Informatics 132: Freerice Final Report

Discussion: Monday 10am-10:50am

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Executive Summary

The following report has been developed with the purpose of redesigning Freerice, an online non-profit food donation website. The goal of this report is to detail key results obtained by the team via analysis, methods, testing, and redesigns.

Understanding the goals of the system

The first step in this process was determining the goals of the existing system in order to obtain a better understanding of the purpose of Freerice. After determining the goals of the system we were able to develop objectives to help guide our study's tasks. The team determined that the research would be guided by the following objectives:

- Determine what drives users to use the system
- Determine why users stop using the system
- Determine whether the type of food being donated affects users' interaction with the system
- Determine whether the knowledge learned from the system is utilized

Identifying Usability issues

In an effort to identify usability issues of Freerice, the team used the following two methods: Usability testing and cognitive walkthroughs. The team then developed a series of tasks to drive the usability tests, and a separate set of tasks for the cognitive walkthrough. The purpose of these tasks was to help the team see how users interact with the system when given a task to complete. Through this process we were able to gather data on what steps users took to achieve this goal and how users interact with the system while attempting to complete the given task. This aided in determining whether or not system features are being used as intended and how the system can be improved. The following are the conclusions drawn from the aforementioned tests:

- Often users are unable to properly sign up due to the size and location of the buttons
- Users ability to signup with a desired username is difficult due to lack of feedback from the system when selecting a username, resulting in constantly re-submitting details in order to find an available username
- The "groups" button on the menu blends with rest of site and makes it hard for users to spot the given feature, this not only goes for the groups button but most buttons on the navigation menu
- Leveling system is poorly designed as Users are unable to select a starting difficulty until after having answered the first question.

Determining redesign targets based on findings

After having collected information regarding the system via user interviews, cognitive walkthroughs, etc... the team came up with the following four redesign targets for the system:

- Buttons/Navigation Layout/Overall Look/Login and Signup system as many issues exist with the current system, from lack of feedback when users select unavailable/invalid usernames to latency issues when signing up and logging in. As well as issues with users locating buttons due to the color scheme, layout, etc..
- Changing the ways users see and interact with the change levels feature
 as it is hidden from users until after answering the first question as well as
 the location of the button and style makes it difficult to identify as a button
- Incorporating rewarding feedback into the system as users lose interest due to lack of change within the system when answering questions. As well as lacking a feeling of accomplishment when answering multiple questions correctly
- Changing Start page/Landing page/Game flow as the system currently exists it fails to provide users with a sense of direction. The system exists as learning game/donation game but fails to behave like a game as it gives no directions

The previously mentioned redesign targets are addressed by combining desired solutions from sketches drawn by team members, which were driven by user provided suggestions, usability principles, and other UI/UX design principles. The landing page now acts like a proper "game" by providing new users a quick tutorial when first visiting the website showing them where all the information they need to know is at. The navigation layout and overall look of the system has also been changed to better reflect a modern style and by the removal of unnecessary features like a "home"/"Game" button on the main page. The interaction between users and the change levels features has been changed so it is present at all times and has its location shown via the tutorial. Lastly the system now incorporates rewarding feedback, when users answer multiple questions correctly they are provided with auditory feedback (which can be disabled if users please) and visual feedback in the form of a message/alert (which can also be disabled if users please).

Introduction

Freerice is a non-profit ad-supported system that allows users to play a quiz-like game where correct answers result in the donation of rice through the World Food Programme. For every question answered correctly on the site 10 grains of rice are donated. There are a multitude of subjects available on the system for users to choose from allowing for both learning and donations to occur simultaneously. The system offers users the ability to learn Math, English, Other languages, Sciences and more while donating.

The website extols the vocabulary game as a tool to expand their mental lexicon in ways such as being able to better formulate ideas, write more effective papers, speak more precisely, and read faster. Through this website, users can use their knowledge to help end world hunger. Despite this noble cause, the user interface is clunky and unappealing, and the main activity that allows people to donate rice is boring. The web site's poor execution prevents it from being a product that most users would want to use. The idea of using a web browser game to both increase people's knowledge and contribute to fighting world hunger is a good cause that could be improved upon with some user focused design. There exist a number of other direct competitors that have more appealing user interfaces, features, and functions that place this system at risk. Our goal is to determine where the weak points of the system currently are via user research and usability tests in an effort to redesign and improve the system.

Project Limitations

Some limitations imposed upon our user research were as follows: The age group was restricted to primarily students K-12 and collegiate level students and as the site is transitioning some tasks were completed in different ways. Due to only testing kindergarten through collegiate level students our scope for testing may be limited and skewed towards a younger group of users. As Freerice is transitioning to an updated website some tasks were not as clear to complete and the testers had to find out ways to complete tasks that we did not forsee.

Competitive Analysis

Direct Competitors

Free Wheat

- Product Name: Free Wheat
- URL for the product: http://freewheat.gear.host
- A brief 1-2 sentence description of the product
 - Freewheat is a website that helps feed starving kids all over the world. Essentially, by visiting this website and solving the math problems you are contributing to giving these children wheat to nourish them.
- The problem being addressed
 - Freerice is highly supported by ads. These same ads can result in the websites aesthetic and lead users to no longer use the site. freewheat on the other hand is ad-free with a may simplistic layout.
- The functionality or feature set
 - Like Freerice, freewheat's main purpose is to people who are starving.
 - Freerice's game is based on vocabulary building which is a skill improvement process. Freefheat's game is based on math solving problem which also to improve skill.
- The user base for the product
 - The math problems are very simplistic and all multiplicative problems. Therefore, the user base will be children ages 7-12 years old.
- Any other notable similarities or differences
 - Both Freerice and freewheat focus on helping feed children around the world. The sites are interactive and help the users study and building their skill sets while donating to a cause. However, freerice focuses on more diverse subjects as opposed to freewheat that only has multiplication. Overall, the sites have the same goal which is to help children with their academics while also helping them help other children around the world.

Bean Bean Bean

Product Name: Bean Bean Bean

- URL for the product: https://beanbean.com/what-is-this.html
- A brief 1-2 sentence description of the product
 - Bean Bean Bean is an online website that allows users to answer questions and when answered correctly bean(s) are gained which are a way of representing aid being used for helping nourish children.
- The problem being addressed
 - Bean Bean Bean much like Freerice aims to help those in need via answering questions. As sometimes one is unable to directly provide help and through websites like Bean Bean Bean and FreeRice one can provide aid to others while educating themselves.
- The functionality or feature set
 - Bean Bean Bean and Freerice both provide similar features and functionality while Bean Bean Bean has a smaller variety of topics for people to choose from for answering questions it has superior aesthetics to FreeRice. The User Interface for Bean Bean makes it much easier for people to know what can be interacted with and what cannot as well as the overall feel of the interface is much more user friendly and visually appealing.
- The user base for the product
 - The user base for the product includes anyone wanting to learn and/or help those in need. There is no specific age rage as people can either be on it for educational purposes, though in the educational aspect it targets k-12. While many others may use the product not for it's educational aspect but instead for helping those in need.
- Any other notable similarities or differences
 - Some notable similarities include the ability for users to choose amongst a variety of topics for which to answer questions much like free rice. Bean Bean Bean doesn't directly donate beans instead it donates the dollar equivalent per bean earned which is unlike Freerice. Another key difference is how much Bean Bean Bean relies on advertising for funding and unlike Freerice is not a non-profit, though one cannot be sure that it's for-profit as neither is explicitly stated.

Indirect Competitors

Hunger Site

- Product Name: The Hunger Site
- URL for the product: <u>https://thehungersite.greatergood.com/clicktogive/ths/thank-you</u>
- A brief 1-2 sentence description of the product
 - The Hunger Site is a website that allows users to donate to certain international program, which includes donating food to refugees or to people in need. The user is able to help donate by clicking and viewing sponsor ads, buying merchandise from the websites store, and by directly donating money to those certain programs.
- The problem being addressed
 - The conflict from this website to Freerice is that it directly asks users to donate by purchasing their products instead of doing it in a fun and exciting way like FreeRice does. By directly asking users to donate, users are less likely to participate because they see the process of purchasing an item as long and maybe strenuous because they have to actively look for an item, unlike Freerice which is a quick and educational game. The user is also unable to see the amount of food that is being donated and to which program, unlike Freerice which gives the exact amount of rice being given and only donates to the United Nations World Food Programme.
- The functionality or feature set
 - The Hunger Site has a different functionality than the Freerice website. The Hunger Site caters more towards helping its international programs by having users buy its products, so many advertisements are shown showing what items can be bought. There is an option at the top of the screen that allows the user to click a button and help donate, however the product advertisement are distracting, making it hard to notice it.
 - The Hunger Site and Freerice are both nonprofit organization.
 - The Hunger Site has an option to subscribe so that the user can get notification on sales and new products. It also includes a review system for its products.
 - In order to purchase one of the Hunger Sites products, the user will have to create an account and login, similar to Freerice
- The user base for the product
 - The user base for this will be people who have money to spend and help donate to whatever program the Hunger Site helps donate to,

most likely people over the age of 28. The Hunger Site user base is unlike the Freerice users, where users don't necessarily have money to spend and users can play an educational game in order to donate food, which can include all ages.

- Any other notable similarities or differences
 - The Hunger Site does not only donate to food charities but also charities that support breast cancer patients, animals, the rainforest, veterans, people who are autistic, have alzheimers, diabetes, have literacy issues, and many others.

Answer4Farth

- Product Name: answer4earth
- URL for the product: http://www.answer4earth.com/game.php?answ=1
- A brief 1-2 sentence description of the product
 - Answer4earth is a website where if we play games to plant trees.
 Each answer we give helps plant a tree. We have to choose the best answer to the question. Next question difficulty depends on our overall skill. Each correct answer we give, generates a donation to plant trees thus helping our environment.
- The problem being addressed
 - In our product Freerice, if user answers the questions the donation goes to low-income communities but in answer4earth if the user answers the right answer to the questions, the donation does not go to any specific people or communities. Trees get planted all around the world. The whole world gets benefited.
- The functionality or feature set
 - Money generating process between Answer4Earth and freerice is almost the same. On both products, each time a user the question right, the money is generated through the advertisements appeared on the screen except in Answer4Earth each correct answer leaves, branches or trees are donated where in Freerice for each correct answer 10 grains of rice is donated.
 - Answer4Earth splits its donations between two non-profit charities, Trees For the Future and The Fruit Tree Planting Foundation where Freerice is based only on one organization called United Nations World Food Programme.
 - Both Answer4Earth and Freerice makes zero profits through their product.
 - Answer4Earth does not require the user to sign-up but in freerice sign-up is required to track total answers, join or create groups.

