

# Milestone 2

Group 4

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## **Milestone 2**

### **Problem:**

Our data showed that the kitchen was underutilized as a space for entertainment, and that many people do not cook involved meals due to things like: price, time, skill barriers, or simple laziness. With other forms of entertainment competing for the time that could be used to prepare meals, people tend not to spend much time in the kitchen, even despite the fact that the kitchen is one of the ‘homier’ rooms in a home.

### **Solution 1: Virtual Reality**

#### **Basics of VR and How it Solves the Problem:**

VR allows users to experience anything digitally, mostly through sight. VR creates a virtual world, like a kitchen for instance, that a user is free to explore. The user can interact with this environment using a variety of controls. VR’s potential with giving a life-like experience to users makes it a perfect candidate for cooking simulation. With VR, a kitchen world can be created to help users explore cooking without having to worry about the cleanup. This exploration can help users practice and refine their cooking expertise and nutritional knowledge. Ideally, if a user can practice without the negative parts of cooking, users can feel more familiar and spend more time having fun and experimenting rather than concerning themselves with safety or mundane tasks like cleaning when cooking. The actual solution will be an application that is designed specifically for VR.

#### **Functionality:**

- The VR app will create a virtual kitchen that the user can interact with
  - The user will be able to turn a complete 360 degrees and move in 2 dimensions.
  - The user will interact with the world using a controller or keyboard but will recommend the use of motion controls.
  - All appliances will be interactive.
- Quizzes
  - These will allow the user to refine their cooking knowledge.
  - The questions will regard nutrition, vocabulary, and ingredients that typically go well together.
  - The user can set these to appear at random times during their virtual cooking experience.
- Recipes
  - The app will allow users to explore a variety of recipes.

- The recipes will be grouped by categories
    - Cultures
    - Difficulty
    - Ingredients
    - Etc.
- Experience
  - As the user takes quizzes and practices cooking, he/she will accrue experience points. When a user gains a certain number of points, he/she will level up.
  - Recipes will be recommended to the user depending on his level. The higher the user's level, the more difficult the recipes the app will recommend.
  - Experience points can be redeemed for different kitchen themes. For example, a user can spend points to make his virtual kitchen become a "sky" kitchen in a penthouse suite of a skyscraper or a unique underwater kitchen.
  - Experience points can be redeemed for extra challenges and recipes.
- Music and sound
  - The app will support music from other apps while a user "cooks."
  - The app will have audio cues with stereo output so that the user will know where to look. Various appliances will have certain sounds like timers, but the app itself will use auditory cues to indicate to the user when it is time to move to the next step.
- Challenges
  - The user can engage in challenges that might not reflect normal cooking conditions. Challenges might include time trials, ingredient mashups in which the user must make a dish using a variety of strange ingredients, etc.
- Encyclopedia
  - The user can access the encyclopedia to manually read about terms or recipes that the app provides.
  - Tutorials and videos
- Cooking experience
  - The user can select a recipe to attempt.
  - The app will guide the user through the steps of the recipe.
  - The user will be able to interact with each step, for example, if the app instructs the user to cut carrots, the user will be able to use his controller to perform the action. Another example might be shaking a pan. Motion controls will allow the user to make actual cutting movements. This should help familiarize the user with various cooking actions.
  - The user can also interact with the appliances like opening a refrigerator to get ingredients or open a stove to pull out a dish.
  - The user can set the app to skip certain phases like the preparatory phase.

- The user can skip to certain steps of a recipe to maximize the practice of that step.
- Profile
  - A profile will allow a user to see his favorite recipes, recently completed recipes, and recommended recipes
  - The user's profile will also display his cooking level and cooking level progress bar.
  - The profile will include the user's email so that he/she can email recipes' ingredient list so that the user can actually make the dish after he/she has practiced.

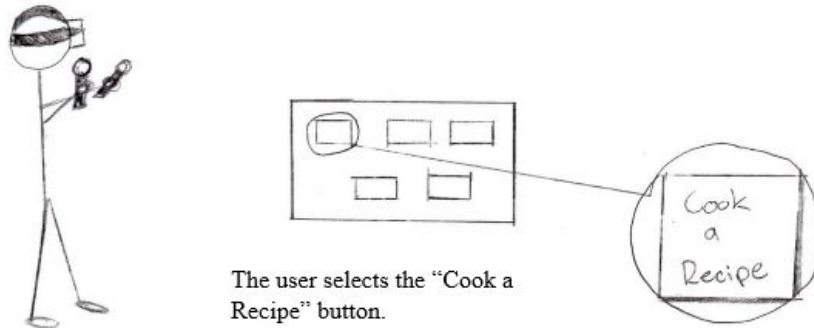
### **Narrative:**

The user begins the user of the program by opening it on his respective device. The application opens to a menu. The menu includes the following options: "Cook a Recipe", "Encyclopedia", "Profile", "Quizzes", and "Challenges." The user selects an option. "Cook a Recipe" brings a user to the interactive experience in a normal mode for him/her to begin learning how to cook a recipe. "Encyclopedia" opens the in-app encyclopedia of terms, ingredients, recipes, and videos. "Profile" allows the user to see his progress and favorite recipes. "Profile" also allows the user to change his themes and spend his experience points. "Quizzes" allows the user to manually access quizzes. "Challenges" allows the user to access the interactive experience in a challenge mode. The user can select from a list of challenges to start the experience.

