the audio and video
3. Ensure that the sharing option for the videos is set to "Private"
4. Log in to YouTube to ensure that the video is available on YouTube Channel
5. Quickly scrub through the video to ensure the integrity of the audio and video
6. In Video Manager, set the "Privacy settings" to unlisted, which will allow you to give access to the video through a link.

*Figure G7.* Usability Protocol.

APPENDIX H
**Usability Tasks**

**Usability Tasks Worksheet**

Test Facilitator: _____          Test Subject: _____

Test Date: _____          Test Location:_____

**Scenario**: You are planning to have or expecting a child in the near future. Having a child takes a lot of preparation and planning, so you decide to visit a website that provides a comprehensive source of information about pregnancy and childbirth specific to the island of Oahu.

**Pre-Task**: You navigate to the website and see the landing page.
   1. What initially catches your attention?

   2. What do you think the purpose of this website is?

   3. How do you think this website applies to your current situation?

   4. What do you think you are supposed to do with this information?

   5. What information would you find most useful?

*Figure H1*. Usability Tasks for Pre-Task: Purpose.

**Task 1**: Search for ways for you or your partner to take care of yourself or herself during pregnancy.

Participant's Verbal Comments:

Suggestions for making this task easier:

Please rate the level of difficulty of this task.

| 0 | 1 | 2 | 3 |
|---|---|---|---|
| (Zero frustration) | (Minimal frustration) | (Medium frustration) | (High frustration) |

Please rate the participant's ability to complete the task.

0 = Participant completed task with zero difficulty.
1 = Participant completed task with minor problem(s).
2 = Participant completed task with more time and effort.
3 = Participant did not complete the task.

*Figure H2.* Usability Tasks for Task 1: Wellness.

**Task 2**: Search for a class that you and/or your partner would be interested in taking based on your needs and interests.

Participant's Verbal Comments:

Suggestions for making this task easier:

Please rate the level of difficulty of this task.

| 0 | 1 | 2 | 3 |
|---|---|---|---|
| (Zero frustration) | (Minimal frustration) | (Medium frustration) | (High frustration) |

Please rate the participant's ability to complete the task.

0 = Participant completed task with zero difficulty.
1 = Participant completed task with minor problem(s).
2 = Participant completed task with more time and effort.
3 = Participant did not complete the task.

*Figure H3*. Usability Tasks for Task 2: Classes.

**Task 3**: Search for information about your preferred birth location based on your needs and interests.

Participant's Verbal Comments:

```



```

Suggestions for making this task easier:

```



```

Please rate the level of difficulty of this task.

| 0 | 1 | 2 | 3 |
|---|---|---|---|
| (Zero frustration) | (Minimal frustration) | (Medium frustration) | (High frustration) |

Please rate the participant's ability to complete the task.

0 = Participant completed task with zero difficulty.
1 = Participant completed task with minor problem(s).
2 = Participant completed task with more time and effort.
3 = Participant did not complete the task.

*Figure H4.* Usability Tasks for Task 3: Birthing Location.

**Task 4**: Search for information about your preferred delivery method based on your needs.

Participant's Verbal Comments:

Suggestions for making this task easier:

Please rate the level of difficulty of this task.

| 0 | 1 | 2 | 3 |
|---|---|---|---|
| (Zero frustration) | (Minimal frustration) | (Medium frustration) | (High frustration) |

Please rate the participant's ability to complete the task.

0 = Participant completed task with zero difficulty.
1 = Participant completed task with minor problem(s).
2 = Participant completed task with more time and effort.
3 = Participant did not complete the task.

*Figure H5*. Usability Tasks for Task 4: Delivery Method.

**Task 5**: Determine how you would create a birth plan, and if writing one is something you want to do.

Participant's Verbal Comments:

Suggestions for making this task easier:

Please rate the level of difficulty of this task.

| 0 | 1 | 2 | 3 |
|---|---|---|---|
| (Zero frustration) | (Minimal frustration) | (Medium frustration) | (High frustration) |

Please rate the participant's ability to complete the task.

