52 Sprouts

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52sprouts.com
**Introduction**

Food is one of the few things in life that is essential to our survival, and yet oddly something we are increasingly disconnected from. We eat food grown thousands of miles away in places we will never visit by people we will never meet. Most of our food is not even grown anymore; it is manufactured in factory farms and processing plants. We let countless others do the purchasing, preparing, and cooking for us to the point where most of us are terrified of the kitchen. And we eat things that our ancestors would consider more of a science experiment than actual food. How have we become so removed from something so essential to our survival as a species?

Four common complaints arise when it comes to making food at home: time, money, motivation, and skill. The majority of the people we spoke with complained that there simply is not enough time in the day to cook, that it is cheaper to eat out, that they are not motivated enough to cook for themselves, or that they lack the skills necessary to make delicious food at home. As we will show, all four of these complaints are simply not true. What is true, however, is that we no longer prioritize cooking. Why bother when you can grab some takeout on the way home from work, pop in a microwave dinner and have something ready in under five minutes, or go to a new trendy 5-star restaurant that everyone has been raving about? A trillion dollar industry has been built to make it faster and easier to eat food prepared by others rather than ourselves.

Unfortunately, this lack of prioritization when it comes to making our own food has contributed to some major health problems over the years. The connection between our health and what we eat is obvious. We have known for several millennia that we are what we eat. Hippocrates wrote as early as the fourth century BCE: “Corpulence is not only a disease itself, but the harbinger of others” (Johnson, 2010, p. 10). By the 18th century, doctors began routinely recommending moderation, and the first popular diet books appeared (Haslam & Rigby, 2010). Yet even with a long history of knowing that overeating is bad for us, we still do it, and in record numbers. According to the latest stats from the Center for Disease Control (CDC), over 35% of U.S. adults and 17% of children are clinically obese (Ogden, Carroll, Kit, & Flegal, 2012). The CDC also points out that obesity is the leading cause of most preventable deaths from heart disease, stroke, type 2 diabetes and certain cancers. Furthermore, the medical costs associated with obesity-related complications is upwards of $150 billion annually (Finkelstein, Trogdon, Cohen, & Dietz, 2009).

What does obesity have to do with cooking at home? When we eat out, it seems we make less healthy choices when it comes to what we eat. On average, we eat more calories, more fats, more salt, more sugars and more processed food when we eat out than when we cook at home (Lin, Guthrie, & Frazão, 1999; Lin & Guthrie, 2012). Due to the extra effort involved, people do not typically make French fries or triple layer chocolate cakes when they cook at home. At restaurants, however, such indulgent foods are just an order away. We have also increased the amount of money we devote to eating outside the home. We are now spending over 40% of our food budget and
getting close to 33% of our daily calories from food made outside the home, which is almost double what we were spending and consuming just thirty years ago (Lachat et al., 2012). Increases in obesity closely follow increases in calories obtained from dining out. While we must be weary of confounding correlation with causation, the research clearly suggests that what we eat when we dine out has some impact on our waistline.

Our Master’s final project, 52 Sprouts, is a native iOS application designed to encourage people to cook more often at home. We asked ourselves: how might we nudge novice, yet motivated, people to cook more at home with fresh produce? By combining findings from psychology and behavior change literature, information about local and in season ingredients, and the best in mobile app design methodology, we think we have created an engaging and novel way to get people to cook more frequently at home. In doing so, we hope to help people lead healthier and happier lives.

Mission Statement
Encourage people to cook more often, use fresh, seasonal ingredients, and lead healthier lives.

Why Cooking Matters
We have been cooking our food—transforming raw ingredients into cooked nourishment in some form or another—for at least 1.8 million years. In Catching Fire: How Cooking Made Us Human, Richard Wrangham (2009) makes a compelling argument for the “cooking hypothesis,” claiming that it was our cooked, calorie-dense creations that allowed the human brain to grow larger. This led to increases in cognitive abilities, and the freedom to spend time doing more than simply digesting. That spare time, he argues, allowed humans to move past their fellow primates in terms of social and cultural achievements. Aside from this deep ancestral connection with the past, cooking at home introduces a level of autonomy and self-reliance rarely experienced elsewhere in modern society. As we transform raw ingredients into meals to eat and share, we too are transformed from simple consumers to producers. Cooking allows us to make something with our own hands in a world where we typically only consume finished products made for us. As Michael Pollan (2013) points out in his recent book on the history and importance of cooking, Cooked, being a constant consumer “breeds helplessness, dependence, and ignorance and, eventually, it undermines any sense of responsibility” (p. 19).