In a normal case, the user will select the "Cook a Recipe" menu item once he has started the VR app. Then the app will display a list of recipes with brief descriptions. When he/she selects a recipe, the app will load the interactive experience specifically designed for the selected recipe. Before the experience begins, the user is prompted if he/she wants to enable quizzes. If the user agrees the experience will randomly ask the user quiz questions throughout cooking the meal. The app begins walking the user through the various steps of the recipes with prompts and/or text. The user interacts with the environment with his/her controller. Various sound cues are used to give further instruction and notifications to the user. Upon completion of the recipe, the user is shown the experience he/she earned.

In a side case, a user may want to access the encyclopedia, then proceed to a challenge section. The user would open the app and select "Encyclopedia." Now he can review as much information as the encyclopedia has to offer. When he/she is ready, he/she selects the "Challenge" item. The app shows a list of descriptions of the available challenges. The user can select a challenge. The app brings the user to the interactive world in the challenge mode. The challenge mode might impose various constraints on the interactive world. The user accomplishes the goals of the challenge. Upon failure or completion, the user is shown the experience he/she has earned. Completion leads to a greater amount of experience.

## Storyboard 1: User starts the interactive world to practice a recipe

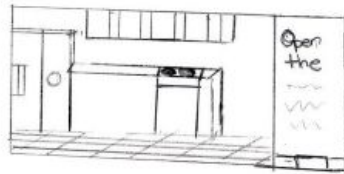
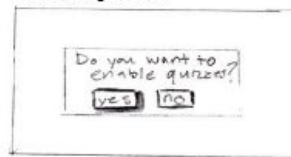


User interacts with app via controller. He launches the app.

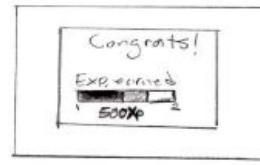
The user gets a list of recipes with description and can click "Let's go" to begin.



The user is given an option to enable quizzes.



The app loads into the interactive experience. The directions and cues begin. He performs the tasks as given to complete the recipe.



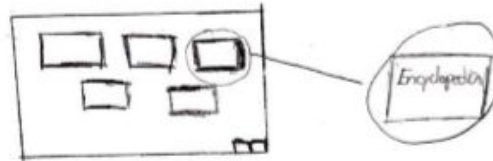
The user completes the recipe and is rewarded experience points. He is shown his progress.

## Storyboard 2: User looks at the encyclopedia, then starts the app in challenge mode

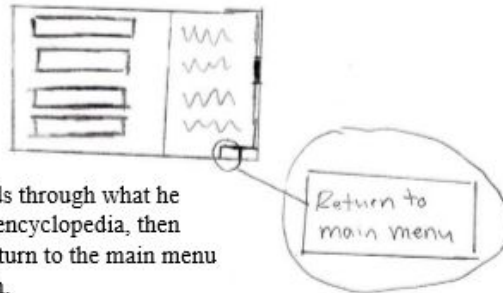
The user interacts with the app via controls. He starts the app, bringing him to the main menu.



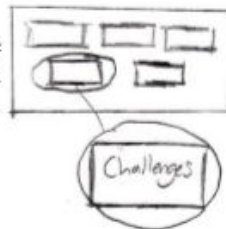
The user selects the "Encyclopedia" menu item.



The user reads through what he wants in the encyclopedia, then chooses to return to the main menu via the button.



The user selects the "Challenges" menu item from the main menu.



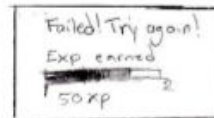
The user reads about the various challenges. In this case he chooses "time trial."



The app initiates the interactive world. The user then proceeds to complete the steps as indicated for the challenge.



Once he completes or fails the challenge, the user is shown the experience points he earned. In this case he failed the challenge, so was rewarded fewer points than if he would have completed the challenge.



## **Justifications:**

VR was chosen as a possible system design because of the vastly increasing VR market. We felt that VR is a relatively new medium that could be very helpful for teaching users how to perform certain tasks, or in this case cook. Looking back at milestone 1, we discovered that people do not think of the kitchen as the number 1 place to be entertained, but also they don't really know what they are doing when it comes to cooking. We discovered that people dislike the cleaning and preparatory work, but also that people lack general cooking knowledge. These things prevent people from finding enjoyment in cooking. We felt that the VR solution would allow users to gain knowledge of cooking, without having to do all of the tedious steps that they would have to do in real life like prep and cleanup if they don't want to. VR also prevents users from having to spend money on food that might not turn out well. While cooking isn't typically considered a wildly dangerous activity, there is still an element of danger to it whether it be concerns about being burned or cutting oneself. On that note, the VR solution is safer, especially for a beginner. We felt that the immersive experience VR has to offer could help users get in practice and become comfortable with various cooking tools, techniques, and recipes so that they will be prepared when making real dishes.

We chose to require that users have a controller to interact with the world. We chose to recommend the use of motion controls so that users can get a more accurate understanding of how certain actions feel in real life.

We chose to implement a quizzing system to help users learn about ingredients, vocabulary, tools, and techniques that a user may be interested in. We felt that quizzes are a good way to solidify someone's understanding of a subject.

We wanted to allow users to explore a variety of recipes, so we designed the system to categorize the recipes so that users could choose whatever recipe they were in the mood for.