0 = Participant completed task with zero difficulty.
1 = Participant completed task with minor problem(s).
2 = Participant completed task with more time and effort.
3 = Participant did not complete the task.

*Figure H6.* Usability Tasks for Task 5: Birth Plans.

APPENDIX I
**Post-Survey**

## Post Survey

Thank you for participating in this usability study. Please complete this short survey after engaging in the study. In order to maintain anonymity, no identifying information will be collected.

* Required

1. **1. Overall, how easy was it to navigate through this website? (1=Very difficult, 2=Slightly difficult, 3=Moderate, 4=Easy, 5=Very easy)** *
   *Mark only one oval.*

   |              | 1 | 2 | 3 | 4 | 5 |           |
   |--------------|---|---|---|---|---|-----------|
   | Very difficult | ◯ | ◯ | ◯ | ◯ | ◯ | Very easy |

2. **2. Overall, how satisfied are you with the content of the website? (1=Not satisfied, 2=Slightly satisfied, 3=Neutral, 4=Satisfied, 5=Very satisfied)** *
   *Mark only one oval.*

   |              | 1 | 2 | 3 | 4 | 5 |               |
   |--------------|---|---|---|---|---|---------------|
   | Not Satisfied | ◯ | ◯ | ◯ | ◯ | ◯ | Very satisfied |

3. **3. How useful did you find this website? (1=Not useful, 2=Slightly useful, 3=Neutral, 4=Useful, 5=Very useful)**
   *Mark only one oval.*

   |            | 1 | 2 | 3 | 4 | 5 |             |
   |------------|---|---|---|---|---|-------------|
   | Not useful | ◯ | ◯ | ◯ | ◯ | ◯ | Very useful |

4. **4. Why was this website helpful to you?** *

   _____

   _____

   _____

   _____

   _____

*Figure I1*. Post Survey Questions.

5. **5. What information did you find most valuable on the website? Select all that apply.** *

*Check all that apply.*

- [ ] Wellness (exercise & diet)
- [ ] Classes
- [ ] Delivery options (hospital choice, birth center, home)
- [ ] Birthing methods (natural, assisted, Cesarean, etc.)
- [ ] Creating birth plans
- [ ] Neonatal Intensive Care Unit (NICU) information

6. **6. What, if any, other information would you have liked to see on the website?** *

_____

_____

_____

_____

_____

7. **7. What, if any, suggestions do you have to improve this website?** *

_____

_____

_____

_____

_____

8. **8. After participating in this study, how important is it to obtain information on pregnancy and childbirth? (1=Not important, 2=Slightly important, 3=Neutral, 4=Important, 5=Very important)**

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Not important | ◯ | ◯ | ◯ | ◯ | ◯ | Very important |

9. **9. After participating in this study, how likely are you to obtain information about pregnancy and childbirth from an online resource? (1=Not likely, 2=Somewhat likely, 3=Neutral, 4=Likely, 5=Very likely)** *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Not likely | ◯ | ◯ | ◯ | ◯ | ◯ | Very likely |

*Figure 12.* Post Survey Questions.

10. **10. After participating in this study, how valuable did find this comprehensive website about pregnancy and childbirth for people living on Oahu? (1=Not valuable, 2=Somewhat valuable, 3=Neutral, 4=Valuable, 5=Very valuable)**
*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Not valuable | ◯ | ◯ | ◯ | ◯ | ◯ | Very valuable |

11. **11. How likely are you to recommend this website to others? (1=Not likely, 2=Somewhat likely, 3=Neutral, 4=Likely, 5=Very likely)** *
*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Not likely | ◯ | ◯ | ◯ | ◯ | ◯ | Very likely |

12. **12. Additional feedback**

_____

_____

_____

_____

_____

Powered by
Google Forms

*Figure I3*. Post Survey Questions.

