

Cease

Hardware assisted companion app to aid cigarette smokers in quitting.

Team

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Problem and Solution Overview

Smoking is a habit that millions of people engage in across the world. It causes a myriad of deadly health problems to smokers and their loved ones via second-hand smoke. Most people who attempt to quit rely on willpower alone to do it, which is often unsuccessful. We wanted to design a solution to make it as easy as possible to help smokers quit. With the use of a smart filter and a community based application, our solution will give smokers the tools and support group to easily quit smoking.

Design Research Goals, Stakeholders, and Participants

For this project, we decided to restrict our focus to college-aged smokers instead of the entire smoker population. Since smokers represent a wide variety of demographics, it's infeasible to try and gather representative data and come up with a single solution that works for every smoker. By focusing in on college students, we can get a better idea of the outside factors that influence cigarette smoking on specific demographic and how to design an appropriate and effective solution. Targeting college students also allows us to easily find a group of smokers willing to take our surveys by taking advantage of social media and other common modes of communication throughout the university.

The main audience of this research was the college-aged smokers who are looking for new methods to either quit smoking or lessen their nicotine intake. Other stakeholders who originally thought would be interested in this design were the friends and family members of college smokers who may be affected by the college student's smoking habit. Both of these groups could be affected by the second hand smoke produced from cigarette smoking. Since we focused on college-aged smokers, we also thought universities may also have interest in this project and the design in order to cut down on smoking among its student body on campus. For example, in University of Washington, smoking is prohibited in most areas on campus; however, these rules are not strictly enforced and are constantly broken. Gathering information about the average college smoker can help university foster a healthier, smoke-free environment.

Our actual research was divided up into 2 main parts: the google surveys and one to one interview with participants. To start, we created google survey questionnaire to poll for basic understanding of the student smoker demographic. The main goal of this questionnaire was to get quantitative data across many college-aged smokers. Some of the questions that we asked were: "When did you start smoking?", "How long have you been smoking", and "How much do you smoke weekly?". These questions were designed to help us grasp basic demographics about the audience we are targeting and to narrow down the candidate who we can interview to get more qualitative data. As a result, the second method that we used was one-on-one interview with the participants we gathered through the questionnaire. The goal of this research was to gather more qualitative data that we missed out during the research done with questionnaire. During this interview, we asked the participants to provide us with some of the reason why they made specific decision to start smoking and some of the effects that they noticed after they started smoking. We also asked if the participants have tried smoking cessation and if so what are some methods that they used and reason behind using that specific smoking cessation method. The responses from the participants allowed us to narrow down our focus when we are designing the solutions.

Design Research Results and Themes

Displeasure towards self-reporting

A majority of the smokers that we have interviewed have communicated a displeasure towards the requirement of having to manually log information every single time they smoke a cigarette. Some participants go through a pack a day, and recording this information twenty separate times in 24 hours seemed burdensome to them. Implementing some sort of automatic tracking feature into our design would be very advantageous. This way the smoker does not have to do any of the information logging themselves. This would also avoid the problem of smokers not reporting whenever they smoked due to feeling guilt.

Social influence

One characteristic that was common among all the people we interviewed was a social influence that motivated them to begin smoking. Some participants had parents that smoked while others had close friends who could supply them with cigarettes. One participant even stopped smoking for a period of time because they were no longer in contact with their friends who smoked. It is very clear that social influences have a powerful effect on the choices people make and closely examining this dynamic will be important in creating an effective design. Some people may feel pressured to continue smoking due to the people around them. And although we cannot force people to end these relationships through our design, we can try and find ways to integrate a positive social impact.

Familiarity with electronic cigarette products

All the participants we talked to either had previous experiences using electronic cigarettes or expressed interest in using them to quit smoking. Some electronic cigarettes provide the benefit of not creating a strong smell that lingers like traditional cigarettes do. This information is very valuable for our design approach. It suggests that we could possibly involve a hardware element into our solution. One possibility could be a smart electronic cigarette that could record information for the smoker. Introducing hardware could allow us to automate and simplify certain tasks that would otherwise be burdensome for the smoker. There are a wide range of designs we could pursue, but knowing that smokers are starting to shift away from the traditional cigarette is critical.