- There is a special feature in Answer4Earth which lets the user do direct donation but this functionality is missing in Freerice.
- The games in Answer4Earth not specifically aimed for learning but Freerice provides excellent vocabulary building games.
- The user base for the product
 - Answer4Earth contains questions that varies with different levels.
 The easiest questions are created for elementary school kids and the challenged questions are made for people whoever thinks can answer the hardest questions ever. So, there is no special categorized user base for Answer4Earth. Anyone can play the question-answer game which is the similar user-base of Freerice as user base of Freerice is also all aged people.
 - In Answer4Earth when we play the game, advertisements appear above the question area. The money generated by these advertisements is then used to plant trees. We generate money by playing the games which pays for the planting of trees. Here the user does not have to have money to play the game as the tree planting is paid by the sponsors whose ads appear on the question screens. This way, the user base of Answer4Earth also seems similar to the user base of Freerice which is basically anyone.
- Any other notable similarities or differences
 - Both websites' user interface has similarity in colors except new beta version of freerice has a different color option.
 - Answer4Earth is to fight global warming where Freerice is to end hunger.

Target Population Research

Target Population

The target population that our team is interested in is K-12 students, college students, and people who are post studies. For the students who are from kindergarten to high school, assuming they will range from five to eighteen years of age. Common characteristics among the target population include: motivation to study, interest in donating/helping others, and an interest in learning other subjects like languages or pre-collegiate level topics. In most cases not having a steady form of income or in some cases any income. The target population has a basic understanding of how to navigate a website and how to play a question and answer game.

For our target population of college students, our team assumed they would typically range from eighteen to twenty-two years of age. Some of their characteristics will include being very busy and being somewhat of an expert in time-management, and having an internal or external motivation to donate anything to a community. They will typically have an income, however this income may vary and may not be steady. They will most likely be an expert at navigating websites and other forms of technology. This population will also have an understanding of the basic subjects that Freerice uses with their game.

Our last target population will include people who are no longer in school, our team assumes that this group will be at least twenty-three years of age. They will have some characteristics like having some free time and wanting to directly help out people in the community. They will typically have a steady income and have a savings account. This target population may or may not have a higher education past high school but will have a basic understanding of computers but not all forms of technology. They will also have experience in the basics of how games work.

Methods

Our method for the interview portion of this project was clear. We first needed to come up with a list of interview questions that would include an ice breaker, an introduction question, key questions, a summary question, and a conclusion question. Some of the key questions were optional

depending on the previous answer, this way we could ask specific questions if someone answered a certain way. The total amount of interviews needed to be done was ten and they would last up to 30 minutes. Also, the interviews were constructed in an unstructured way so that we could ask more questions and get more information about the Freerice website.

Our method for the online survey portion was very much up to the people who took the survey. We created a list of questions very similar to the interview questions, but more focused on understanding the users of Freerice. The survey questions were to be taken within 10 minutes, with some questions being optional. The method of directly finding these users of Freerice was through Facebook. Both the methods for this project were done with parental permission if a user was younger than 16 years old.

Findings

During the interview and the survey section of this project our team discovered exactly who our users are and what they care about. As the survey questions were very much based on the interview questions, our team received many similar answers however the survey questions focused more on exactly who our users are.

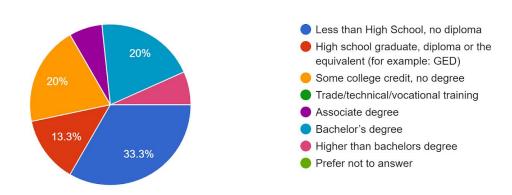
During the interview section of the project, our team discovered that we mostly found users that were younger than 24 years old. This is most likely heavily influenced by the fact that we, as college students, have better access to people our age and younger. We found that most users of free rice were drawn to the website for a variety of reasons (but most commonly were introduced to it through school). Despite this there were several patterns that emerged through this process. Most users were pleased with the idea that they could donate food through the website. Some even labelled it as a primary reason that they used the website. When asked how they would feel about donating other types of food, users had suggestions but did not notify that changing this aspect of the website would make them more likely to engage with the website. The second common pattern that emerged was that users did not stay engaged with the website. Often they thought the questions were too easy or repetitive to warrant staying on the website. Answers show that users were very unlikely to engage with all aspects of the vocabulary game such

as changing levels manually or changing subjects. In fact, some users didn't even know that those were options available to them. Contributing to the lack of engagement is the color scheme and layout, which many users stated were bland or unengaging. However, users also showed that they connected with being able to see a visual representation of their progress in the bowl of rice that filled up as more questions were correctly answered.

During our survey section of the project, our team discovered that there is a variety of users of Freerice from the ages of 10 to 53. Users had a wide variety of educational backgrounds, but 63.6% of users had some college experience or less, and 43.6% of users had no college education at all.

Highest level of education

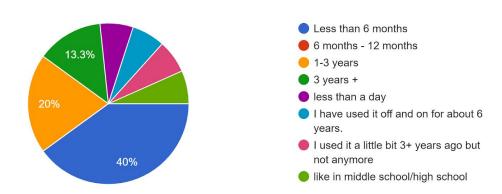
15 responses



The largest portion of users had been using the website for less than 6 months (40%) and the second largest portion had been using the website for 1 to 3 years (20%). This is consistent with the drop in engagement that we would expect from users after interviewing some of them.

How long have you been using Freerice?

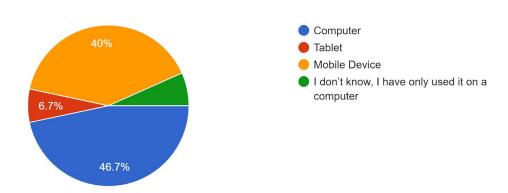
15 responses



Users were split between desktop and mobile almost evenly, but there were many responses asking for an iOS application for the browser.

What device is easier to use with Freerice

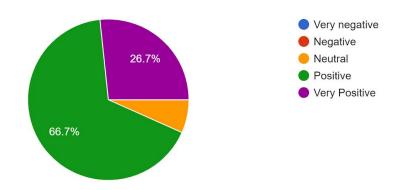
15 responses



The large majority of users reported that they had a positive or very positive experience using the app.

How do you feel about your experience using Freerice?

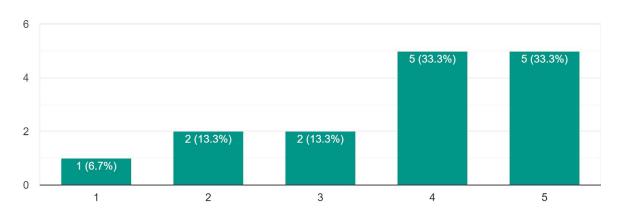
15 responses



The thought that it was useful for both learning and retaining subject knowledge.

How helpful do you feel Freerice is for learning new subjects?

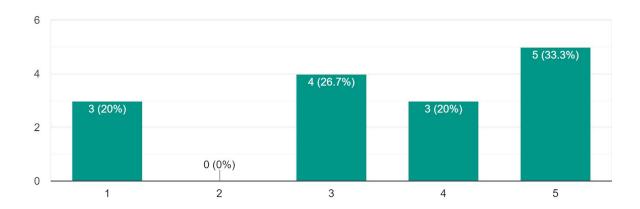
15 responses



They also answered that they would see themselves using the app in the future, but following the data, we would assume that most of them would stop using the website in a few months time, and the rest would stop using the website over the next couple of years.

How likely do you see yourself using Freerice in the future?

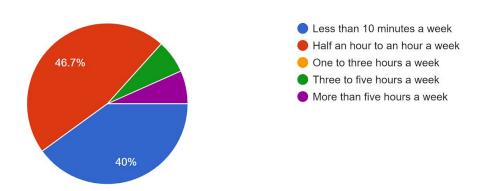
15 responses



In addition, most users show a very short engagement pattern with the website.

How often do you use Freerice?

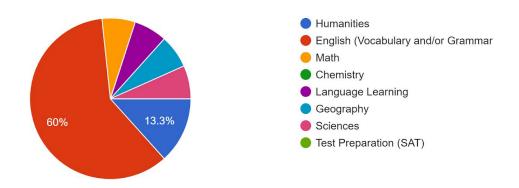
15 responses



Furthermore, the survey responses line up with the interview responses that show that many users aren't getting the most out of every aspect that the website has to offer, with most users sticking with the vocabulary game on the starting levels.

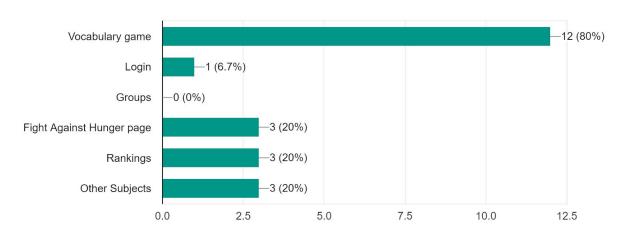
What subject do you use Freerice for the most?

15 responses



What parts of Freerice do you find yourself using?

15 responses



What this shows that there is a general willingness for users to engage more with the website, but an inability to stay engaged with the material or to find material that better engages them. Much of that inability comes down to the layout of the website hiding what would be key features. Users like feeling positive about donating food but would like more positive feedback to keep them engaged. They value donating food of any type very highly and many of them included feeling good about donating as a key factor that drove them to this website. All of this together shows that

the most likely culprit that drives user engagement down would be the visual interface.

Usability Tests

Methods

Our methods were separated into two sections for the usability test and for the cognitive walkthrough. The first section for the usability test was done as separately and only done with one person due to schedule conflicts. It involved asking a user of Freerice that our team had previously used to go through tasks that we had created. We created a total of 6 tasks that were made up of easy and hard actions to perform. The approximate completion of all 6 tasks was supposed to be within 30 minutes, however our tests ranged from 15 to 35 minutes depending on the user.

Our methods for the cognitive walkthrough was much easier than the usability test. We all met up during class and gave each other roles, such as tester, note taker, assistant note taker, and modulator. We had 2 testers who would do only 3 tasks each. One task being from the usability test we previously did and two being new tasks. We had the testers use a computer and try to complete each one. The approximate completion time was between 5 to 8 minutes depending on the testers.

Findings

Freerice is a website that is currently undergoing a restructuring, and as such, certain functions of the website are hard to use. One such example of this is the sign in process. In order to sign up for an account on Freerice, a user must navigate to the new webpage, create and account there, and move back to the original website.

In Important: Signing up for new accounts is disabled. Visit **beta.freerice.com** and make a new account there.)