APPENDIX J
**Nielsen's Severity Rating Scale**

**Nielsen's Severity Rating Scale**

**Project**: Happy Hapai: Evaluating the Usability of a Pregnancy and Childbirth
            Preparation Website

The following 0 to 4 rating scale can be used to rate the severity of usability problems:

**0** = I don't agree that this is a usability problem at all
**1** = Cosmetic problem only: need not be fixed unless extra time is available on project
**2** = Minor usability problem: fixing this should be given low priority
**3** = Major usability problem: important to fix, so should be given high priority
**4** = Usability catastrophe: imperative to fix this before product can be released

*Figure J1*. Nielsen's Severity Rating Scale.

**Iteration 1**

| Problem | Rating | Reason for Rating | Revisions |
|---|---|---|---|
| Home page is structured like a single page application. It has all of the information available on one page, so the user has to scroll quite a bit to find the information he/she needs. | 3 | What is the point of having other pages if the home page has all of the information? The intent of this website is to get reliable information quickly. | • Keep information concise, and condense onto carousel slides/pictures |
| Terminology of items on navigation bar can be confusing and/or misleading. | 3 | The items on the navigation bar need to be clear so that the audience knows exactly which link to click to get the information they need. | • Wellness → Health<br>• Locations → Delivery locations<br>• Methods → Birth methods |
| Images on the homepage take some time to load before moving to the next panel. | 2 | These images are on the homepage, and are therefore the first thing that the audience will see. | • Change the speed of progression from image to image |
| Images take time to load | 1 | Internet connectivity issues | |

*Figure J2.* Nielsen's Severity Rating Scale of Problems for Iteration 1.

**Iteration 2**

| Problem | Rating | Reason for Rating | Revisions |
|---------|--------|-------------------|-----------|
| Link to Kapiolani Hospital is broken | 3 | This is one of the main hospitals on the island that expecting parents research. | • Check and change website link |
| Terminology of items on navigation bar can be confusing and/or misleading. | 3 | The items on the navigation bar need to be clear so that the audience knows exactly which link to click to get the information they need. | • Wellness → Health<br>• Locations → Delivery locations<br>• Methods → Birth methods |
| Birth Plans page is too simple; not enough information | 3 | Birth plans are an important aspect of a woman's childbirth experience | • Include additional information and sample of birth plans |
| Include information about bringing the baby home | 2 | This is additional to my current scope | • Create additional resources, such as car seat info, nursery set up, etc. |
| Images take time to load (again) | 1 | Internet connectivity issues | |

*Figure J3*. Nielsen's Severity Rating Scale of Problems for Iteration 2.

**Iteration 3**

| Problem | Rating | Reason for Rating | Revisions |
|---|---|---|---|
| Terminology of items on navigation bar can be confusing and/or misleading. | 3 | The items on the navigation bar need to be clear so that the audience knows exactly which link to click to get the information they need. | • Wellness → Health<br>• Locations → Delivery locations<br>• Methods → Birth methods |
| Social media link broken | 3 | Social media links hep market the website | • Check and change website link |
| Additional resources for those unable to have their own child | 2 | This is additional to my current scope | • Future changes → Broaden scope to include surrogacy, IVF, adoption |
| Consistency among all pages | 1 | Current layout provides enough information | • Future changes → Possibly make all pages with the same format |
| Images take time to load (again) | 0 | Internet connectivity issues | • Choose different images to showcase Hawai`i |

*Figure J4.* Nielsen's Severity Rating Scale of Problems for Iteration 3.