Willpower as main quitting method

One interesting theme that we observed was the overwhelming reliance on willpower to quit smoking. All our interviewees reporting using willpower to quit and the majority of people that responded to our survey also refrained from using anything to help quit smoking. This lack of reliable solutions could be one reason why quitting has been difficult for the majority of smokers. This could also suggest that the other available methods of quitting are simply not convenient enough for the average smoker. This puts even more emphasis on convenience and ease of use for our design. We can borrow elements from other solutions such as gums and patches that gradually remove the smoker's dependence on cigarettes, but also find ways to make it as seamless as possible.

Task Analysis Questions

1. **Who is going to use the design?**
 - a. College aged smokers looking for methods to quit are going to be using the design. We decided on college aged smokers because we wanted to narrow the demographics of our population in order to gather data that was more reflective of our concerned population and smokers around our same age was the most pertinent to us.
2. **What tasks do they now perform?**
 - a. The majority of smokers we gathered data from do not use any smoking cessation aids and instead just stop smoking altogether. They will rely on their own willpower to prevent themselves from smoking and try their best to resist cravings.
 - b. Some smokers use products such as nicotine gums and patches to slowly relieve them of their dependence on nicotine and cigarettes
3. **What tasks are desired?**
 - a. We want smokers to be able to track the amount they are smoking and the amount of nicotine and tar that are going into their bodies. Since smokers do not want to manually record each cigarette they smoke, it would be imperative to minimize the amount of work the smoker has to do to gather this information
 - b. We want to promote a positive social environment that will provide smokers with more motivation to quit. Being able to see the progress of fellow smokers and suggest tips on quitting will make quitting much easier than relying on willpower alone.
4. **How are the tasks learned?**
 - a. Most smokers do not learn about all of the smoking cessation options available to them and usually defer to willpower in order to quit. Some of them hear about ways to quit from other smokers and smoking cessation products on the market.
5. **Where are the tasks performed?**
 - a. People attempt to quit smoking wherever they feel the urge to smoke. It could be locations where stressful situations occur such as work or school, or it could be places where other smokers gather to socially smoke.
6. **What is the relationship between the person and data?**
 - a. Right now, someone's only way to track nicotine intake is to count how many cigarettes in a day they smoke or counting puffs on an e-cigarette. People also know how long it's been since they last smoked to gauge how well their attempt to quit is going.
7. **What other tools does the person have?**
 - a. Quitting tools available to smokers include nicotine gums and patches that gradually reduce the dose of nicotine given to a smoker.
 - b. There are also clinics and behavioral therapy sessions that can help smokers quit but these seem to be rarely utilized
8. **How do people communicate with each other?**
 - a. Although we have found that smoking has a large social aspect, it's rare to see smokers communicate online. Most interactions will occur in person. Some examples include, but are not limited to: smoke breaks, parties, and outside restaurants/bars.

9. How often are the tasks performed?

- a. On average, participants smoke 3 to 6 cigarettes a day, which sums up to be about 1 pack a week

10. What are the time constraints on the tasks?

- a. Many people smoke during short breaks in their day that they have, such as walking between two places, between their classes, or on smoke breaks at work. Usually, smokers will spend 2-10 minutes on a cigarette.

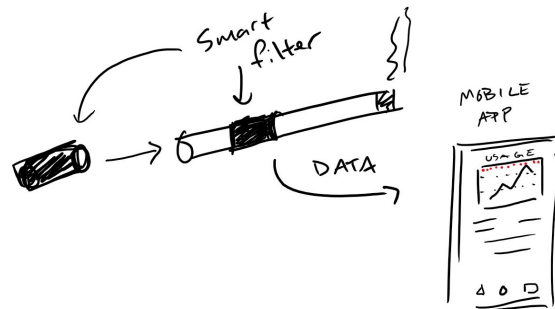
11. What happens when things go wrong?