The experience points, challenges, and themes were designed with one question in mind: "How do we make cooking fun?" We felt that allowing users to earn redeemable points would provide a fun and rewarding experience that would draw the users back to the app, but also give them a new appreciation for cooking. The points show progress, and people like to know that they have made progress. The challenges were added because we felt that, like a videogame, a user would be drawn to a challenge because users find challenges to be fun, and ultimately this entire solution is supposed to help the user be entertained.

The addition of an encyclopedia was something we felt was necessary. We felt this could give users another outlet to learn.

Lastly, we added a profile for the user because we wanted the user to be able to find all of his progress in a centralized location, but we wanted the app to provide extra functionality like emailing a shopping list to a user so that he/she could actually make the dish he/she practiced.

All together we believed that these features and design decisions could help our target audience tremendously by providing the knowledge, skill, and fun the audience told us it lacked in the previous milestone.

### **Strengths and Weaknesses:**

- Strengths
  - No cleanup
  - Safer than actual cooking
  - Potentially faster than actual cooking
  - Transforms something perceived as boring into something satisfyingly challenging, rewarding, and fun
- Weaknesses
  - The initial investment could be high depending on how nice of a VR system a user wants
  - Virtual experience is not 100% accurate

## **Solution 2: Mobile/Tablet Application**

### **Overview:**

This application will provide a solution that makes cooking more entertaining and engaging to both experienced and inexperienced cooks alike. In essence, this is an electronic cookbook for smartphones and tablets with some game-like elements to further aid and entertain the user.

### **Functionality:**

- Digital pantry:
  - The user will be able to enter the ingredients they have at home into the app. This will allow the application to recommend recipes the user can currently make as well as tell the user what ingredients they lack for a selected dish.
  - Shopping list creation based on needed ingredients.
- User profiles and experience system:
  - The app will be able to support multiple users and keep a profile for each.
  - Each user will gain experience with each dish they cook. Different dishes will have different experience values based on their technical challenge.



- By gaining experience and levels, the application will recommend more difficult and complex recipes as well as offer new tips for things like a faster way to handle a knife, etc.
- Character avatar
  - Each user will have an avatar that they can customize and make their own. This will be visible to other users who view that profile.
  - As they level up, the user will be able to spend their experience points on vanity items to further customize their avatar. This adds even more incentive to cooking.
- Online Community
  - The application will support online functionality.
  - Users will be able to rate existing dishes.
  - Users will be able to upload creations of their own to the community section.
  - Each user profile will have a social 'wall' where they can make posts, share recipes, and friend other users.
- Educational Videos:
  - Leveraging its internet functionality, the application will be able to host tutorial videos for basic and advanced cooking skills.
  - This will be linked both in the education section as well as in the recipes that may require such techniques.
- Cookbook
  - The cookbook will draw from a wide array of culinary styles and dishes for all skill levels.
  - While the application will recommend dishes that match the user's skill level and current ingredients, the user will by no means be locked out of the rest of the cookbook.
  - Each recipe will list necessary ingredients, cultural origin, and nutritional facts.
  - There will be sections for different dietary requirements (vegan, vegetarian, gluten-free, etc).
  - Recipes will be categorized by a number of qualities: difficulty, time, price, diet, previous recipes made by the user, etc.
- Dish Creation:
  - Once the user has selected a dish, the app will walk the user through the recipe step-by-step in manageable chunks.
    - The app will support 'co-op cooking' and will assign each user a task to do at each step so cooking can be enjoyed with another.
  - Successfully completing each task will reward experience towards the user's level.

- At the end of each recipe, the user will rate how they think they performed. This will monitor their skill level and show them where they can improve.