This takes time, not only because both websites are slow and laggy with this process, but also because there is not a lot of feedback for the input boxes. For example, there is no way of checking if a username is already taken until a user has tried to create an account with that username. Also, many text boxes that need to be filled out take a lot of time to complete or

are redundant. Nearly every participant mentioned or experienced lag from the website upon completing this task, which caused further frustration. This makes the process of creating an account, one of the most basic features that a website would need to create a consistent user base, a huge hassle for any incoming users. Furthermore, joining a group is made more difficult by the moving process. While some users reported being able to join a group without trouble, other users found that they were unable to join existing groups without having access codes or creating their own. One user was unable to find where to join groups in the first place. This shows two problems. First is visibility. The ability to join groups should be placed more prominently if the website wants users to interact with that feature more.

HOME SUBJECTS GROUPS RICE! SIGN UP LOGIN ABOUT ENGLISH V

This is important because fostering a community would help keep users invested for longer. The second problem is that there is not enough feedback in the process for creating groups. Users aren't told whether they have successfully joined a group in a way that is clear. Other common actions such as changing the levels of questions being answered are also more complicated than they need to be. Freerice has different tiers of questions that are tied to a difficulty level. The ability for users to select a starting difficulty on the web page is at first hidden to users, despite being a key feature.



The only way to change difficulties is to first answer a question on the easiest difficulty. Then, a small text box in an unclear color and font appears.



This makes the ability to choose the level of difficulty for questions seems like an afterthought and would potentially push away users who are looking for more difficult questions to learn from. One of the problems that persisted through each question was difficulty finding where to perform tasks. Important functions are often found in small fonts, hidden away, and in colors that blend into the background.

Redesign

Redesign Target 1: Change levels feature

Problem

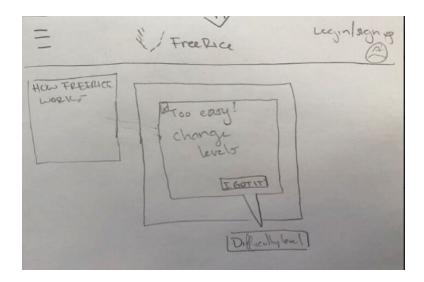
Many users found the initial level to be rather easy and wanted to be provided with a challenge. However, most were not aware that they could change the difficulty level.





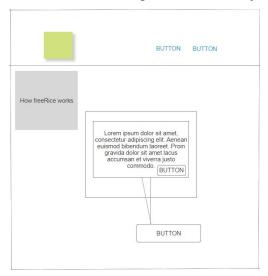
Evidence

The eye trackment of the users initially goes to the middle of the screen and stays there for the remainder of the time as their attention is focused on the questions. This leads to users then ignoring the bottom of the page which includes the following details and buttons: "Level", "Best Level", "Change Level", and "Re-start". When first viewing the site it took the team some time to notice this section, similarly the interviewees also experienced difficulty. Our goal was to provide individuals with a challenge if they desired it and due to the system being targeted towards users of a large range of ages, we determined it was poorly located as for those who wanted to change their levels couldn't because they didn't know how to. In hopes of alleviating this issue we decided to include the feature in a tutorial, alongside relocating it.



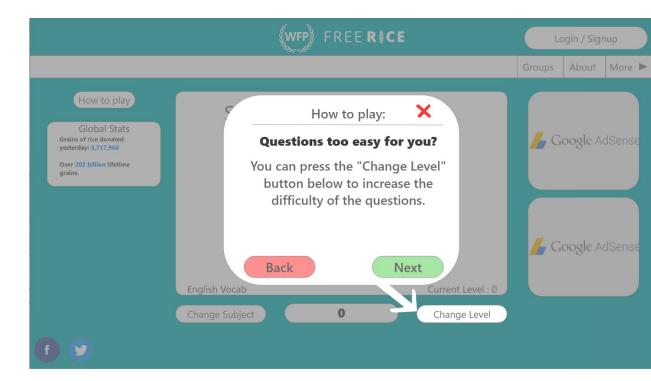
Process

In the above sketch we decided to only focus on the main problem, to help simplify the visual. In this way users could easily understand how to play and where to change levels as they were shown via a tutorial.



Results

To improve this concept we went with a "Tutorial" prompt to help new users navigate the site. On the users first time visiting the site, they will be presented with a message/tutorial showing where the "change level" button is located.



Redesign Target 2: Change Start page/landing page

Problem

New users have a difficult time understanding how to use and navigate Freerice.com. Due to there being no actual "start" button or any obvious instructions to guide then this can cause the user to lose interest in the site and not revisit. To begin playing you simply have to answer a question and click the correct response. However, since there are no buttons new users tend to be confused.

Evidence

While the game flow was not right, one of the users during the interview was having difficulty on how to start playing the game as playing games instruction comes later after starting the game.

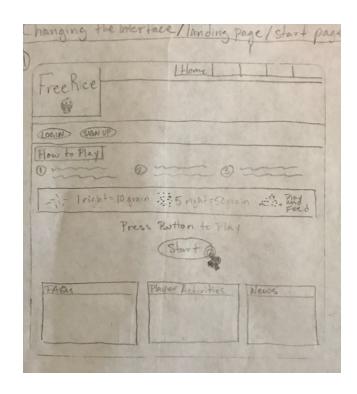


Image 2.3: sketch of game flow 1

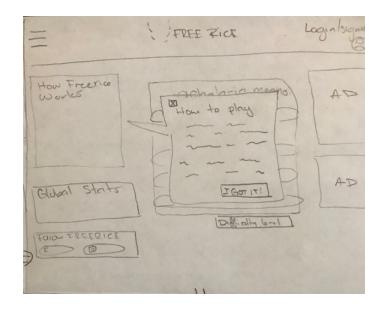


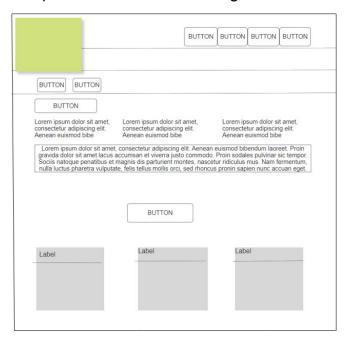
Image 2.3: sketch of game flow 2

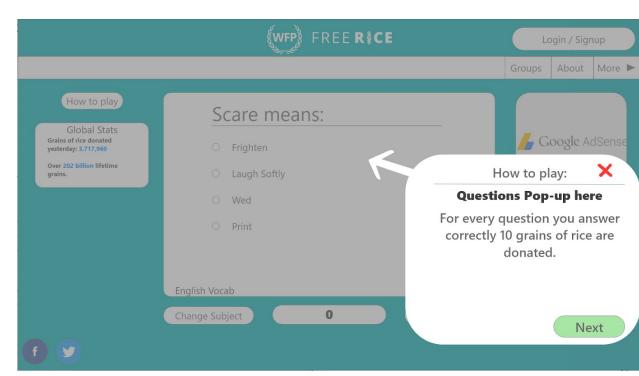
Process

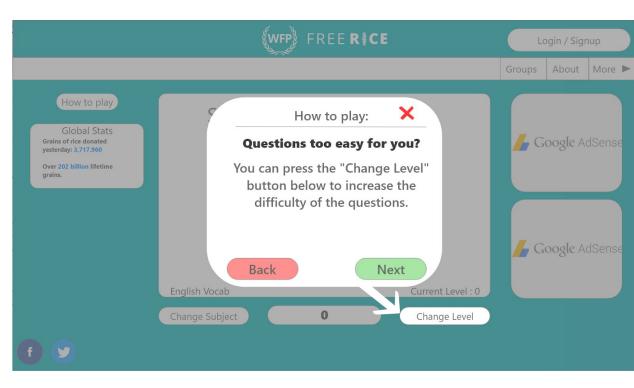
We decided it was best to include a tutorial that explains to users how to play the game and where to find everything. As shown in the sketches above, as the interaction is much like that of a game.

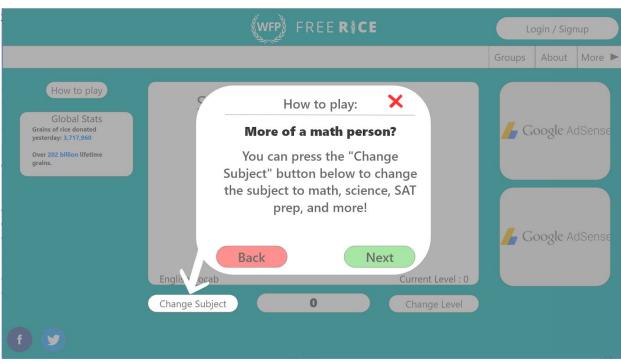
Results

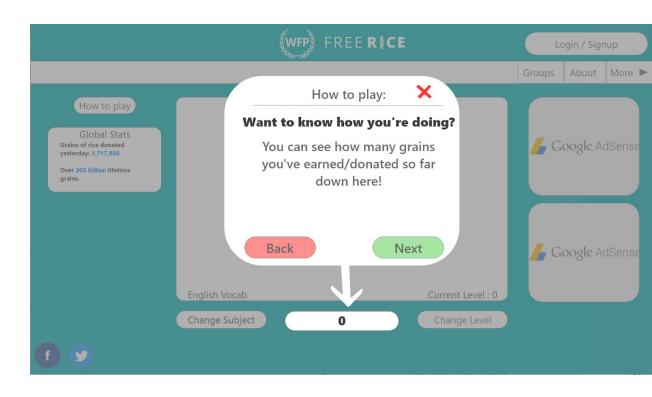
This redesign prompts how to navigate the site when you first enter. This allows the user to understand it is a game. Giving the users a set of instructions prevents users from leaving the site due to confusion.

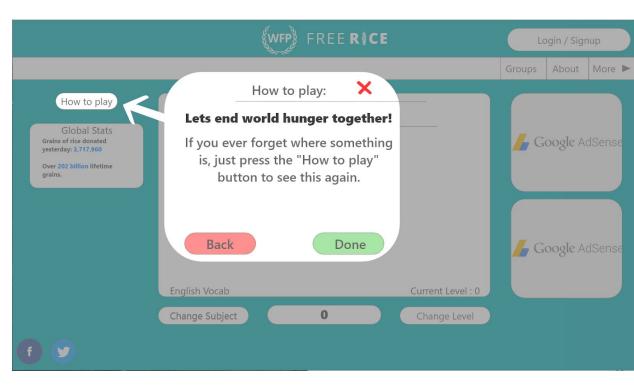














Redesign Target 3: Sign in/Sign up

Problem

Navigation layout can get a little confusing. After sign-up or log-in, there is no feedback that can assure us that the steps have been completed properly. Feedback is given such way that it can easily be unnoticed by users.