APPENDIX K
**Revised Website Prototype**
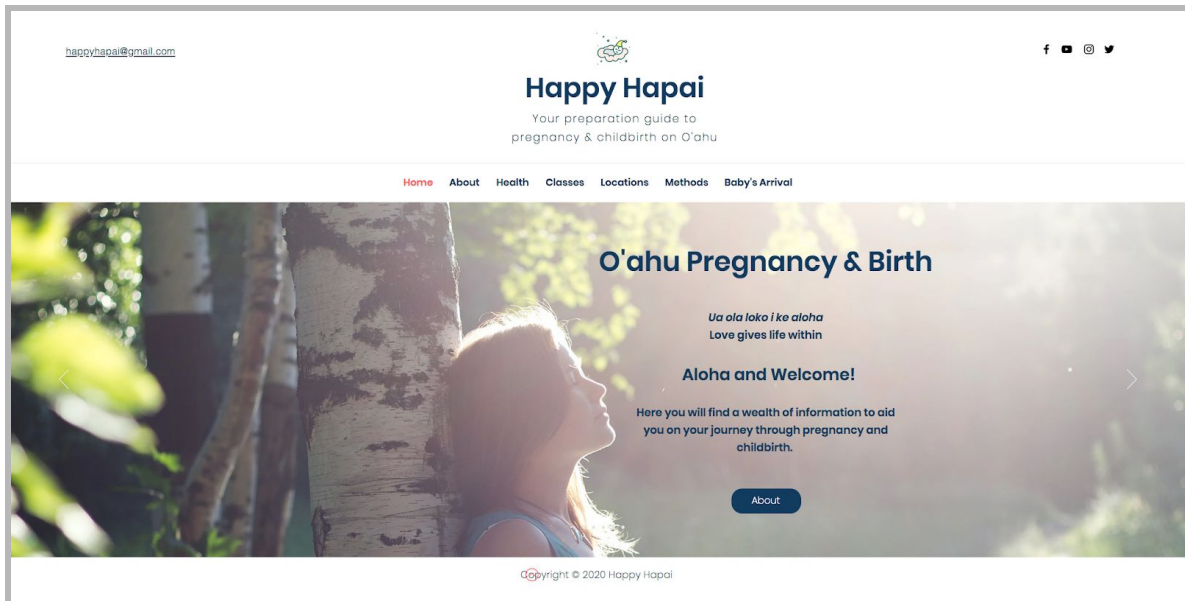


*Figure K1.* Revised Website Prototype Homepage.

*Figure K2.* Revised Website Prototype Wellness Page.

*Figure K3.* Revised Website Prototype Classes Page.
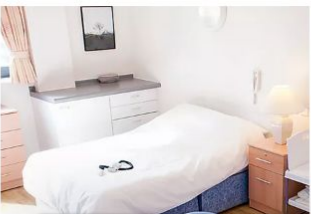
*Figure K4.* Revised Website Prototype Birthing Methods Page.

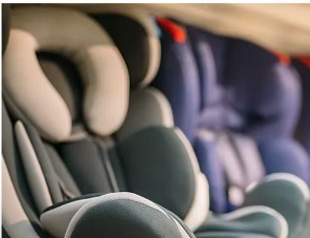*Figure K5*. Revised Website Prototype Birthing Locations Page.

*Figure K2*. Revised Website Prototype Baby's Arrival Page.

APPENDIX L
**Collaborative Institutional Training Initiative (CITI) Certifications**



*Figure L1*. CITI Exempt Researchers Key Personnel.

*Figure L2.* CITI Exempt Researchers Key Personnel IPS.