**Narrative:**

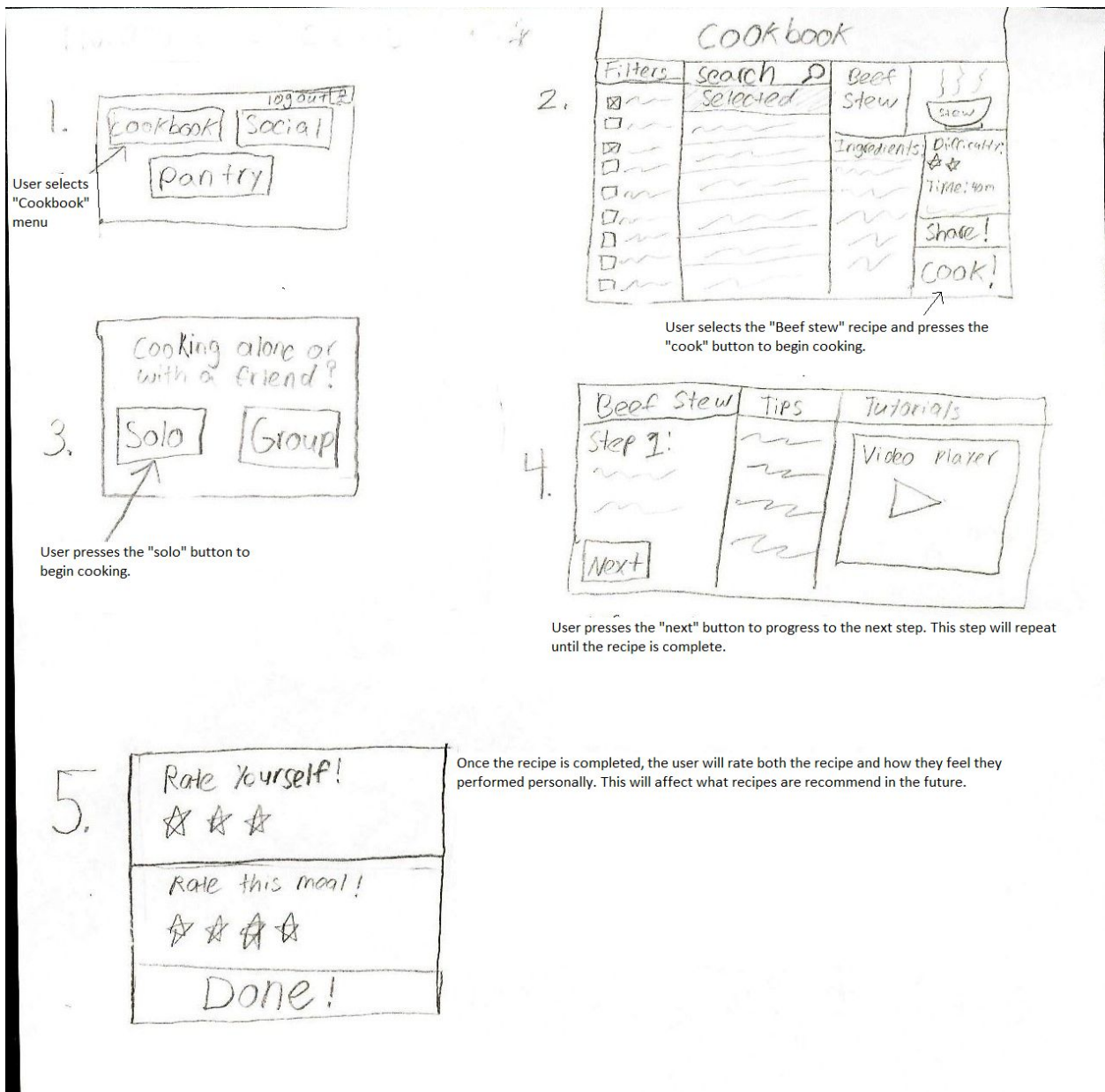
The user starts by opening the application on their respective device. If this is their first time using the application, then they will be prompted to create a profile. Otherwise, they will simply log in using their existing profile. From here, they will be taken to the home screen, which will allow them to navigate to a variety of menus, including: “Cookbook”, “Social space”, and “Pantry”.

The “Cookbook” menu will have a list of recipes and filters that can be added to the list to narrow the range. Some filters may include: ethnicity, price, difficulty, or only showing recipes for which you have the ingredients already. There will also be a sub-menu for favorite recipes that the user will want to remember. The “Social Space” menu will act like many social media platforms where you can friend other users, share recipes you’ve found or created, and make posts about anything you might like to say or share. The “Pantry” menu will be the location where a user can add ingredients to their pantry so the application can know what the user has on hand, as well as a place where the user can simply review what they already have, and even make a shopping list for the next time they go out.

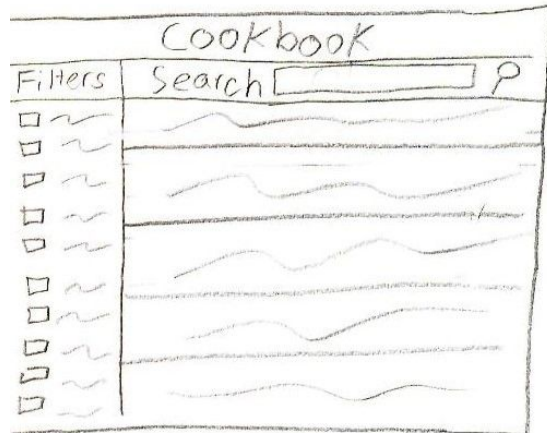
In most cases, the user will select the “Cookbook” menu and find a recipe that they would like to make. Once they have selected a recipe and selected either “solo” or “co-op cooking”, the application will begin walking them through the steps and offer tips and hints to aid in the task at hand. If they selected “co-op cooking” the application will give each user a task at every step.

Once the cooking is finished, the user will be able to rate the recipe as well as how well they think they did. If they did well, the application may recommend more difficult recipes in the future. The rating they give the meal will impact what recipes will be recommended in the future to both that user and other users across the app.

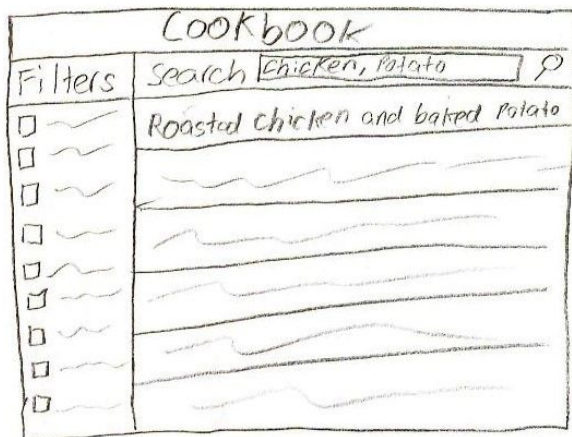
## Storyboard 1: Finding and cooking a recipe