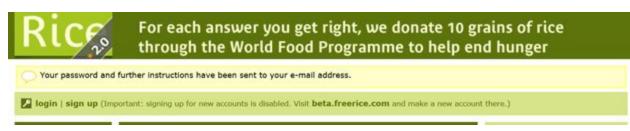


Image 3.1: After signing up feedback can get unnoticed by users

Evidence

During our cognitive walkthrough our users signed up for an account multiple times. Without realizing it, they had already created an account. Therefore, is section lacks feedback.

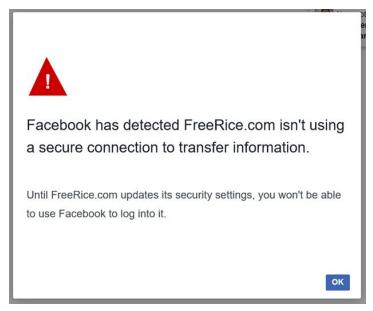


Image 3.2: Restricted facebook sign-up page

Process

We decided to redesign by using methods of feedback. After successfully creating an account the user will see a pop-up notification to ensure that they have created their account. We also redesigned the sign-in and sign-up page. By using boxes and clearly labeling everything we believe this will help the user recognize that it is a sign-in/up page.

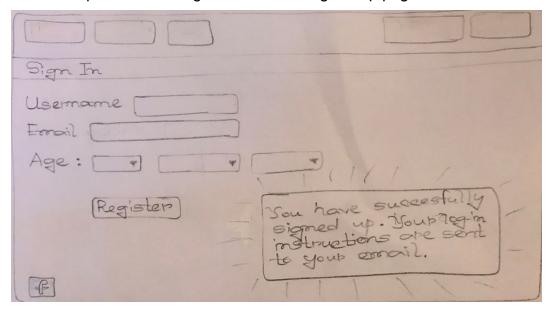


Image 3.3: sketch of feedback with pop-up window after signing up



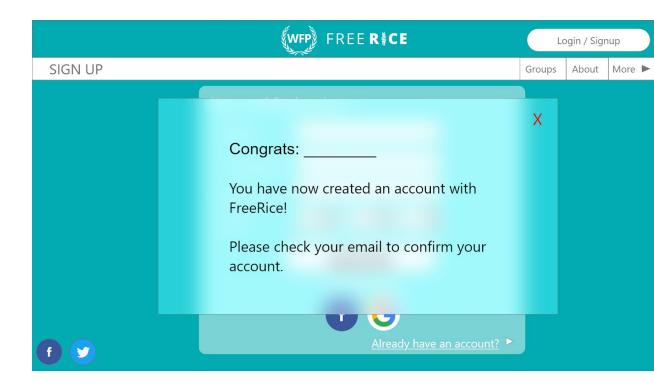
Image 3.4: sketch of feedback with pop-up window after signing-up with facebook



Results

This redesign is as simple as our sketch. It is recognizable as a sign-in/up

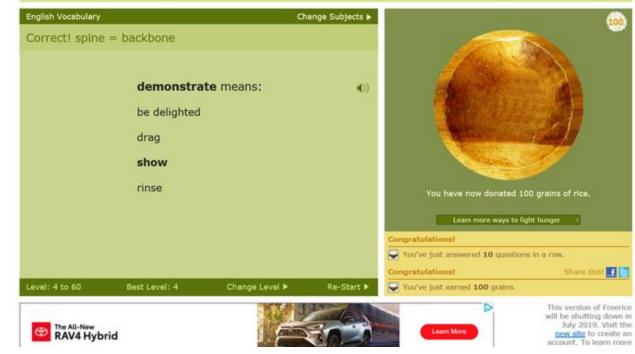
WFP FREER CE		Login / Signup			
SIGN IN	The state of the s		Groups	About	More ►
	USERNAME: PASSWORD: Remember me	Forgot your password? SIGN IN Or sign in with: f New? Register here			
f y	(WFP)	FREE R E	L	ogin / Sig	nup
SIGN UP	3,2		Groups	About	More ▶
f y	New user? Register EMAIL: USERNAME: PASSWORD: AGE: MM				



Redesign Target 4: Rewarding feedback

Problem

This was one of the aspects of our users enjoyed the most. However, we wanted to improve it a bit more because the feedback we received suggested that they wanted progressive feedback that really exemplified the impact they were making by playing this game`. Therefore, the solution was to make a bigger pop-up that congratulates the user on their hard work.



🔀 login | sign up (Important: signing up for new accounts is disabled. Visit beta.freerice.com and make a new account there.)

Image 4.1: Feedback is not effective and encouraging for users

Evidence

In one of the interviews, one user was playing the game without feeling like they were making an impact based on how much rice they were gaining or how many answers they were getting correct. There is no feedback option in the website that encourages the users to continue playing.

Process

This section prompts a welcoming and enjoyable screen that touches base with emotions. Because this is a website that is doing good for those in need it was necessary to display a sense of gratitude for the users donation.

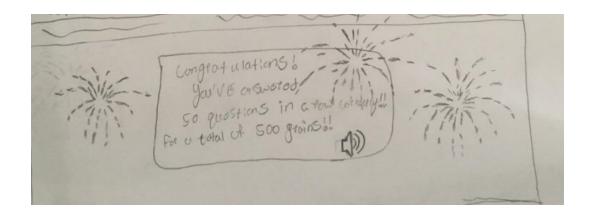
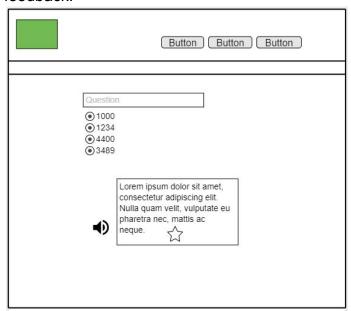
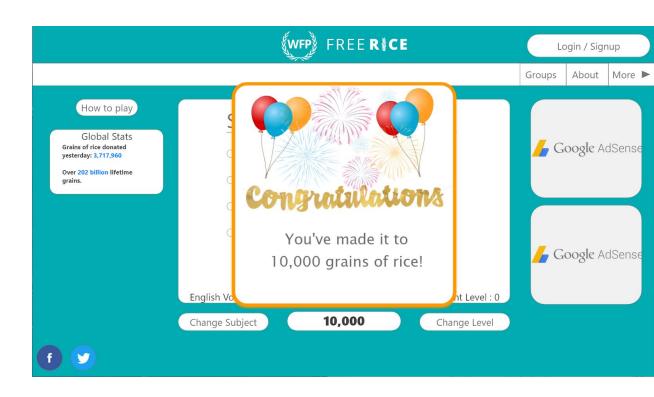


Image 4.2: sketch of rewarding feedback

Results

Below is wireframe and mockup of the web page where it encourages feedback.





Redesign Evaluation

Heuristic Evaluation

Our Team did a heuristic evaluation on each redesign mockup based on Nielsen's 10 Heuristics for User Interface Design:

Visibility of system status

Our redesign version has some notable "issues" with this Heuristic. When a user is interacting with the system on any page hovering over options/buttons does not cause them to change. Implementing a hover-over option would prove useful for users not as acquainted with systems without it.

Though not currently visible on any redesign, a loading symbol in the middle of the screen would prove useful between pages to show users that the page is still loading, but just may be running a bit slow. Something that is done well within the system is the visibility of buttons, as they have been separated and placed against a contrasting color. Whenever users finish signing up for an account or achieve a milestone they are presented with a banner letting them know they've either reached a milestone or have successfully signed up.

Match between system and the real world

In terms of matching the system to the real world, some would argue that there is a lack of icons in our current design. But that was done intentionally, as text proves to be less vague. As such there are no icons, other than discernable ones, like Facebook, Google and Twitter logos.

Though there is perhaps an issue with the "change level" button as it could be misunderstood as changing more than just the difficulty of questions being asked. Perhaps changing this to "difficulty" would prove useful to users in understanding the purpose of the button.

User control and freedom

Currently there exist a few issues in regards to user control and freedom within the redesigned system. Currently user's are unable to disable notifications for milestones on the game page, the feature currently exists on under more. There also exists an issue in regards to the volume of the system, though the assumption was made that users' have access to a web browser that allows the muting of tabs/windows.

Consistency and standards

Our redesigned system abides by consistency and standards as all the information is consistent across the different pages. There exists a common theme between the redesigned system and that of other current popular systems. For example the signin and signup system, follows a minimalistic simple signup design, only showing users information they need to see and putting that which is interactable in the middle and in focus of the user.

Error prevention

Currently for error prevention, user's are able to at any given moment click the exit button available on the tutorial, in case they were to accidentally click the "how to play" button again after the first iteration or delete cookies/browser cache. If users manage to change the level of the system to a higher/undesirable one on accident, they can always change it back, allowing for users to recover from errors as fast as possible.

Recognition rather than recall

The redesigned system's implementation of a tutorial allows users to revisit it whenever they forget where something is allowing for users to visually recognize where actions are. Due to having text on most intractable options recall is not required as the opportunity for interpretations of what a button/option doesn't exist.

Flexibility and efficiency of use

The new system allows for new users to navigate through the site with little knowledge of what the website entails. It is also a refresher to users who have been inactive for some time. The purpose of the tutorial is so users recognize the purpose of the website without digging too deep. Experienced users are able to disable the "rewarding feedback" if they desire, helping increase efficiency of use, as well as the ability to always revisit the tutorial but not having to see it every time they revisit the site, having it only show upon first visit and upon clicking the "how to play" button.

Aesthetic and minimalist design

The system follows a minimalist design by only presenting relevant information on pages and only when necessary. Due to this pages are visually appealing as they are uncluttered and it makes it easy to find what one is looking for. For example there exist only a handful of buttons on the main page allowing users to easily spot them due to the contrasting colors and simplicity/minimalist design.

Help users recognize, diagnose, and recover from errors

Most of this is not applicable to the redesigned pages, as "errors" cannot occur aside from the signup and login page. Implementing an error/notification message that allows users to know that a username is taken/password is invalid/email is already being used would prove useful. Though not visible in the redesign mockups, errors have been minimized by preventing user interaction with the rest of the website upon banners/loading pages/etc... appearing.

Help and documentation

Help and documentation is not applicable on some of the redesigned pages (signup/login) as none exists aside from the "forgot password" option on signup and login. Aside from that the system does a good job at providing help and documentation in the form of the tutorial as it can easily be accessed at any point.

Conclusion

As a non-profit organization, Freerice may not have had the ability to provide users with a perfectly designed website. So, in order to help Freerice out, we have conducted a competitive analysis, target population research, usability tests, redesigning the website, and a redesign evaluation. The original Freerice website was cluttered, with a lot of features that are not commonly used filling up visual real estate. This made finding all of the things that a user could do on the website difficult. The color scheme was also jarring, especially after long periods of use. The use of so much green also caused many elements to blend into each other.