**APPENDIX M**
Participants' Frustration Level Data from Usability Tasks
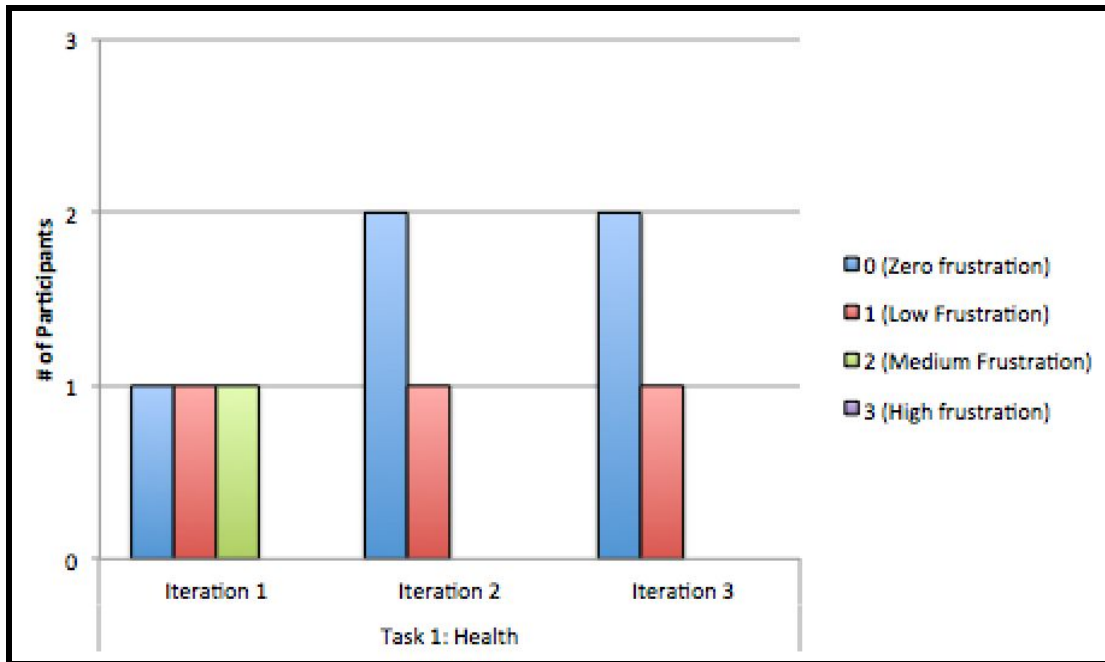


*Figure M1*. Bar chart illustrating participants' level of frustration from Iterations 1, 2, and 3 for Task 1: Health.
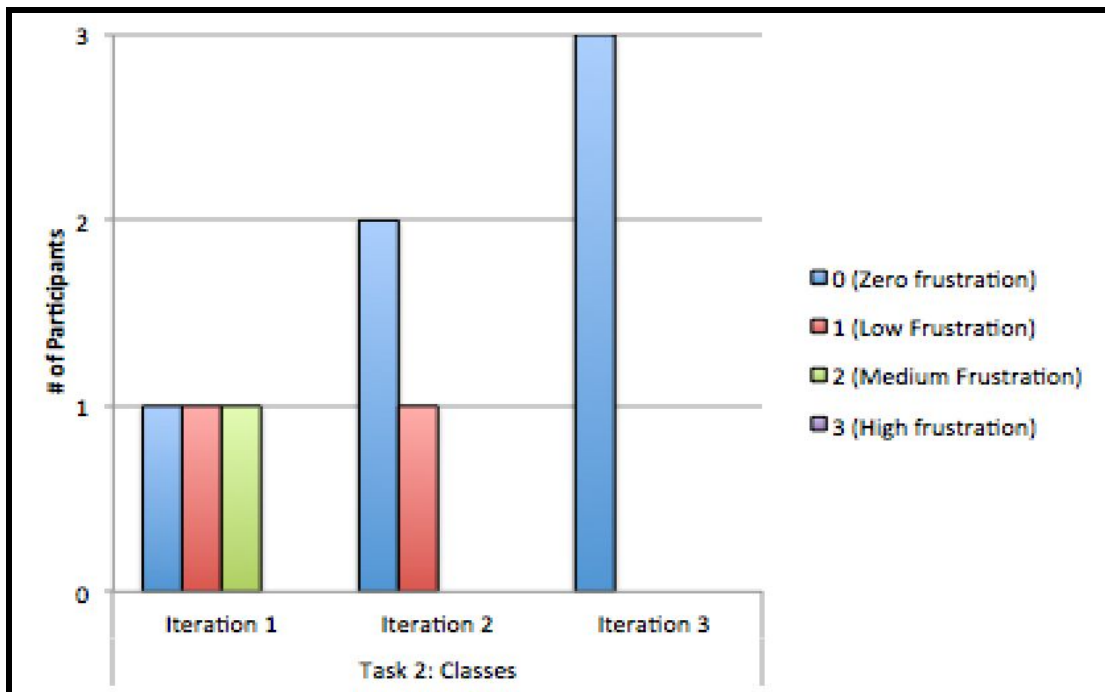