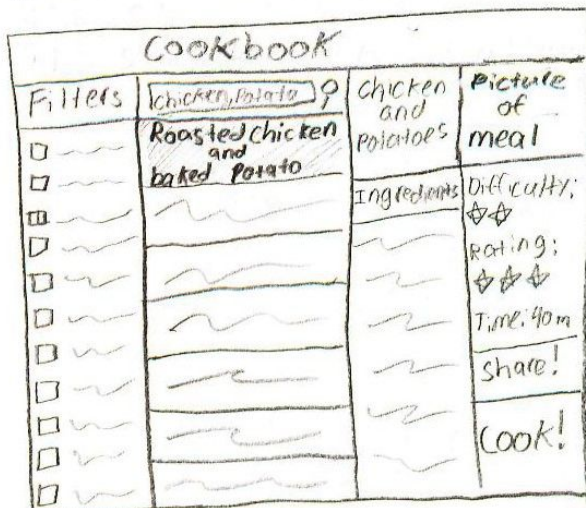
## Storyboard 2: Searching for meals including a specific ingredient(s)



User starts at cookbook menu. Note that there are no recipe details on the righthand side as a recipe is not currently selected.



User enters the ingredients they have on-hand into the search bar. Recipe list updates to show recipes containing the specified ingredients. Note that the application expects the user to have basic spices and seasoning.



User selects meal from the searched list. The application then displays the details for the selected meal and gives the user the option to start cooking.

## **Design Justifications:**

We chose an app based system because we believe we can get access to a larger audience, as well as mitigate production costs as no hardware will actually need to be produced. We decided to have an emphasis on making it a social app that integrates with social media well because we observed the amount of pictures people share of meals they've made on Instagram; people enjoy sharing what they've accomplished, especially in the kitchen. Having a social network aspect in which people can share recipes and achievements is a great way to provide a rewarding experience, introduce people to great new recipes, and give people an avenue for creativity. We also chose to "game-ify" cooking because many of our survey responses mentioned that people found cooking to be one of many daily chores they wished could be more interesting. "Gameification" often adds incentive and gives users milestones to reach, as well as some form of reward for doing well. Motivation is incredibly important when learning a new skill.. See: "Extra Credits: Gamifying Education" on Youtube for evidence as to why gamification can help motivate users to learn.

## **Strengths and Weaknesses:**

- Strengths:
  - Because the system will be app-based, that allows for a cheap price tag and access to a larger audience.
  - Having a social network will help build a community and give people a creative space to share their work and recipes.
  - Being able to visualize your progress via the level system will give feedback and help the user see how far they've come, and how far they can still go.
  - Unlike physical cookbooks, this app will constantly add new recipes, giving it longevity.
- Weaknesses:
  - Sanitation is important for cooking, and phones and tablets are notoriously dirty.
  - It's quite difficult to cook and use an application all at the same time.
  - Measuring performance and progress is left to the user, as the app cannot judge a user's performance in cooking, as that happens outside the application.

## **Solution 3: Voice Assistant with Smart Kitchen Appliances**

### **Overview :**

This design aims to make cooking easier to do for novices so that they could partake in the social, creative, and enjoyable activity that is cooking. This design uses a voice assistant to give direction during the cooking process and smart appliances to improve feedback to the user on the process and its techniques.

### **Functionality:**

- Music Playing
  - Aims to make cooking more fun by adding an element to cooking that many already enjoy and that can make the time pass more quickly.
  - Can make the activity seem like it is less work (similar to working out)
  - Cooking and Cleaning Playlists
- Step-by-Step Directions
  - The device will give step-by-step instructions for the recipes.
  - Can ask for repetition of a step if it was not heard the first time
  - The device can advise you when you need to do something or check on something (e.g. warning that a pasta should be taken out because it has been boiling for 10 minutes)
- Recipe Recommendations
  - The device can give you recommendations based on previous recipes that you cooked and enjoyed.
  - Liking system that allows the system to make recommendations for similar recipes
  - Liking recipes will not be just for recommendation algorithm but also can create a catalog of recipes that the user liked so that they can easily find and cook them again.
  - The device can recommend recipes which will make good use of the smart appliances which you own (still possible to do recipes for which you do not own smart appliances)
- Cooking with Friends
  - The device lets you add cooks to the recipe so that you can cook with others.
  - Gives each cook a job to spread out the workload
  - Cooking can be a social activity, and it can make the experience of cooking less work and more entertaining.
  - The device can then assign advice about appliance choice and technique to user's individually
    - Friends can announce which appliances they will use for their task
- Spreading out the Prep

- When creating a recipe, the device will attempt to reduce the amount of time waiting, which is a boring part of cooking, by spreading the prep out to different stages and encouraging multitasking
- Recipe Difficulty and Time
  - Each recipe will have a difficulty marker to convey the level that is needed to complete the recipe
  - Each recipe will have a time marker to allow the user to know how long the recipe is expected to take
  - All of these markers or tags will be conveyed when a user asks for more information about the recipe
- Recipe Supplements
  - Recommendations for good pairings to recipes mainly wines and spices, but it could also be for sides, salads, other meals
- Search for recipes for what you have and want
  - Assistant can be asked for recipes that can be made with certain ingredients so that you can cook with ingredients that you may already have at home
  - Assistant can be asked for recipes that can be made in a certain time frame
  - Assistant can be asked for certain types recipes (e.g. recipes for pancakes )
- Smart Appliances
  - Appliances include all major kitchen appliances as well as tools used in ingredient preparation
  - Appliances can be given names by the user for easy reference with the voice assistant
  - When cooking with multiple people, users can announce with appliances they are using
  - System can give feedback on choice of appliance for a task
  - System can also use telemetry from the appliances to give feedback on the user's technique
  - The device can also notify users when they are finished with a task via haptic feedback mechanisms
  - Devices include smart mixer, knives, pots, and pans.

