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# Pawsitive

Encouraging safe and positive social interactions for dogs

Aeron Langford, Grace Zhu, Megan Vo, ZK Lin

## Problem and Solution Overview

A common problem that dog owners face is handling social scenarios with their dogs in their community. Since there is a wide range of what socialization can entail, our design focuses on tackling interactions between other dogs and unfamiliar owners during walks. In particular, our problem concerns unpleasant and/or awkward interactions between unfamiliar owners and dogs and the nervousness that it creates. While owners already take steps to help reduce anxiety and uncomfortable interactions by actively avoiding other owners on walks, some express the desire to slowly and safely expose their dogs to others, as they believe socialization to be critical for their dog's happiness.

Our proposed solution is a wearable piece of technology that aims to identify the compatibility of two dogs as they interact on walks. The design works by detecting and displaying the dog's mood through light signals on the dog's back. Different colors indicate the approachability of the dog in social scenarios, so other dog owners can act appropriately. Information about each interaction is stored and visually summarized through a phone application. The design works as a way to notify others rather than impede the personal connection between owner and dog.

# Design Research Goals, Stakeholders, and Participants

## Methods and Participant Rationale

Our initial interview with a professional dog trainer was important for gathering reliable information on owning dogs; her perspective was unique due to her extensive knowledge of training and owning dogs. After this experience, we expanded our target participants to a more generalized group of dog owners invested in their dogs' well-being. Thus, we conducted our last two studies with participants who are everyday dog owners.

Research was conducted through semi-structured interviews supplemented with personal inventory and contextual inquiry in order to understand participants' daily interactions. This allowed us to get a better understanding of the common problems dogs and owners experience, which a semi-structured interview alone could not fully provide. Our participants had various levels of experience in owning dogs of different sizes, ages, and temperaments.

## Participants

### Participant 1 (P1):

We conducted a semi-structured interview with retired Research Assistant P1 who adopted her first dog 16 years ago. P1's dog at the time had poor social skills, so she trained her dog to stay calm in the presence of new people. Due to the success of training this dog, P1 became a certified dog trainer and now owns 4 dogs with the oldest being 13.5 years old. We met P1 on Wednesday, January 23 at Cafe Solstice and discussed topics ranging from maintaining the health and happiness of her dogs to positive dog training practices.

### Participant 2 (P2):

Our second interviewee, P2, is a UW computer science grad student who owns a 2-year-old Great Dane. She grew up with dogs, but this is the first dog she has raised on her own. We completed a semi-structured interview and personal inventory of toys with P2 and her dog in her apartment on Saturday, January 26. P2's situation is unique because she is a full-time student and cannot leave her dog alone for more than half a day. P2's main concern seems to focus on socializing her dog and maintaining a level of energy around her dog to lessen anxiety.

### Participant 3 (P3):

We conducted a semi-structured interview, personal inventory, and contextual inquiry with P3, a college professor with experience raising dogs since she was young. She currently has 2 dogs, both of which are a mixed breed, the older dog being a 3-year-old, medium-sized dog and the younger one being a 2-year-old, small chihuahua mix. We met P3 in her house on Saturday, January 26, discussed topics related to P3 and her dog's daily routines and health concerns, along with observing the living environment of the dogs and their interaction with P3.

## Design Research Results and Themes

### Disinterest in Food/Health Tracking Devices

A great insight we discovered is that health tracking monitors are actually unpopular with general dog owners. None of our participants have used pet health tracking monitors before and none of them expressed an interest in these kinds of devices for their dogs after we mentioned them. They believe that they know their dogs well enough, considering all the time they have spent together, and will be able to detect the potential physical/emotional problems through personal interaction with their dogs. Instead of health data, they would like to pay more attention to their dogs when interacting with them.

### Use Dog Services Only When Necessary

We found that our participants use dog services including vets and dog walkers, but rarely do so, due to the high cost. For example, they only take their dogs to the vet when the dogs are sick. It also appears that the participants tend to rely more on their own networks, such as family and friends, when they need dog care.

### Understand the Dog Needs Well

All three participants mentioned the importance of maintaining a strong connection to their dog. Part of their daily routine includes reading the dog's body language to determine when the dog is hungry or feeling unwell. In addition, the participants thoroughly researched the products they provided their dogs with, such as different types of collars and leashes.

Participants P1 and P2 especially noted the significance of maintaining a calm or happy voice when interacting with their dogs. This can limit anxiety when learning new skills and also reduce stress in potentially dangerous situations. Ultimately, reducing owner stress works to maintain happiness and calmness of the dog.

### Concerns about Socialization

One common theme mentioned by all participants was socialization. The participants are consistently concerned by their dogs' interactions with other dogs and unfamiliar humans. Depending on the novel stimuli, the dogs will respond with varying feedback. For example, many of our participants' dogs presented symptoms of nervousness in response to interacting with territorial, aggressive dogs. Nervousness and discomfort were also commonly present in situations involving unthoughtful people who stare or pet dogs without acknowledging the dogs' temperaments. Our participants hope that by presenting their dogs with a wider variety of experiences, the dogs will learn how to safely respond to new stimuli. As dogs are social creatures, this process is also critical for general happiness.