*Figure M2*. Bar chart illustrating participants' level of frustration from Iterations 1, 2, and 3 for Task 2: Classes.
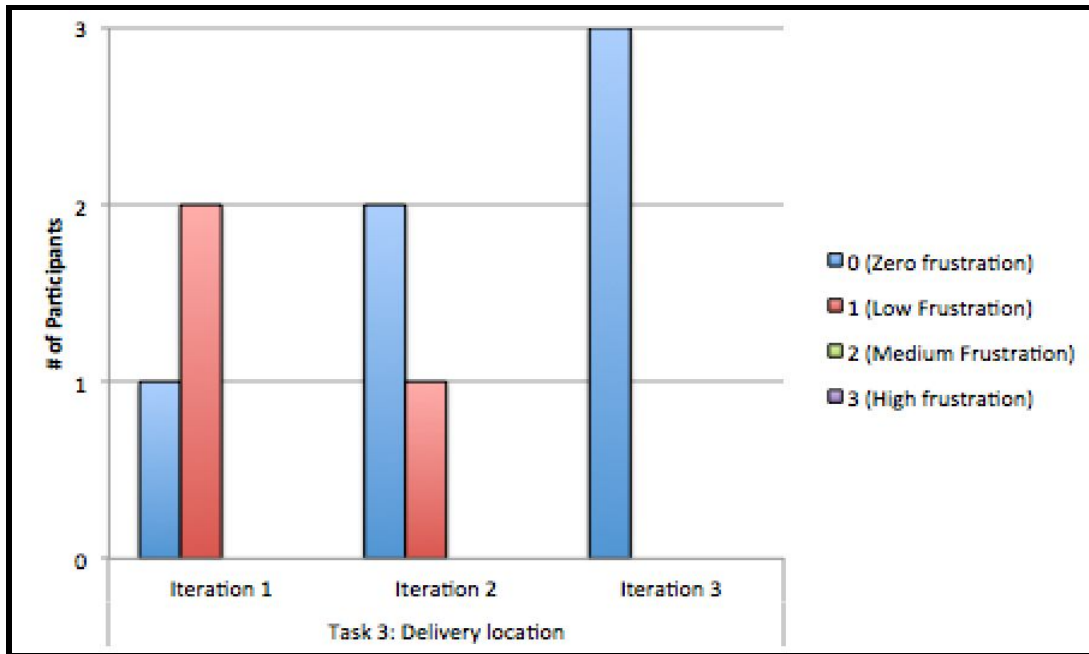
*Figure M3*. Bar chart illustrating participants' level of frustration from Iterations 1, 2, and 3 for Task 3: Delivery Location.
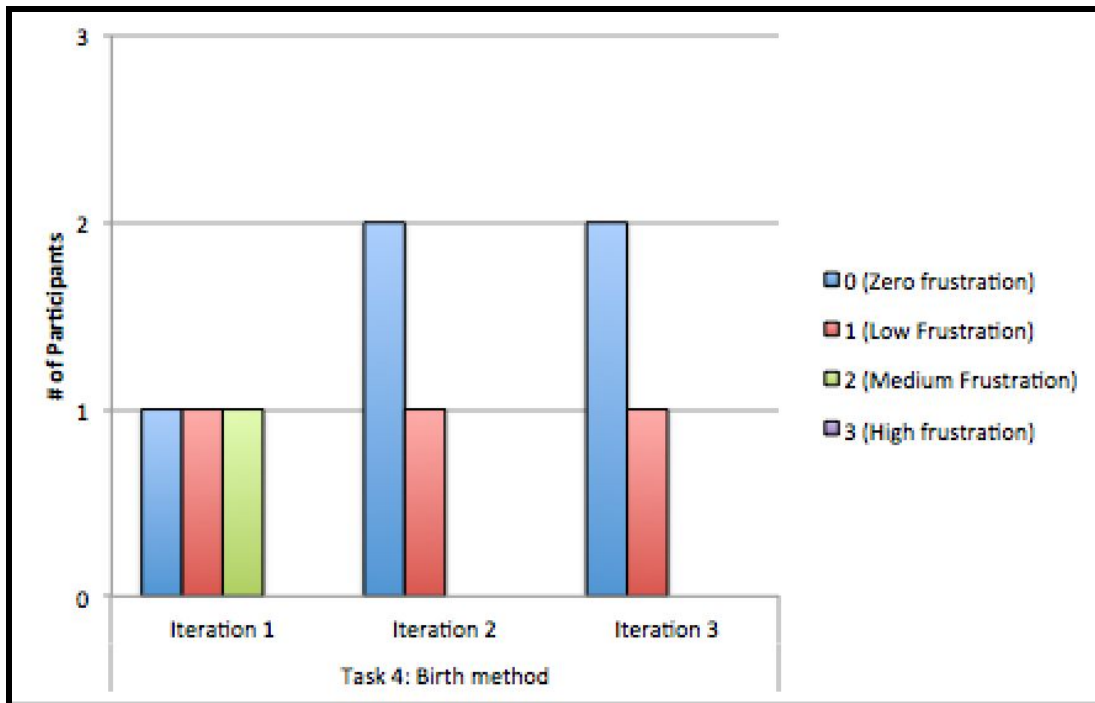