## **Narrative:**

The user initiates interaction with the voice assistant by asking for help with a recipe. The voice assistant asks how many cooks there will be and for each cook to register themselves with the voice assistant by providing their names. From here, the user who initiated interaction specifies the recipe they want to do or asks the voice assistant for a recommendation of a recipe

based on the appliances registered with the assistant, previously liked recipes, an amount of time, a list of certain ingredients, and the number of users registered. The user can also request that the voice assistant starts one of their created playlists.

Once a recipe is selected and the users are registered, the voice assistant will divide preparation steps among the users. Once the minimum number of preparation steps necessary are completed, the voice assistant will instruct the users on how to begin incorporating their prepared ingredients into the cooking vessel or vessels. At this point in multiple user scenarios, a subset of the users will be assigned to combining ingredients in the cooking process, while other users prepare further ingredients to keep the recipe moving forward. If there is only a single cook, the voice assistant will pack preparation steps into the waiting periods while the previously prepared ingredients are cooking.

If the user has smart appliances registered with the voice assistant, the voice assistant will offer feedback based on how the users are operating the appliances. The user may do a step incorrectly, at which point the voice assistant will offer advice on how the user can improve their techniques.

Once the recipe is finished, the voice assistant will enter waiting mode while the users go to eat. When the users come back from eating, they will announce this to the voice assistant, at which point it will ask for their names again to determine which users will be present in the cleaning mode.

At the beginning of cleaning, the voice assistant will ask if the users would like to continue their previous playlist or begin listening to a new one. After selecting music options, the voice assistant will delegate the dishes used in the course of the recipe to users, assigning one at a time, and giving each user a new assignment, once they tell the voice assistant that the dish is cleaned.

Upon completion of the recipe, the voice assistant will ask the user to rate their experience with the recipe. This rating will affect both the likelihood of the current recipe being recommended to other users and the likelihood of similar recipes being recommended to this user.

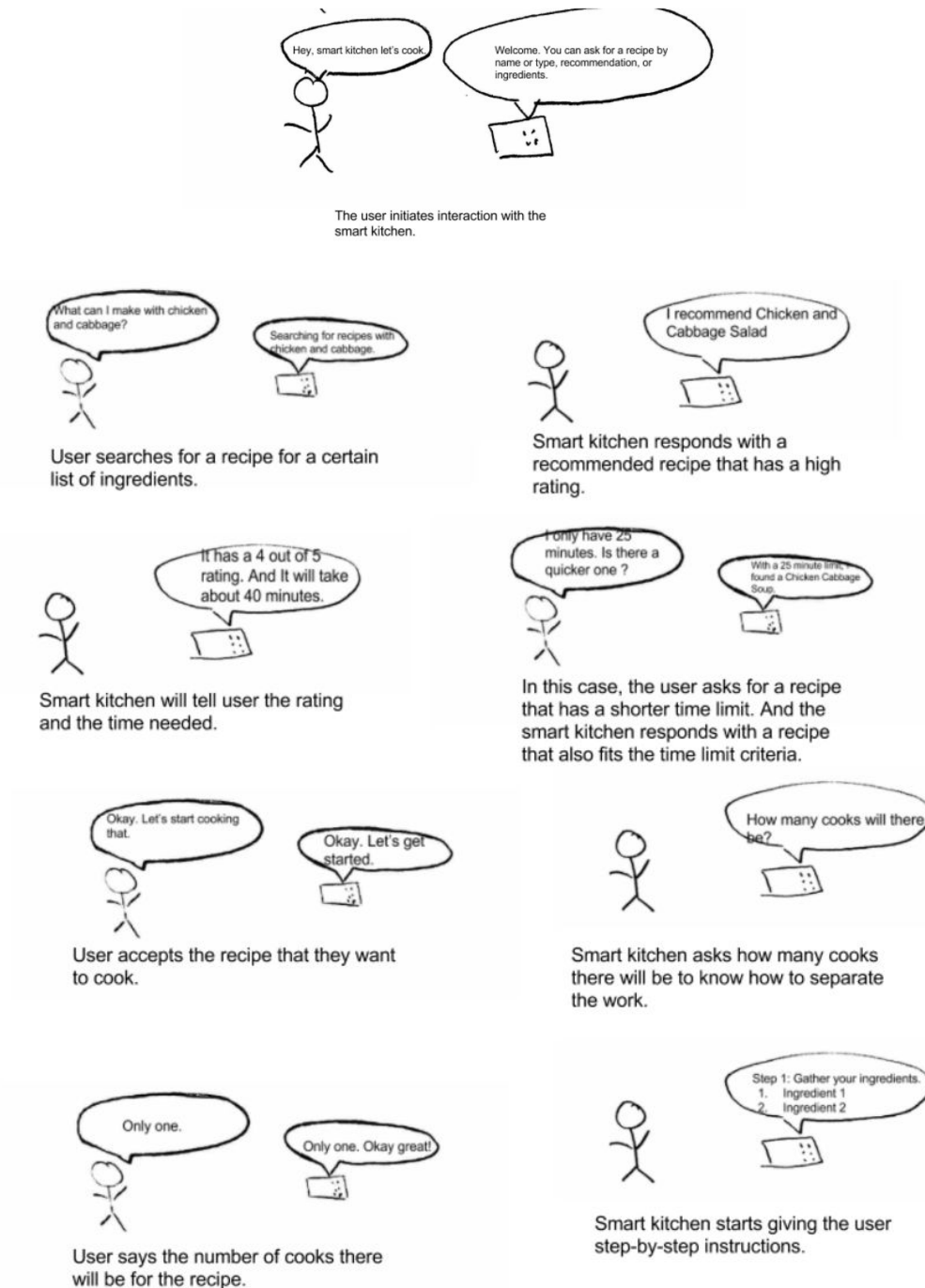
When the user isn't using the voice assistant for cooking, they may want to either add a new smart appliance or add music to one of their playlists. In order to add a smart appliance, the user must first set up the appliance on the network the voice assistant is on, and then press the pairing button on the appliance. Once this is complete, the voice assistant will ask the user what they would like to name their new device, and the user will provide a name.