In some ways, cooking can be seen as a small yet significant protest against the highly specialized capitalist consumer society we live in today. Food and cooking also bring people together. The acclaimed anthropologist, Claude Lévi-Strauss (1969), said in his iconic book on food and culture, The Raw and the Cooked, that “cooking establishes
the difference between animals and people... Not only does cooking mark the transition from nature to culture, but through it and by means of it, the human state can be defined with all its attributes” (p. 164). Echoing Lévi-Strauss’ prophetic words, people we interviewed said one of the main reasons they still took the time to cook was to connect with friends and family while sharing good food. At a time when going out has almost become the default, putting in the extra effort to cook a meal from scratch shows someone you truly care. Add on to all these fundamental human components the fact that cooking at home tends to be healthier and cheaper, and it is a wonder we ever stopped doing it for ourselves.

**Barriers to Cooking**

During our user research, the people we spoke with repeatedly mentioned that time, money, motivation, and skills were what prevented them from cooking more at home.

**Time**

In terms of time, people felt it was simply faster to eat out, grab something pre-made, or make something frozen than cook fresh food from scratch. While it certainly can be faster to eat out, it is by no means the time saver people make it out to be. If you add in driving to the restaurant, finding parking, waiting in line, ordering and serving time plus the time it takes to consume additional items you might order because it is “quicker” (like dessert), eating out easily becomes just as time-consuming (if not more so) than cooking at home. Again, the problem seems to be more of a prioritization issue than an actual lack of time. Americans now spend more time watching cooking shows on *Food Network* than they do actually preparing food (Pollan, 2013). When people describe cooking as time consuming, we think they are actually using cognitive load as a proxy for time (Thomas & Weaver, 1975). Since there are infinite possibilities in the kitchen, cooking requires planning and a number of small, seemingly arbitrary decisions that can be mentally exhausting (Sela & Berger, 2012). Compare that with eating out, where one typically has a few restaurants within a limited range and a much smaller menu of items to choose from than the infinite possibilities of cooking at home, and it is easy to see that eating out can be mentally less taxing.

**Money**

When it comes to money, cooking at home is clearly a money saver. According to a 2012 Zagat survey of restaurants across the country, the average cost of a meal dining out was about $35 (Zagat, 2012). Compare that to the United States Department of Agriculture’s (2013) *Weekly Cost of Food* estimates, which, at the most liberal end of the spectrum, estimates food costs for a week’s worth of food at $83. If there are 21 meals per week, that puts the cost of a meal at home at an astonishingly affordable $4 a meal. But those are just statistics. What happens in real kitchens when it comes to costs? When talking with people about their perceived cost of cooking at home, many felt they had to recreate the extravagant dishes they would order out or see featured...
on recipe websites. These fancy concoctions inevitably required exotic spices or special ingredients that necessitated a trip to the grocery store, increasing both the time and cost of the meal. Ironically, when we interviewed professional chefs who make elaborate meals day in and day out, they mentioned that they cook the simplest of food at home, minimizing time and ingredients. Most professional chefs had a few simple recipes they could whip up in a moment’s notice, without any additional fuss or preparation.

**Motivation**

Motivation is the most difficult barrier to overcome. We understand the limitations of a mobile application in terms of increasing intrinsic motivation, and do not have the expectation that we can convince someone who is not interested in cooking to cook regularly with fresh ingredients. In fact, research on behavior change demonstrates that an action is more easily performed by tapping into existing motivations, and focusing instead on lowering the **effort** required to perform the action or increasing the **triggers** in the environment that cause an action to occur (Fogg, 2009). BJ Fogg, founder of the Stanford Persuasive Technology Lab, created a model for effective behavior change in which a behavior is achieved with the right combination of motivation (innate desire to do something), effort (amount of work required to do the behavior), and well-placed triggers (things in the world that remind you to do a behavior). Someone who is highly motivated is willing to exert more effort to perform an action. Conversely, someone with high skill requires less motivation to complete an action. By focusing on users who were already motivated to cook but were being blocked by other barriers, our app actually has a chance of achieving our desired outcome: people cooking more at home.