Our new design fixes many of these problems by simplifying the landing page and using a clearer color scheme. Now, users should be able to understand what all of their options are clearly upon entering the website. To enhance this further, we have also included a tutorial that appears upon first entering the webpage. These features together make absolutely certain that any new users will know exactly what they should do to have their optimal experience on the website.

Appendix

Interview Protocol

Interv	iew Questions
Date:	
Time:	

- 1. Ice Breaker: What's your name and how old are you?
- 2. Intro: How often do you find yourself using educational games?
- 3. Intro: How did you first come across this website?
- 4. Key: How do you feel about donating food?
- 5. Key: What foods would you like to donate if you would like to donate food?
- 6. Key: Would donating a different food affect how you feel about donations?
- 7. Key: When was your last experience with Freerice?
- 8. (Optional) Key: Can you tell me a little bit about why you stopped using the Freerice? What was the main reason?
- 9. Key: How was your last experience?
- 10. Key: What device have you used to access Freerice?
- 11. (Optional) Key: What device is easier to use with Freerie: a computer, mobile device, or any other?
- 12. Key: How do you feel about the visual experience of Freerice?
- 13. Key: What drives you to use this website?
- 14. Key: How helpful do you feel this website is for learning subjects?
- 15. Key: Do you use more than one subject when on Freerice?
- 16. Key: What do you use this knowledge for?
- 17. Key: Do you see yourself continuing to use this product in the future?
- 18. Key: Would you recommend this website to a friend?
- 19. Summary: What is the most important thing to you that we've talked about today?
- 20. Wrap-up: Is there anything that we have not covered that you would like to discuss?

Interview Log

 Participant #: 0 Gender: Male

Age: 21

Description: College student, 4th year

Date: 4/23/19 Time: 9:00pm

Duration: 20 minutes Location: Irvine, Ca Interviewer: Jose Farias

Participant #: 1
 Gender: Male

Age: 22

Description: College student, 4th year

Date: 4/23/19 Time: 9:30pm

Duration: 15 minutes Location: Irvine, Ca Interviewer: Jose Farias

Participant #: 2
 Gender: Female

Age: 16

Description: HIgh school student, 10th grade

Date: 4/22/19 Time: 3:50pm

Duration: 15 minutes Location: Irvine, Ca

Interviewer: Sazeda Sultana

Participant #: 3Gender: Female

Age: 15

Description: High school student, 10th grade

Date: 4/21/19 Time: 9:40pm

Duration: 14 minutes Location: Irvine, CA

Interviewer: Sazeda Sultana

Participant #: 4Gender: Male

Age: 11

Description: Elementary school student, 5th grade

Date: 4/22/19 Time: 8:30 pm Duration: 30 minutes Location: Irvine, Ca Interviewer: Dalia Mills

Participant #: 5Gender: Female

Age: 15

Description: Middle school student, 8th grade

Date:4/22/19 Time: 9:00 pm

Duration: 22 minutes Location: Irvine, CA Interviewer: Dalia Mills

Participant #: 6
 Gender: Male

Age: 23

Description: College Student, 5th year

Date: 4/23/19 Time: 9:30am

Duration: 21 minutes Location: Irvine, CA Interviewer: Nitin Nallan

Participant #: 7
 Gender: Female

Age: 20

Description: College Student, 2nd year

Date: 4/23/19 Time: 2:00pm

Duration: 16 minutes Location: Irvine, CA Interviewer: Nitin Nallan

Participant #: 8
 Gender: Female

Age: 20

Description: College Student, 3rd year

Date: 4/22/19 Time: 12:00pm

Duration: 24 minutes

Location: Irvine, CA

Interviewer: Ailyn Gonzalez

Participant #: 9
 Gender: Female

Age: 21

Description: College Student, 3rd year

Date: 4/22/19 Time: 2:00pm

Duration: 16 minutes Location: Irvine, CA

Interviewer: Ailyn Gonzalez

Survey Questions

Survey Protocol and Questions

The following is the description of the survey protocol and questions. Required questions are marked as *.

SECTION 1

Freerice Survey

We are conducting a study of how people use Freerice.com. The purpose of this study is to inform the design of this kind of technology. It is not intended to test your individual performance in any way. This study is being conducted as part of a course at the University of California, Irvine, entitled "Informatics 132: Project in Human Computer Interaction." As such, this is also a training opportunity for us as students.

This survey should take no longer than 10 minutes.

We will use the data you give us, along with the information we collect from the other participants, to design better technologies. To ensure confidentiality, we will not associate your name with your data. If you have any questions or comments, you may contact us.

Please provide your age * (Open text response)

•	Have you used Freerice before * o Yes No
•	Email address (OPTIONAL) (Open text response)
•	Highest level of education * Less than High School, no diploma High school graduate, diploma or the equivalent (for example: GED) Some college credit, no degree Trade/technical/vocational training Associate degree Bachelor's degree Higher than bachelor's degree Prefer not to answer
•	How long have you been using Freerice? * (Select one) Less than 6 months 6 months - 12 months 1-3 years 3 years + Other:
•	What device is easier to use with Freerice * (Select one) Computer Tablet Mobile Device Other:
•	What drives you to use this website? * (Open text response)
•	How do you feel about donating food * (Select one) Very Opposed Opposed No Opinion Positive Very Positive Other:

- If you could donate any type of food to charity, what would it be? *
 (Open text response)
- What subject do you use Freerice for the most? * (Select one)
 - Humanities
 - English (Vocabulary and/or Grammar
 - Math
 - Chemistry
 - Language Learning
 - Geography
 - Sciences
 - Test Preparation (SAT)
- How helpful do you feel Freerice is for learning new subjects? *
 (Open text response)
- How helpful do you feel Freerice is for retaining knowledge? *
 (Open text response)
- How do you feel about your experience using Freerice? * (Select one)
 - Very negative
 - Negative
 - Neutral
 - Positive
 - Very Positive
- How likely do you see yourself using Freerice in the future? *
 (Open text response)
- How often do you use Freerice? * (Select one)
 - Less than 10 minutes a week
 - Half an hour to an hour a week
 - One to three hours a week
 - Three to five hours a week
 - More than five hours a week
- What parts of Freerice do you find yourself using? * (check all that apply)
 - Vocabulary game
 - o Login
 - o Groups
 - Fight Against Hunger page
 - Rankings

- Other Subjects
- Is there anything you would like to tell us so that we could improve your experience? * (Open text response)

SECTION 2

Statement of Informed Consent

I consent to release the information provided above to the study being conducted as part of a course at the University of California, Irvine, entitled "Informatics 132: Project in Human Computer Interaction."

- Yes, I consent
- o No, I do not consent

Informed Consent Document

Statement of Informed Consent

Purpose: We are conducting a study of how people use freerice.com. The purpose of this study is to inform the design of this kind of technology. It is not intended to test your individual performance in any way. This study is being conducted as part of a course at the University of California, Irvine, entitled "Informatics 132: Project in Human Computer Interaction." As such, this is also a training opportunity for us as students.

Procedure: You will be asked to participate in an interview. We will ask you questions about your experience and opinions. This interview is meant to be a conversation – there are no right or wrong answers. We expect the interview to last approximately 30 minutes. We will take notes about your responses.

Confidentiality: We will use the data you give us, along with the information we collect from the other participants, to design better technologies. To ensure confidentiality, we will not associate your name with your data.

Freedom to Withdraw: Participation in this study is voluntary. You may withdraw from the activity at any time without penalty.

Contact information: If you have any questions or comments, you may contact us.

If you agree to these terms, please indicate your acceptance by signing below:

Signature:	
Printed Name:	
Date:	

Usability Test

Usability Test Tasks Descriptions and Evaluation Protocols

Hello and thank you for participating in today's usability test. Our team wants to learn about how user navigate the given website. We will give you a task and you are expected to complete the task. Please think aloud, this will help us understand your thought process. You will need to take a usability test that lasts 30-45 minutes and has about 4-8 tasks (depending on task complexity and time to completion).

Usability Test

Use the Think-Aloud Protocol, Time-on-Task Metric, and Success Percentage Metric

Task 1 — Please visit www.freerice.com in the browser and change the 'English Vocabulary' subject to 'Chemistry Basic'.

Task 2 — Sign up for an account.

Task 3 — Join a group

Task 4 — Please change the current level to level 15.

Task 5 — Find out Freerices goals/motivations

Task 6 — Find out where Freerice is based

Task 7 — Answer 10 questions of any subject

End test with:

- What did you think of the website?
- Did you find it hard or easy to navigate through the website?
- What did you think of the test?
- What would you recommend be changed if you could?
- Is there anything that we have not covered that you would like to discuss?

Data Collection Log

Participant #: 0
 Gender: Male

Age: 22

Description: College, 4th year

Date: 5/13/2019 Time: 12:30pm Duration: 33 minutes Location: Irvine, CA

Interviewer: Ailyn Gonzalez

Participant #: 1 Gender: Male

Age: 11

Description: elementary school, 5th grade, avid gamer

Date: 5/8/2019 Time: 7:50 pm Duration: 37 minutes Location: Irvine, CA Interviewer: Dalia Mills

Participant #: 2Gender: Male

Age: 23

Description: College, 5th year

Date: 5/12/2019 Time: 6:30 pm

Duration: 26 minutes Location: Irvine, CA Interviewer: Nitin Nallan

Participant #: 3Gender: Male

Age: 21

Description: College, 4th year

Date: 5/14/2019 Time: 2:00pm

Duration: 22 minutes Location: Irvine, CA Interviewer: Jose Farias

Participant #: 4Gender: Female

Age: 16

Description: High school student

Date: 05/14/2019 Time: 3:30pm Duration: 23 mins Location: Irvine, CA

Interviewer: Sazeda Sultana

Cognitive Walkthrough

Task 1. Create an Account

Task 2. Find the Sponsors/ Partners of FreeRice

Task 3. Look up the top ranked groups on FreeRice

Heuristic Evaluation

Evaluation 1: Dalia Mills

- 1. Visibility of system status
 - a. Redesign target 1: Once the button is pressed to change the levels then loading status will show that the website is going to the next page
 - b. Redesign target 2: This should only apply when the website is loading
 - c. Redesign target 3: Once a user, signs up they will receive a notification that it was successful
 - d. Redesign target 4: The banner will show how many grains that have been donated once a user hits a certain number
- 2. Match system words to real world
 - a. Redesign target 1: Changing the levels is easy for users to understand
 - b. Redesign target 2: The website now looks like it's normal with only a few noticeable colors and uses real words like 'About'
 - c. Redesign target 3: Sign up and the Login button are the same words used in every website and in the right hand corner
 - d. Redesign target 4: Congratulations is usually a word that means something good has happened
- 3. User control and freedom
 - a. Redesign target 1: The changing level feature will give users the chance to control the levels for more experience
 - b. Redesign target 2: The user has the control to go backward and get out of the website or exit out of the tutorial
 - c. Redesign target 3: The user has the control of going back if they don't want to login or sign up
 - d. Redesign target 4: This does not apply
- 4. Consistency and standards
 - a. Redesign target 1: By making the changing levels into the shape of a button, it's easy for users to see that they should press on it.
 - b. Redesign target 2: The layout looks like other websites with the logo at the top and the menu bar right under it.
 - c. Redesign target 3: Only in some websites are the sign up and the login page together
 - d. Redesign target 4:The banner will not be up for very long blocking the view, so it could be considered standard like other ads
- 5. Error prevention
 - a. Redesign target 1: There is no possible way an error can be made because the user cannot change the levels on the screen
 - b. Redesign target 2: Does not apply