*Figure M4*. Bar chart illustrating participants' level of frustration from Iterations 1, 2, and 3 for Task 4: Birth Method.
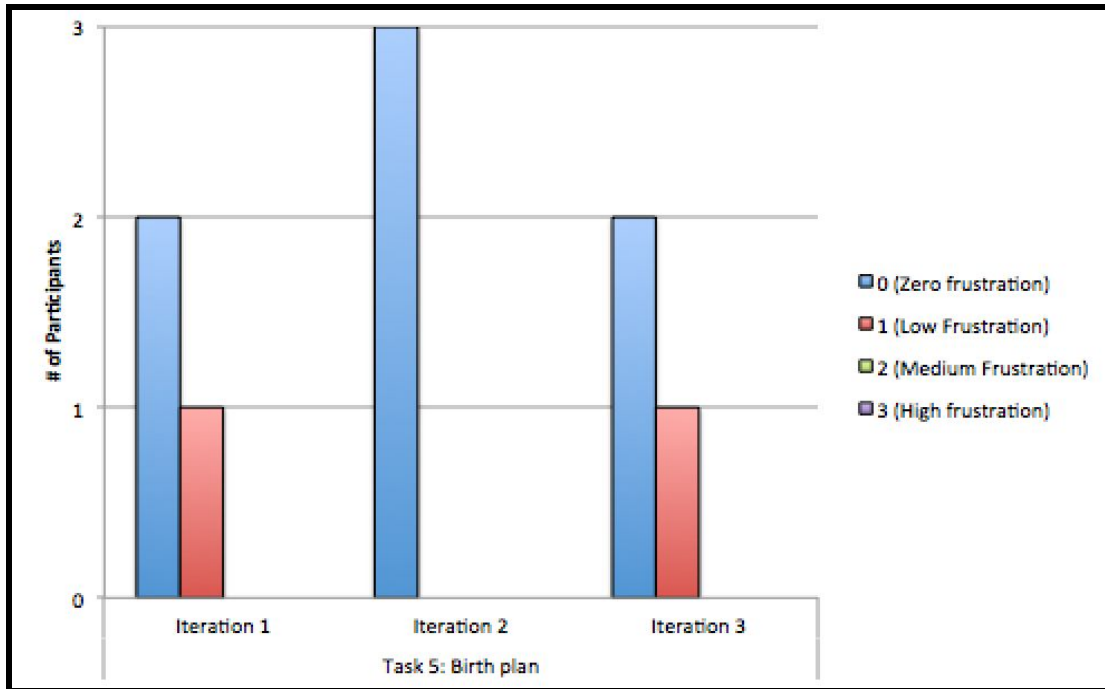
*Figure M5*. Bar chart illustrating participants' level of frustration from Iterations 1, 2, and 3 for Task 5: Birth Plan.