**Skills**

Lastly, when we spoke with people about their skills in the kitchen, most actually knew the basics (chopping, sautéing, mixing, etc.), but felt insecure in their ability to create good food without following a recipe verbatim. Recipes, unfortunately, added to the perceived difficulty of cooking at home. People complained that recipes were often overly complex or difficult to follow, encouraged rigidity or mindless cooking, and employed techniques that the home chef was unfamiliar with. A home chef that does not believe she is good at cooking, rarely receives positive feedback about what she makes, and consistently chooses recipes that are out of reach, can quickly create a vicious cycle that reinforces the idea that “eating out is easier.” Thankfully not all is lost on the aspiring home cook; a few simple words of encouragement might be all she needs to keep trying. We observed several cooking classes put on by Three Squares, a non-profit organization focused on empowering people in the kitchen. We noticed that a majority of class time was spent simply encouraging people to try new foods, reassuring them that what they are doing is the right thing, and letting them know that their food will turn out great. We were lucky enough to interview Samin Nosrat, a well-known Bay Area chef and cooking instructor who taught Michael Pollan how to cook
for his latest book. She confirmed that much of what people end up paying for in a cooking class is simply someone to tell them they are doing just fine (S. Nosrat, personal communication, February 20, 2013).

We created 52 Sprouts as a platform to tackle all four issues: time, money, motivation and skill. On the time front, we observed that if people waited until late in the day to decide to cook dinner, they had already missed their opportunity. By the time they got home from a long day at work—tired, hungry, and lacking ingredients needed to make the complicated recipe they picked—the immediate payoff of a meal out would win over a home cooked meal. In terms of money, we designed the app to make it easy to share simple, easy-to-make recipes using in season (and therefore cheaper) ingredients. If a dish has only a few ingredients and a short description, we think it will by necessity be cheaper than their more complicated counterparts found on traditional recipe websites. In terms of motivation, we decided to narrow the scope of our user group to novice cooks who already have some motivation to cook more, but need a nudge to overcome the other barriers. Part of that strategy is to help our users improve their cooking skills. To do so, we wanted to build on what we heard while observing cooking classes and bake in positive reinforcement. We use an encouraging tone of voice throughout the app, letting users know things are alright, and that even if everything goes completely wrong in the kitchen, they are still learning and improving their skills. The worst thing they can do is to not try at all.

52 Sprouts, the App

Now that we have made the case for cooking as an important part of healthy living, showed that many commonly perceived barriers to cooking can be overcome, and shared some insights from our research phase, we will explore how those findings translate into a beautifully designed mobile app that increases the likelihood of cooking at home.

Ingredient of the Week

With 52 Sprouts, we want to simplify the cooking process, thereby making the decision to cook at home easier and more frequent. Breaking down complex or ill-defined problems into smaller, more achievable steps has been shown to increase the likelihood of completing a task (Fogg, 2009). To break down the cooking process, we start by simply picking an in season ingredient to focus users’ efforts each week (hence 52 Sprouts). We discovered many cooks feel overwhelmed when picking a recipe unless they have a starting point like an ingredient, cuisine or some other constraint that makes the search for recipes or inspiration easier. By choosing an ingredient for users, we already eliminate a huge chunk of the recipe search space and transform the question from the daunting, “what can I cook tonight?” to the more attainable, “what can I cook with X tonight?”
Rich Ingredient Information

We also provide rich information about the ingredient including when it is in season, how to shop for it, how to store it, what it pairs well with, common preparation techniques, and substitutes in case someone cannot find or dislikes the ingredient that week. The thinking behind this additional information was that we could encourage users to create dishes without even having to look up a recipe. Lastly, rather than having to search for recipes, the app features a stream of user-created posts so that the user deciding to cook can simply browse—a cognitively less taxing activity than searching.

Fig. 1 – Ingredient of the Week and Ingredient Information
Precommitment

Next, we employed behavior change techniques to nudge users to schedule a day to cook in advance. Scheduling allows the app to set a reminder for the user the day before to purchase ingredients or plan a meal. Several studies have shown precommitment (setting a specific date and time for doing something) to be a powerful way to get people to do what they say they are going to do (Ariely & Wertenbroch, 2002). Both the in-app prompt asking users to pick a day to cook and the reminder the day before the schedule cooking day act as triggers, or behavioral cues, designed to get people to do the desired activity.