When the user wants to add a new song to a playlist, they can either specify the name of an existing playlist or a new name. If the name is new, the voice assistant will verify with the user that they want to create a playlist with that name. Once the playlist is selected, the user will specify the name of the song they want, and the voice assistant will find one with that name. At this point, the voice assistant will give the user the full name of the song it found and play a short segment to verify that this is the song the user wants. Then, the user can either accept the song or



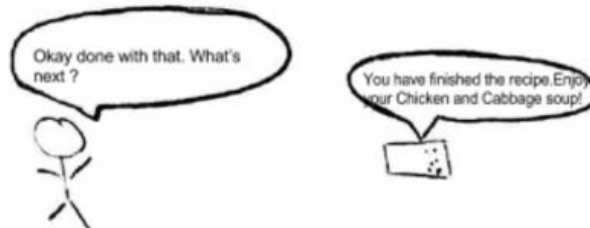
the ask the voice assistant to find another, at which point the voice assistant will repeat the process of verifying the song to the user.

## Storyboard 1 : Selecting and making a recipe

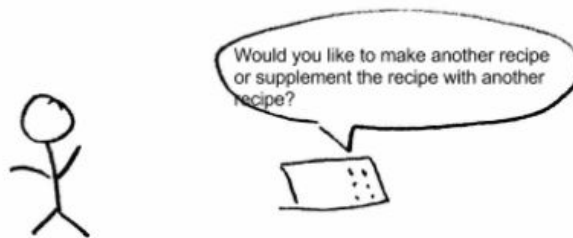




User finishes a step and asks for the next step in the process. This happens until the user is finished with the recipe.

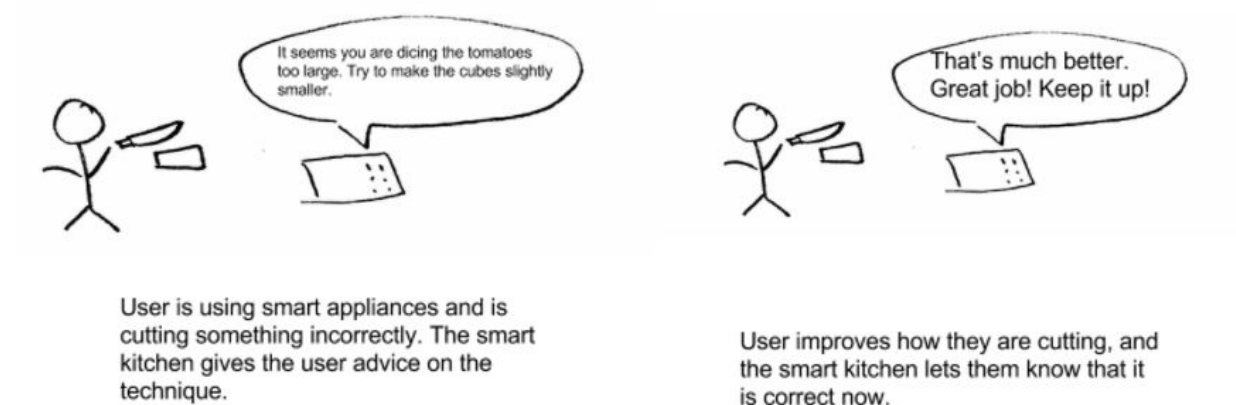


User finishes the recipe.

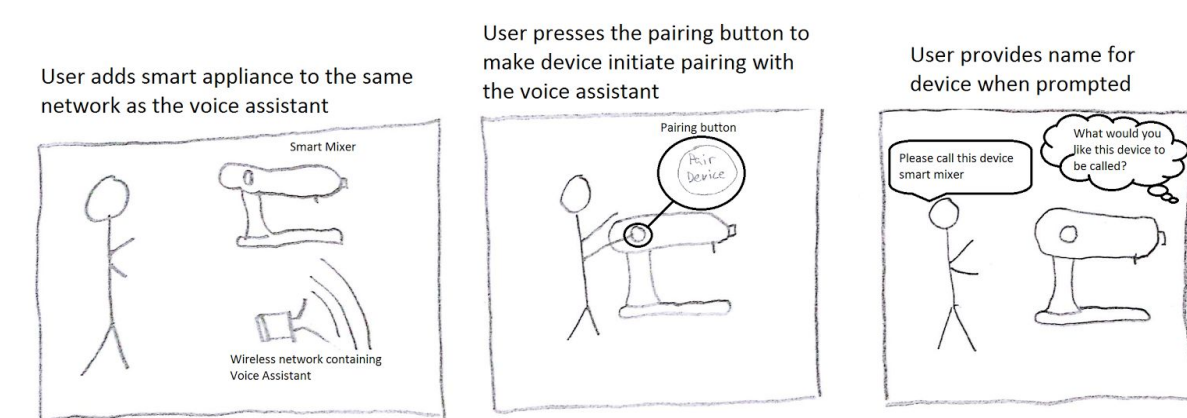


Once the recipe is finished, the smart kitchen will ask if the user wants to make something else.