- c. Redesign target 3: This does not apply
- d. Redesign target 4: This does not apply
- 6. Recognition rather than recall
 - a. Redesign target 1: Once the change button feature is pressed the next page will still say what level the user will want to change to
 - b. Redesign target 2: The top section of the website should never change when going to a different page
 - c. Redesign target 3: The text boxes will show an example of what needs to be inputed
 - d. Redesign target 4: This does not apply

7. Accelerators

- a. Redesign target 1: This does not apply
- b. Redesign target 2: This only applies to the more menu button and the drop down button
- c. Redesign target 3: There is a link to find password or username
- d. Redesign target 4: This does not apply
- 8. Minimalist design
 - a. Redesign target 1: The change button is simple and is not complex
 - b. Redesign target 2: The design is simple and not cluttered with more menu buttons
 - c. Redesign target 3: The page is not as wordy or as cluttered as the original website
 - d. Redesign target 4: The banner is simple, does not cover the page, and not too distracting
- 9. Help users recognize and recover from errors
 - a. Redesign target 1: This does not apply
 - b. Redesign target 2: This does not apply
 - c. Redesign target 3: A notification should be inserted to notify user that username is take
 - d. Redesign target 4: This does not apply

10. Help and documentation

Redesign target 1: If the user needs help, they can contact the managers Redesign target 2: If the user needs help, they can contact the managers Redesign target 3: If the user needs help, they can contact the managers Redesign target 4: If the user needs help, they can contact the managers

Evaluation 2: Ailyn Gonzalez

- 1. Visibility of system status
 - a. Redesign target 1: New page will pop up in order for the user to know the "Change level" feature is working.

- b. Redesign target 2: Inset a loading symbol if server is taking too long.
- c. Redesign target 3: Labeled "Sign In" and "Sign Up" in order to ensure the user knows what webpage they are in.
- d. Redesign target 4: Progress reports allows the user to know how much rice they have donated.

2. Match system words to real world

- a. Redesign target 1: User should have a sense of what it is to change level. If not consider changing wording to "Difficulty level."
- b. Redesign target 2: information such as the tutorial allows the user to know how to use the system and how to play without any confusion of what the page truly is.
- c. Redesign target 3: Sites are similar to a generic sign in/up page.
- d. Redesign target 4: Phrasing such as "congratulations" is recognizable as a word that means a sort of accomplishment.

3. User control and freedom

- a. Redesign target 1: The tutorial allows users to learn how to use the system and decide which features they wish to use.
- b. Redesign target 2: By giving the user the ability to learn how to use the site they can then decide whether or not to stay in the site.
- c. Redesign target 3: The user has the option of sign in/up with either their personal email/Facebook/Gmail.
- d. Redesign target 4: not applicable

4. Consistency and standards

- a. Redesign target 1: Consider changing "Change levels" to "Difficulty level"
- b. Redesign target 2: Generic website where one can play a game.
- c. Redesign target 3: Generic way of sign up and signing in.
- d. Redesign target 4: not applicable

5. Error prevention

- a. Redesign target 1: allows the user to change the level back to whatever level they were previously on.
- b. Redesign target 2: not applicable
- c. Redesign target 3: Both sign in and sign out page have a way to switch to either sign in/up in case the user pressed the wrong one.

- d. Redesign target 4: not applicable
- 6. Recognition rather than recall
 - a. Redesign target 1: The tutorial allows the user to be aware of how to change the levels feature in case the user did not initially see the button located on the bottom right
 - b. Redesign target 2: instructions for page come in the form of a tutorial.
 - c. Redesign target 3: All sections are labeled in order to remember what goes where.
 - d. Redesign target 4: not applicable

7. Accelerators

- a. Redesign target 1: not applicable
- b. Redesign target 2: not applicable
- c. Redesign target 3: Both Facebook and Gmail login give the user options as to how they can enter the site.
- d. Redesign target 4: not applicable

8. Minimalist design

- a. Redesign target 1: One button indicating how to change levels is both straightforward and
- b. Redesign target 2: The tutorial provided may be useless to users who are frequent users as opposed to new users.
- c. Redesign target 3: "White space" or rather not packing the site with a lot helps the user focus their attention to the center.
- d. Redesign target 4: Banner only shows what is needed, however, a more suitable design might include confetti

9. Help users recognize and recover from errors

- a. Redesign target 1: not applicable
- b. Redesign target 2: not applicable
- c. Redesign target 3: The user has the capability to easily return to either the sign-up or sign-in page if they go to the wrong page.
- d. Redesign target 4: If accidentally clicked on can get rid of using the upper right top 'X'.

10. Help and documentation

- a. Redesign target 1: Help is through the tutorial.
- b. Redesign target 2: not applicable
- c. Redesign target 3: Forgot password available.
- d. Redesign target 4: Not applicable

Evaluation 3: Sazeda Sultana

1. Visibility of system status

- a. Redesign target 1 (Change levels feature): A new page will be to show the visibility status of change level to the user.
- b. Redesign target 2 (Change Start page/landing page): This feature will be visible only when the website is loading.
- c. Redesign target 3 (Sign in/Log out): As soon as the users sign up, they will receive a notification with proper feedback.
- d. Redesign target 4 (Rewarding feedback): There will be a pop-up window showing the numbers of grains the user earned so far.

Match Between system and the Real World

- a. Redesign target 1 (Change levels feature): Change level feature will function easily.
- b. Redesign target 2 (Change Start page/landing page): Start page uses words that are common words in the world. No complicated words are being used.
- c. Redesign target 3 (Sign in/Log out): There is a similarity in sign-up feature words between this system and all other systems that is being used recently.
- d. Redesign target 4 (Rewarding feedback): Words that will pop up to reward the users, will be words that we use to reward people.

3. User Control and Freedom

- a. Redesign target 1 (Change levels feature): Users can change level anytime.
- b. Redesign target 2 (Change Start page/landing page): User can leave the website anytime.
- c. Redesign target 3 (Sign in/Log out): Users can go back if they do not want to sign in or login.
- d. Redesign target 4 (Rewarding feedback): Not applicable.

4. Consistency and Standards

- a. Redesign target 1 (Change levels feature): Users will be able to easily see what to do next, as they will be able to instructions in buttons
- b. Redesign target 2 (Change Start page/landing page): Start page or landing page is similar to those of other current websites.

- c. Redesign target 3 (Sign in/Log out): Sign-up and login is similar to those of other current websites.
- d. Redesign target 4 (Rewarding feedback): All rewarding feedback pop up windows will have the same color scheme.

5. Error Prevention

- a. Redesign target 1 (Change levels feature): Users can prevent error by clicking the "x" on the upper corner of pop up window, if they do not want to change levels.
- b. Redesign target 2 (Change Start page/landing page): Not applicable
- c. Redesign target 3 (Sign in/Log out): Not applicable
- d. Redesign target 4 (Rewarding feedback): Not applicable

6. Recognition Rather than Recall

- a. Redesign target 1 (Change levels feature): Not applicable.
- b. Redesign target 2 (Change Start page/landing page): Not applicable.
- c. Redesign target 3 (Sign in/Log out): Not applicable.
- d. Redesign target 4 (Rewarding feedback): Not applicable.

7. Flexibility and Efficiency of Use

- a. Redesign target 1 (Change levels feature): Lots of options to change levels will give users efficiency in playing.
- b. Redesign target 2 (Change Start page/landing page): Not applicable.
- c. Redesign target 3 (Sign in/Log out): Sign in and log in features do not require complicated steps to follow.
- d. Redesign target 4 (Rewarding feedback): Not applicable.

8. Aesthetic and Minimalist Design

- a. Redesign target 1 (Change levels feature): Button in change level will demonstrate how to change level.
- b. Redesign target 2 (Change Start page/landing page): Not applicable.
- c. Redesign target 3 (Sign in/Log out): Not applicable.
- d. Redesign target 4 (Rewarding feedback): Pop-up window will show only information that is needed at minimal.

9. Help Users Recognize, Diagnose, and Recover from Errors

a. Redesign target 1 (Change levels feature): Not applicable.

- b. Redesign target 2 (Change Start page/landing page): Not applicable.
- c. Redesign target 3 (Sign in/Log out): If users re-enter information again in sign up or log in page if previous data was not reasonable. Also, forgot password can help recover from potential errors.
- d. Redesign target 4 (Rewarding feedback): Users can remove the rewarding feedback window by clicking the "x" at the top right corner of the pop-up window.

10. Help and Documentation

- a. Redesign target 1 (Change levels feature): The is a tutorial to help on change levels features.
- b. Redesign target 2 (Change Start page/landing page): Not applicable.
- c. Redesign target 3 (Sign in/Log out): Not applicable.
- d. Redesign target 4 (Rewarding feedback): Not applicable.

Evaluation 4: Jose Farias

1. Visibility of system status

- a. Change Levels Feature: Though the change levels feature keeps users informed about what is going on due expanding and allowing users to select a level, it could be redesigned to appear more as a button.
- b. Start Page/Landing Page: The start page and landing page allows users to know what is going on through appropriate feedback. The only thing I noticed that could help is perhaps adding in a "on-hover" feature on buttons.
- c. Sign in/Signup: The Sign in/Sign up pages both provide users with appropriate feedback. Same thing as the previous, an "on-hover" feature on buttons could help.
- d. Rewarding Feedback: The system allows users to know how much rice they've donated through notifications/alerts within the system.

2. Match system words and the real world

a. Change Levels Feature: The system does a good job of matching system words to the real world by making buttons have text that is self-explanatory/what users expect.