- a. When people are unable to quit they will eventually go back to their previous smoking habits. They may try to quit again in the future, usually with the same methods, or they will continue to smoke as they normally did.

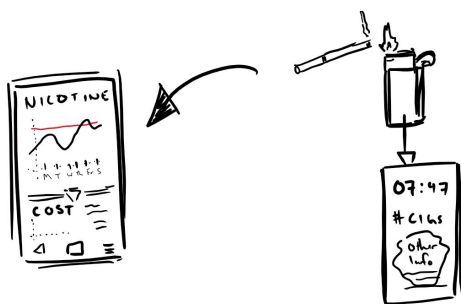
Proposed Design Sketches - “3x4”

Smart Filter with Companion Application

An attachable smart filter that tracks the amount of nicotine, tar, and other dangerous chemicals that are inhaled when smoking. Other information, such as date, location, will be collected and sent autonomously to the application. Along with tracking nicotine, number of cigarettes, and the amount of money spent on cigarettes, the application sets a limit to the amount of nicotine that the person is allowed in a certain time period.



Smart Lighter with Companion Application



A smart lighter that allows people to track their cigarette usage while maintaining a traditional cigarette and lighter combination. A large aspect of this design is to aim for less nicotine intake, while allowing the user to keep track of additional information, so that they are able to better assess their progress. There is also an option to switch to the e-cigarette alternative that pairs well with our lighter. This design will interact with a companion app to control and monitor nicotine usage, stress/triggers, and monetary cost.

Social Buddy Mobile Application

A social interaction based mobile application that aims to promote smoking cessation through positive social influences. The platform allows smokers to set goals to reduce their smoking which they can work towards with their friends. It can also provide smokers with useful information about smoking alternatives. Many smokers picked up the habit because the people around them smoked so utilizing the power of social influence can be very effective for smoking cessation.



Selected Design

Smart Filter & Social Buddy Companion Application

Based on our research, feedback from class, and team discussions, we felt that the combination of a smart filter and the social buddy application is the best direction for our design. We found that the autonomous functions of the smart filter coupled with the social aspect of the buddy application will be very efficient in helping smokers analyze and digest the effects of smoking in order to help them quit in the long run. Something that we have to consider in the future is how we will manage to retain interest and commitment to quitting smoking.

Written Scenarios - “1x2”

Scenario 1: John wants to start a weekly plan to reduce his smoking intake

John is a casual smoker who is actively seeking to reduce the amount he smokes every week and possible to quit smoking. While looking for a good technology that could help him achieve his goal, John discovers Cease. After deciding to use Cease, John receives smart filter and downloads mobile application that syncs the smartphone to the smart filter. John goes to the mobile application and makes his first weekly goal, which is to smoke only 10 cigarettes a week. John also adds the option to reduce his weekly limit to decrease after each week so that by end of 10 weeks, he is no longer smoking. With the goal set up, John goes back to his normal routine of smoking. John can easily remember to put the smart filter onto cigarette because it is easily attachable to his lighter that he always carry around to smoke. After week has been passed, the mobile application shows his smoking trend over the week and lets John know that he reached his goal of smoking only 10 cigarettes this week. After meeting first week's goal, John agrees to continue his long term goal by reducing his cigarette intake by 1 every week.



Scenario 2: Randy seeks support from a social community to help him quit smoking

Randy is a chain smoker who goes through a pack of cigarettes every day. He has tried quitting twice by relying on willpower alone but has gone back to his old habits each time. Randy finds out about Cease through his friend Alex who smokes and decides to get the mobile app and smart filter. He quickly connects with Alex on the app and several other acquaintances who smoke. Randy's goal is to cut down his weekly cigarette consumption by half a pack until he is completely done smoking. Randy uses the smart filter and starts tracking his smoking. Alex notices on the app that Randy's cigarette consumption is too high to meet his goal and reaches out to him to give him personal support. They both visit a smoking cessation clinic and get more information from professionals. With this information and support Randy is able to stay on track and smoke half a pack less the first week.