Fig. 2 – Scheduling a Day and Cooking Reminder
Sharing Creations

Finally, the app allows people to easily share their creations with the larger 52 Sprouts community, receive positive feedback about their experiences with the current ingredient, and see their progress throughout the year. Users are encouraged to “Sprout” what they make each week, which can include a title, a description, a photo, and a list of ingredients used to make the dish. Sprouts can be photos of food the user created, a recipe they want to share, or tips and tricks they have learned about the current ingredient. When users open the app, they see the “Feed” which is a stream of all 52 Sprouts users’ contributions, making it easy to find inspiration for their own journey with the ingredient. Users can also “heart” posts they like, saving them for easy access later. Unlike traditional recipe websites, which have a get in, get your recipe, and get out feel, we allow users to see their progress over time. On the users’ profile pages, we show them all the sprouts that they have shared and liked to date. Knowing that like-minded people are all tackling the same ingredient at the same time should provide some social motivation to cook more often.

Fig. 3 – Adding a Sprout and Sharing in Feed
Positive Reinforcement

Throughout the app, we use positive, reassuring language to let the user know they are on the right path. We want the app to remind people that anyone can cook, not just professional chefs. Building off of the observation that cooking classes are mostly about encouragement, we added the ability to like posts so that users can get encouragement from the community.

The Design Process

While designing and building our app, we followed an iterative, human-centered design process similar to the one espoused by the well-known design firm IDEO. The basic outline of the IDEO design process is: understand, observe, visualize, evaluate, refine and implement (Kelley, 2007). With an initial understanding of the problem we were interested in tackling, we moved into user research and observation to see if our assumptions matched reality and better understand the needs, goals and desires of our target audience. We spoke with a variety of potential users and subject matter experts: people who cook and people who do not, professional chefs and novices in the kitchen, cooking instructors, and cooking class participants. While academic research and statistics certainly helped us understand the problem space, talking with actual people about the problems they faced allowed us to better empathize with them and create something that was truly useful. Armed with the insights we highlighted above and the research phase mostly finished, we moved into visualization, starting with lo-fidelity sketches and paper prototypes. We then shifted into medium fidelity wireframes and simple clickthroughs, and finished with hi-fidelity mockups of the final visual design. At each step in the visualization part of the process, we evaluated our design decisions by showing our designs to potential users and getting feedback. During one such feedback session on one of our medium fidelity prototypes, we had the realization that for version one of the app, less was more, and we refined our app to remove any features that might distract from the main goal of getting people to cook more often. After about fifty iterations, we honed in on our final design and worked on implementing it.

Implementation

We built 52 Sprouts using 2 primary tools: Parse and Xcode. Parse is a “Backend-as-a-Service” framework that provides complete server infrastructure and data storage in the cloud, with native SDKs for all major platforms. All of the app’s data and content is stored in our Parse database. We built the app using Xcode, Apple’s iOS development toolset, and used Github for collaboration. We also used Facebook authentication for our user accounts, allowing for seamless logins through the Facebook integration in iOS. This project represents our first time building a native iOS application using Xcode and Objective-C. The technical implementation was both a challenge and a success, and as we sprinted to build the various features in our design, we were able to quickly gain a deeper understanding of mobile app development in iOS.
The Future

We will submit *52 Sprouts* to the App Store, and hope it will be available late June 2013. We plan to support *52 Sprouts* for 52 weeks, giving us a year of content, user-generated creations, and learnings. We have already selected 52 ingredients and scheduled them based on when they are in season. Keeping the app running for a year will require a small amount of weekly preparation, including generating content for the Information page, finding an image for the banner at the top of the Feed, and cooking and posting at least one recipe to seed the Feed with a *Sprout* from the 52 Sprouts user.

Additionally, we plan to continue the development of *52 Sprouts*. There are a number of features that we would like to incorporate into a second version of the app, including richer ingredient history, richer notifications and additional triggers, ingredient linking/filtering, personal tracking and visualization, and commenting on posts. We have begun beta testing and are collecting feedback from a small group of users on what features work best. Finally, if *52 Sprouts* is successful on the iOS platform, we would like to expand to Android and the web. With Parse as our backend, we already have access to Android and JavaScript SDKs for accessing our database, allowing us to focus on developing the front-end user experience. We are excited for the future of *52 Sprouts* and believe this next year will be a valuable learning experience.
References