- b. Start Page/Landing Page: The system does a good job of matching system words to the real world by making buttons have text that is self-explanatory/what users expect.
- c. Sign in/Signup: Facebook and google logos both match the real world as it is a common thing to have the ability to signin/signup on a system through facebook/google.
- d. Rewarding Feedback: The phrasing used here is direct and explicitly states what is happening in real world terms.

3. User control and freedom

- a. Change Levels Feature: The system allows users to learn how to use the system as they wish through the tutorial showing the location of the change levels feature and always allowing users to change levels whenever they please.
- b. Start Page/Landing Page: The system at all times throughout the tutorial provides users with an "emergency exit" in the top right corner to immediately exit if selected on accident.
- c. Sign in/Signup: The system allows users to stay in control and by providing them with a multitude of options for signin in if they please or continuing to use the system without doing so if they would like.
- d. Rewarding Feedback: Users are allowed to toggle off rewarding Feedback if they wish to and pressing anywhere on the screen removes the banner.

4. Consistency and standards

- a. Change Levels Feature: Due to having only a singular page and button with the ability to change levels it is consistent and will not confuse users. Though "difficulty" in place of "change" could be better understood.
- b. Start Page/Landing Page: Consistency exists across the start-up/landing page as all wording is the same, nothing would cause a user to wonder what is meant by buttons/words/etc...
- c. Sign in/Signup: Consistency exists with standard conventions from all the popular websites, making it easy for users to understand.
- d. Rewarding Feedback: Consistency exists across all rewarding feedback, the only thing that changes is a singular number and it changes to match the current amount of grains earned by the user.

5. Error prevention

a. Change Levels Feature: No problems can occur due to the simplicity of the system, as options outside of the change levels feature are all disabled until the "exit" button in the top right is

- pressed or until they select a different window. Preventing users from running into errors/causing errors.
- b. Start Page/Landing Page: Similarly the tutorial allows users to go through the sequence and disables all options other than the "back", "next" and "X" buttons to prevent errors whilst the tutorial is running.
- c. Sign in/Signup: Due to the simplicity of these it is easy to prevent errors from occurring, the only one I could imagine could happen would depend on implementation of the age drop down menus that could interact poorly and cause errors on legacy systems/uncommon browsers.
- d. Rewarding Feedback: As the rewarding system is set-up to only accept on action is it impossible to break. Clicking anywhere on the screen only removes the banner, because while having the banner in place everything else is disabled.

6. Recognition rather than recall

- a. Change Levels Feature: Users don't have to remember anything with the change levels feature as everything is labeled/visible.
- b. Start Page/Landing Page: Similarly users are able to recognize what they were shown in the tutorial by text.
- c. Sign in/Signup: Common logos like facebook and google logo allow for recognition instead of recall of which button is for what on these pages.
- d. Rewarding Feedback: Not applicable

7. Flexibility and efficiency of use

- a. Change Levels Feature: There doesn't exist an accelerator for the experienced user over the novice user here, perhaps implementing a feature that allows one to select the "max" difficulty instead of having to go through the flow.
- b. Start Page/Landing Page: Users who have already seen the tutorial after the first time will not see it again after returning to the system, helping improve system efficiency for experienced users who know where everything is.
- c. Sign in/Signup: Experienced users are able to skip the signup/sign in process entirely by using google or facebook to quickly sign in or pressing the "remember me" button to skip signing in everytime.
- d. Rewarding Feedback: Allowing experienced users to remove the feedback helps increase efficiency of use for those who wish to donate and don't care about the aesthetics/visual/audio from reaching "milestones".

8. Aesthetic and Minimalist design

- a. Change Levels Feature: There is no unnecessary information on the change levels feature.
- b. Start Page/Landing Page: No unnecessary information, all other information is under the more/about pages.
- c. Sign in/Signup: Only signup/signin button exists, perhaps the only thing that could be removed is the text above the signup boxes, seems self-explanatory due to seeing a "register" button.
- d. Rewarding Feedback: No unnecessary information exists here.
- 9. Help users recognize and recover from errors
 - a. Change Levels Feature: Again as stated before, no error messages exist, this is not applicable.
 - b. Start Page/Landing Page: Again as stated before, no error messages exist, this is not applicable.
 - c. Sign in/Signup: Again as stated before, no error messages exist, this is not applicable.
 - d. Rewarding Feedback: Again as stated before, no error messages exist, this is not applicable.

10. Help and documentation

- a. Change Levels Feature: Not applicable as no help and documentation exists here aside from what is available to the user in the tutorials.
- b. Start Page/Landing Page: The tutorials exist as help and documentation showing users where everything is and how to interact with everything.
- c. Sign in/Signup: Not applicable as no help and documentation exists here, aside from text available near options/buttons.
- d. Rewarding Feedback: Not applicable as no help and documentation exists here.

Evaluation 5: Nitin Nallan

- 1. Visibility of system status
 - a. Change Levels Feature: This creates a new page that will be navigated to upon selecting "Change Level."
 - b. Start Page/Landing Page: Create a loading icon to show that the page is not frozen if the server is taking time to load.
 - c. Sign in/Signup: Upon successful sign up or sign in, the user will receive a notification to inform them that they were successful.

d. Rewarding Feedback: The page will show the user how much rice they've collected both visually in a bowl and in number form.

2. Match between system and the real world

- a. Change Levels Feature: Change Levels might be better worded as change difficulty to more accurately inform the user what it does.
- b. Start Page/Landing Page: The start page shows everything accurately to what needs to be described
- c. Sign in/Signup: The process for signing up and the ability to sign up using the accurate logos for facebook and google are both accurate to how the signup process works in most modern websites.
- d. Rewarding Feedback: The reward is clear and accurate but perhaps some more visual queues would feel more adequate.

3. User control and freedom

- a. Change Levels Feature: The user is allowed to change the difficulty of their experience at their own leisure and switch back and forth between difficulties with no penalties.
- b. Start Page/Landing Page: The start page shows the key places that the user would want to navigate to upon reaching the website.
- c. Sign in/Signup: The sign in and sign up features both allow the user to have their own account with their own high scores and settings.
- d. Rewarding Feedback: Not applicable.

4. Consistency and standards

- a. Change Levels Feature: Change levels might need to be reworded to be more clear but it is now adequately prominent to be used.
- b. Start Page/Landing Page: Landing page has everything necessary for the user to just begin playing the game quickly with no hassle.
- c. Sign in/Signup: The sign up and sign in process are consistent with standards across the internet.
- d. Rewarding Feedback: The feedback might be increased with more visual flair.

5. Error prevention

- a. Change Levels Feature: The user may change back the difficulty at any point.
- b. Start Page/Landing Page: Not applicable.
- c. Sign in/Signup: The page will inform the user if the sign in or sign up process was unsuccessful.
- d. Rewarding Feedback: Not applicable.

6. Recognition rather than recall

- a. Change Levels Feature: The user will always clearly see the change level button and will be able to click it to change the difficulty level.
- b. Start Page/Landing Page: Instructions will always be clearly visible to the user.
- c. Sign in/Signup: Both the sign up and sign in buttons are clearly labeled for the user.

- d. Rewarding Feedback: Not applicable.
- 7. Flexibility and efficiency of use
 - a. Change Levels Feature: Not applicable.
 - b. Start Page/Landing Page: Not applicable.
 - c. Sign in/Signup: The user may sign up using facebook or google to speed up the process.
 - d. Rewarding Feedback: Not applicable
- 8. Aesthetic and minimalist design
 - a. Change Levels Feature: There are no unnecessary steps in the change levels feature
 - b. Start Page/Landing Page: The tutorials in the beginning of the page might be unnecessary, but they disappear quickly and only show up upon first entering the landing page.
 - c. Sign in/Signup: This process is streamlined to be consistent with common standards.
 - d. Rewarding Feedback: The feedback is minimal but clear.
- 9. Help users recognize, diagnose, and recover from errors
 - a. Change Levels Feature: The users will always be able to change levels back if they do not like the difficulty they are at.
 - b. Start Page/Landing Page: Not applicable.
 - c. Sign in/Signup: The user can sign out of their account and will be told if they can not sign up using the current information they are giving.
 - d. Rewarding Feedback: Not applicable.
- 10. Help and documentation
 - a. Change Levels Feature: The tutorial clearly shows what this feature is supposed to do.
 - b. Start Page/Landing Page: Tutorials show the user all of the main features that are accessible through this page
 - c. Sign in/Signup: Not applicable.
 - d. Rewarding Feedback: Not applicable.

Accessibility Evaluation

- 1.1.1 Non-text Content
 - Very few instances of proper alternative text; most alt text reads out "link" whenever an image contains a link but doesn't contain much else.
 - Text that is conveyed as text don't have a null alt text. Linked images do not have alt text.
- 1.2.1 Prerecorded Audio-only and Video-only There is no live videos, therefore no captions are needed.
- 1.2.2 Captions (Prerecorded) There is no non-live videos, therefore no captions are needed.

- 1.2.3 Meaning Sequence The reading and navigation order in the system is not logical and intuitive.
- 1.3.1 Info and Relationships Tables are not used for tabular data and data cells are associated with their headers.
- 1.3.2 Meaningful Sequence Navigation order is not logical.
- 1.3.3 Sensory Characteristics Instructions do not rely upon sound.
- 1.4.1 Use of Color The main color in this website is green. Everything is portrayed with different shades of green.
- 1.4.2 Audio Control There is not that many mechanism in the system that is provided to stop, pause, mute, or adjust volume for audio that automatically plays on a page for more than 3 seconds.
- 2.1.1 Keyboard Page functionalities are not available using keyboard,.
- 2.1.2 No Keyboard Trap User cannot navigate to and from all navigate page elements using only a keyboard.
- 2.1.4 Character Key Shortcuts No keyboard shortcut uses printable character keys.
- 2.2.1 Timing Adjustable There is no time limit in any pages.
- 2.2.2 Pause, Stop, Hide Automatically does not move, blink, or scroll content (such as carousels, marquees, or animations) that lasts longer than 5 seconds can be paused, stopped, or hidden by the user.
- 2.3.1 Three Flashes or Below Threshold No page flashes exist.
- 2.4.1 Bypass Blocks There is no link provided to skip navigation and other page elements that are repeated across web page.
- 2.4.2 Page Titled The web page does not have a descriptive and informative page title.
- 2.4.3 Focus Order The navigation order of links, form elements, etc. is not logical and intuitive.
- 2.4.4 Link Purpose (In Context) The purpose of each link cannot be determined from the link text alone, or from the link text and its context.
- 2.5.1 Pointer Gestures The functionality can be performed with a single point activation.
- 2.5.2 Pointer Cancellation The is no pointer cancellation to avoid inadvertent activation of controls, avoid non-essential down-event activation when clicking, tapping, or long pressing the screen.
- 2.5.3 Label in Name The interface component does not present text, the accessible name for that component.
- 2.5.4 Motion Actuation There is no functionality that can be triggered by moving the device such as waving to a camera that can be disabled. No equivalent functionality is provided through standard controls like buttons.
- 3.1.1 Language of Page The HTML lang attribute of the page is not identified.
- 3.2.1 On Focus Whenever a page element receives focus there is substantial change to the page, spawning of a pop-up window, an additional change of keyboard focus, or any other change that could confuse or disoriented the users.