## Storyboard 2 : User does a cooking technique incorrectly



## Storyboard 3 : Pairing a smart appliance with Voice Assistant



### Justification:

Cooking is a social and cultural activity that can bring people together. And many individuals find the creative aspect of cooking to be enjoyable; however, there are some individuals that simply do not know how to cook or do not see the activity of cooking as an enjoyable activity to do because it is difficult or time-consuming or both. We want to create a design that will not only make the activity of cooking more enjoyable for the people that already know how to cook or like to cook but also for the people that are inexperienced or who see

cooking as more of a chore. Since cooking is a hands-on activity that has a lot of moving parts, it seemed that there needed to be a design that didn't require you to touch to interact with it, other than the tools that you already use in the kitchen. This is where the smart kitchen fits in. We wanted a design that could make cooking easier to do for those who were novices so that they could partake in the social, creative, and enjoyable activity that is cooking by making a design that was easy to use and would not intrude on the process of cooking that already exists but instead to add functionality to the tools that are already used and a voice assistant to coach you and aid you in cooking to make the experience easier and more enjoyable.

One of the most significant pieces of information that we discovered in our previous research was that many did not cook because they did not have time and they thought that it was difficult. That is why there was a rise in microwavable and prepacked meals in recent years; therefore, the design needed to make the process easier and less time-consuming. That is why we decided to add markers to recipes that define what difficulty and the approximate finish time. This way the user can ask the assistant for recipes that they can accomplish based on their experience level in cooking as well as the amount of time that they have to cook. This way they know what they are getting into, and they know that there are easy and quick options that will fit in their limited amount of free time. To also reduce the amount of time needed to make a meal, a reduction in the amount of time needed to go shopping was also something that needed to be targeted. If the user had certain ingredients at home already, but didn't know what to make with them, they could ask for recipe recommendations that could be made with a list of certain ingredients. This was added simply to allow users with limited time or ingredients to also make a good meal quickly. In order to attempt to decrease the amount of time cooking, the device will also suggest multitasking. Although more novice users should do most of the meal preparation at the beginning, they can learn to multitask cooking and preparation for future steps, and more experienced cooks can take the advice as well to optimize the amount of time needed for a recipe. In addition, the device has features to guide the user through the steps through the voice assistant, stating what needed to be done next and how it needed to be done. Cooking has a number of techniques that are involved in the creation of meals, and in more complicated recipes, the timing needs to be precise. The user, at varying levels of experience, will need help with simple or complex tasks. That is why the smart appliances use telemetry from the appliances to give feedback on the user's technique via haptic feedback mechanisms or voice depending on the type of warning or information that needs to be communicated to the user, such as a need to correct how they are doing a certain technique or if they need to do something like turning a burner off.

Another reason that we found many did not want to cook was that people who did not cook perceived that cooking was boring. Many of the people that do cook know how cooking can be an exciting and enjoyable activity to partake in; therefore, these ideas of excitement and fun needed to be conveyed to people who believed the opposite. The social aspect of cooking is something that makes it so enjoyable. We wanted to incorporate a social element in order to

make it easier for people to include friends and split the work among themselves. It makes the process not only easier to do because the work is split up, but it also allows friends to increase bonds, create great memories, learn something new, and attempt a recipe that the user may not have attempted on their own. This leads to the idea of creativity, which is also a large component of cooking and one that also makes it more interesting and enjoyable. Having friends over can make you more adventurous in the meals that you create, and the user can foster and feed off of the ideas of others to create dishes that they never knew they could. In order to further increase creativity, a recommendation system was added. This feature would give the user the ability to get recommendations that they could use and create with, and they could get supplemental recommendations, such as spices, sides, wines, in order to enhance their recipes with something new and exciting. Lastly, the functionality of music was also implemented to increase the enjoyment and fun of cooking. Some would see cooking as time-consuming and music aims to make cooking more fun by adding a form of entertainment to cooking that many already enjoy and that can make the time pass more quickly. And with the creation of cooking playlists, the user can easily start a set of songs that they may want to listen to while cooking alone or with friends.

### **Strengths and Weaknesses**

- Strengths:
  - Allows for hands-free communication and interaction
  - Utilizes mainly tools that are already used for cooking, just smarter versions
  - Makes cooking with friends easy to do by splitting up the work evenly
  - Can coach you through the steps of each recipe and cooking and preparation techniques, warning you of problems or incorrect actions
  - Can inspire creativity through recommendations of side pairings and spices that could be added to a certain recipe
- Weaknesses:
  - For all of the additional features, such as the smart utensils and kitchen ware, it could be expensive
  - Extensive studying of proper techniques will need to be done in order to monitor and comment on the user's technique correctly
  - Doesn't allow the user to see what the recipe may look like. It just provides a description of the recipe to the user

## Citations:

ExtraCreditz. 2012. Extra Credits: Gamifying Education. (May 2012). Retrieved February 24, 2017 from <https://www.youtube.com/watch?v=MuDlw1zlc94>