- 3.2.2 On Input On input is poorly done, as whenever a user inputs a
 username that is invalid the website reloads and there is a small change in
 text saying that the username was already taken/is invalid. As well as
 when the information inputted is valid there's a long load time for the next
 page without a notification/warning forcing users to wait or exit causing the
 action to cancel.
- 3.3.1 Error Identification There is a lack of this information within form labels, for example when signing up password and username require a specific length/only a specific set of characters are allowed and that is not specified in the label.
- 3.3.2 Labels or Instructions There are not sufficient labels and instructions, for a new user it's quite hard to change the level, or even find the change level button. A set of instructions for how to use it and where it was located was provided it would be much more helpful
- 4.1.1 Parsing There are several parsing errors that exist, thus they are not avoided.
- 4.1.2 Name, Role, Value Markup is not used in a way that facilitates accessibility, there are several missing closing braces causing issues in titles/etc.

Sketches

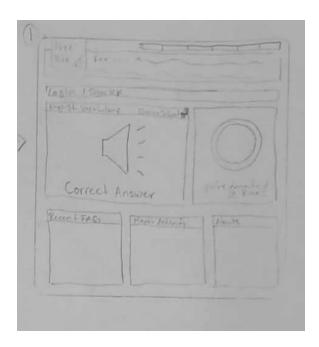
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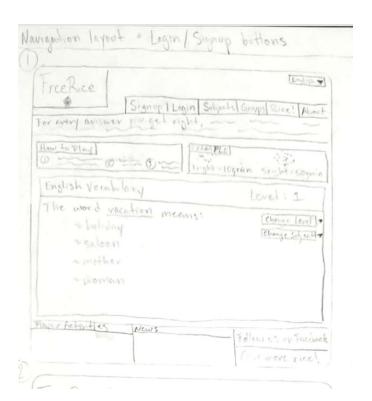


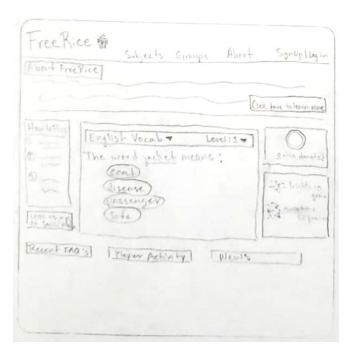
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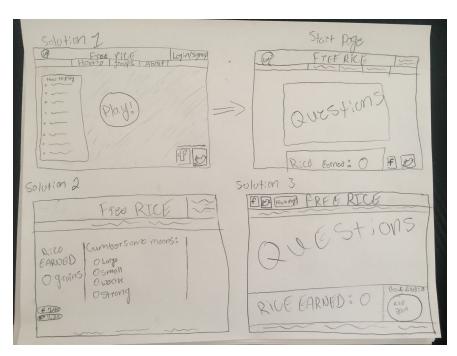
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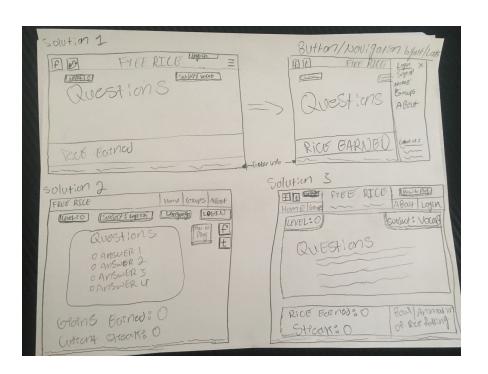


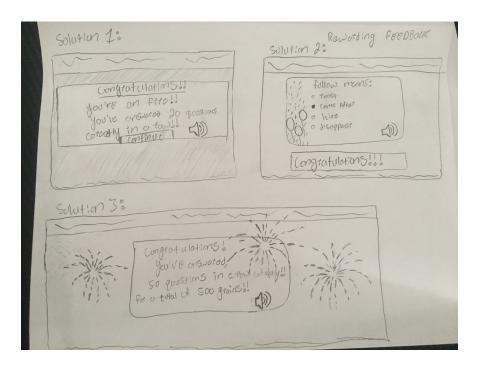


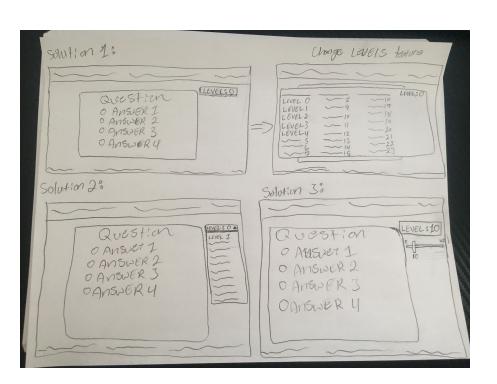
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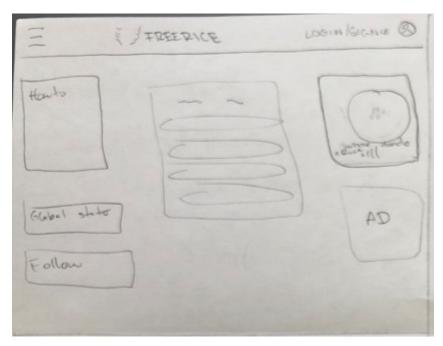


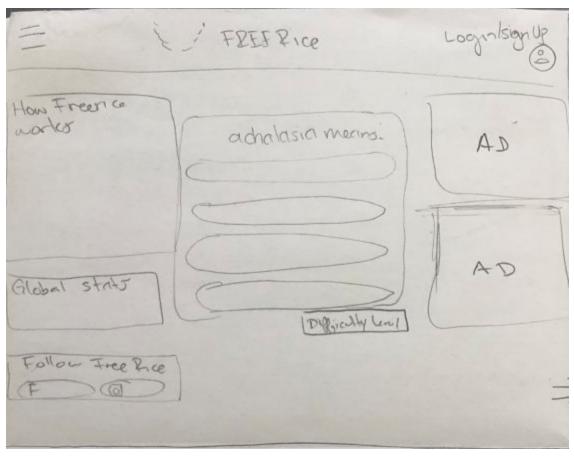


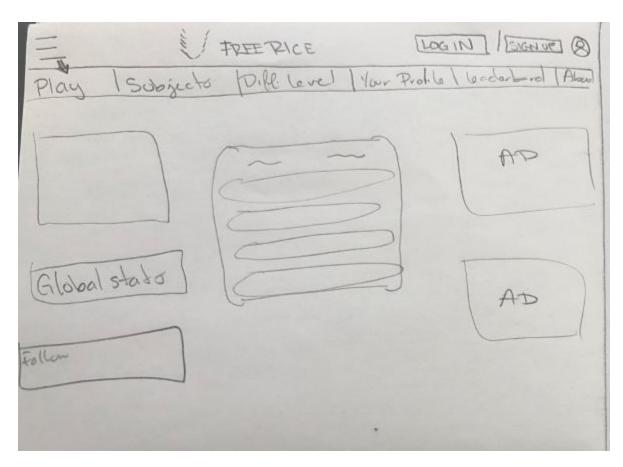




Sketches by Ailyn Gonzalez

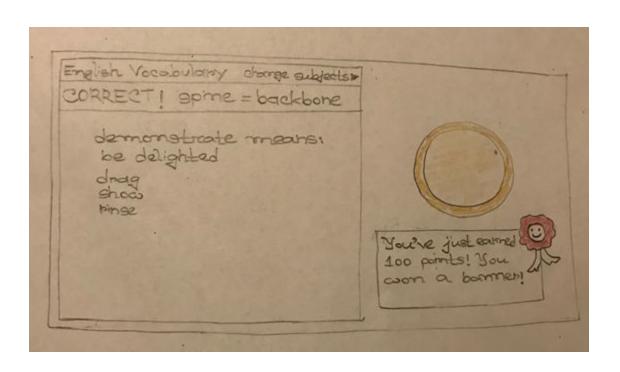




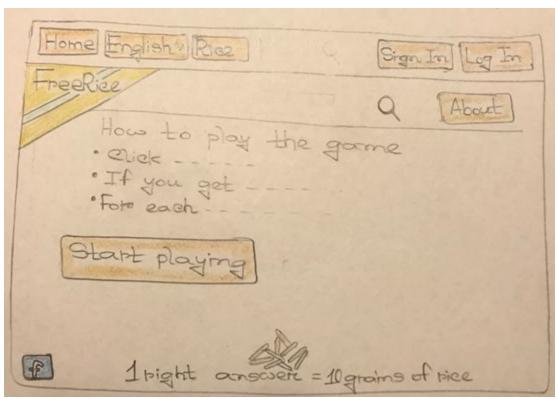


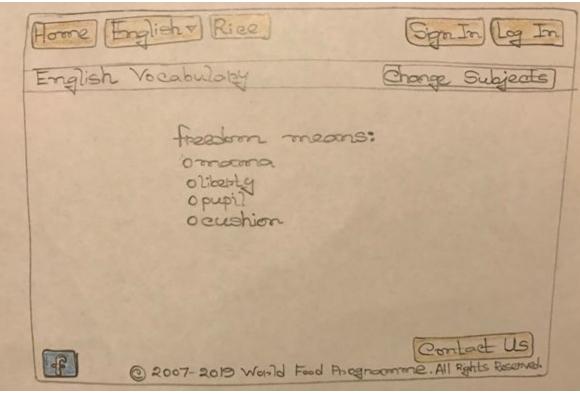
Sketches by Sazeda Sultana



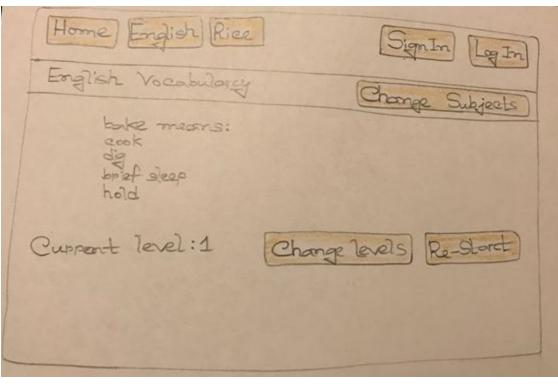














Sketches by Nitin Nallan