## Answers to Task Analysis Questions

### 1. Who is going to use the design?

Specifically, our design targets general dog owners concerned with socializing their dogs with other dogs and humans. The dogs are at least 5 months old and have already been introduced to and are comfortable with a variety of sounds, smells, and sensations.

### 2. What tasks do they now perform?

- Owners already check in with their dogs every day to make sure that the dogs are happy and healthy.
- They do personal research on their dogs, through online searching and asking pet store workers for advice on products that will not aggravate their dogs.
- They are consistently consciously aware of potential outdoor situations that might be anxiety-inducing for their dog. Thus, they maintain a calm demeanor and avoid provoking situations (ex. crossing the street when seeing a cat).
- Owners understand when their dogs have social needs and are experiencing problems. Specifically, when their dog is in a social situation, the owner is able to discern playful behavior from aggression/anxiety.

### 3. What tasks are desired?

The majority of participants expressed the following desires:

- Ways to calm the dogs down when they are nervous
- Ways to avoid improper social interactions between dogs
- Providing opportunities to safely introduce a dog to a new situation (person or other dogs)
- Identifying and maintaining positive dog-to-dog relationships

### 4. How are the tasks learned?

Many of the tasks are learned through observation and spending time with their dogs. There does not appear to be a pattern of learning their dogs' behaviors through formal tracking and sensing. Thus, our design should not automate the learning process but should assist the interactions and observations for positive socialization from dog to owner.

### 5. Where are the tasks performed?

The tasks are performed at home (indoors and backyard), parks, dog parks, playgrounds, and walkways in the neighborhood. However, our design will look at public outdoor places owners frequent (sidewalks, dog parks, etc.).

### 6. What is the relationship between the person and the data?

Right now, most of the data surrounding the dogs are not formally recorded but rather are a part of the owners' personal knowledge. Moreover, data appear to be personal to the dog owners, but there's potential in sharing the data with other dog owners. However, the

relationship between dog and owner is continuously changing as owners learn more about how their dogs socialize.

**7. What other tools does the person have?**

Owners have tools to help their dogs with socialization such as treats to calm them down and lessen distress. They may also use leashes to remove dogs from provoking situations. Furthermore, owners use their own knowledge (either self-knowledge or by talking to others) and access to search engines to help care for their dogs.

**8. How do people communicate with each other?**

Currently, some participants communicate with knowledgeable pet store workers or other dog owners via talking and/or Facebook groups. They also use text messaging to contact family members or friends caring for the dog. Otherwise, their communication with other owners occurs in person.

**9. How often are the tasks performed?**

Dog owners check-in with their dogs emotional and physical well-being and take them on walks on a daily basis. However, active socialization does not occur as frequently, perhaps once a week or even less, as it may create stress.

**10. What are the time constraints on the tasks?**

Time constraints for more active tasks depend on the breed, age, and health condition of the dog. For instance, P2's dog tires of walks after 30 minutes. Engagement in tasks also seems to be constrained by daily owner responsibilities apart from caring for their dogs (ie. school, work, etc.). Because owners may be busy, it will be beneficial for our design to not take additional time out of an owner's day but rather integrate itself into an already pre-existing routine or task (ie. walking, scheduling play dates, etc.).

**11. What happens when things go wrong?**

When the dogs do not have enough socialization with other dogs, they experience nervousness, oversensitivity, uncomfortableness around other dogs and may have physical reactions, including fighting and biting. When a dog is removed from social situations for extended periods of time, it may feel loneliness. When the dogs do not have enough experience socializing with humans, they can easily be nervous when interacting with strangers, which will lead to biting people and affecting the dogs' mental health.

# Proposed Design Sketches

## Task List

1. Finding neighborhood dog friends to increase exposure to socialization and decrease loneliness of own dog
2. Avoiding improper or provoking interactions from strangers with dogs
3. Expose dog to large groups of people (secondary: reduce over-excitement)
4. Avoiding unfriendly or awkward interactions between dog owners
5. Reducing territorial behaviors of own dogs
6. Identifying compatible dogs as a permanent companion for current dog

## Design 1: Mobile Playdate App

This location-based phone application focuses on community building by connecting dog owners and their dogs to each other within the same neighborhood. The idea is similar to human dating apps, except the idea is focused on helping nearby dogs meet each other by setting up playdates. Thus, the profile is built around the dog primarily with information about the owner as a secondary addition, so that owners know who they are communicating with. Moreover, the design encourages two different types of friendships: “casual” dog friendships (through playdates) and long term companionships (by compiling information of the dog’s friends and sending it to nearby shelters to generate a list of possible companions if the owner wants to adopt). Please see **Figure 1** on the next page for details.

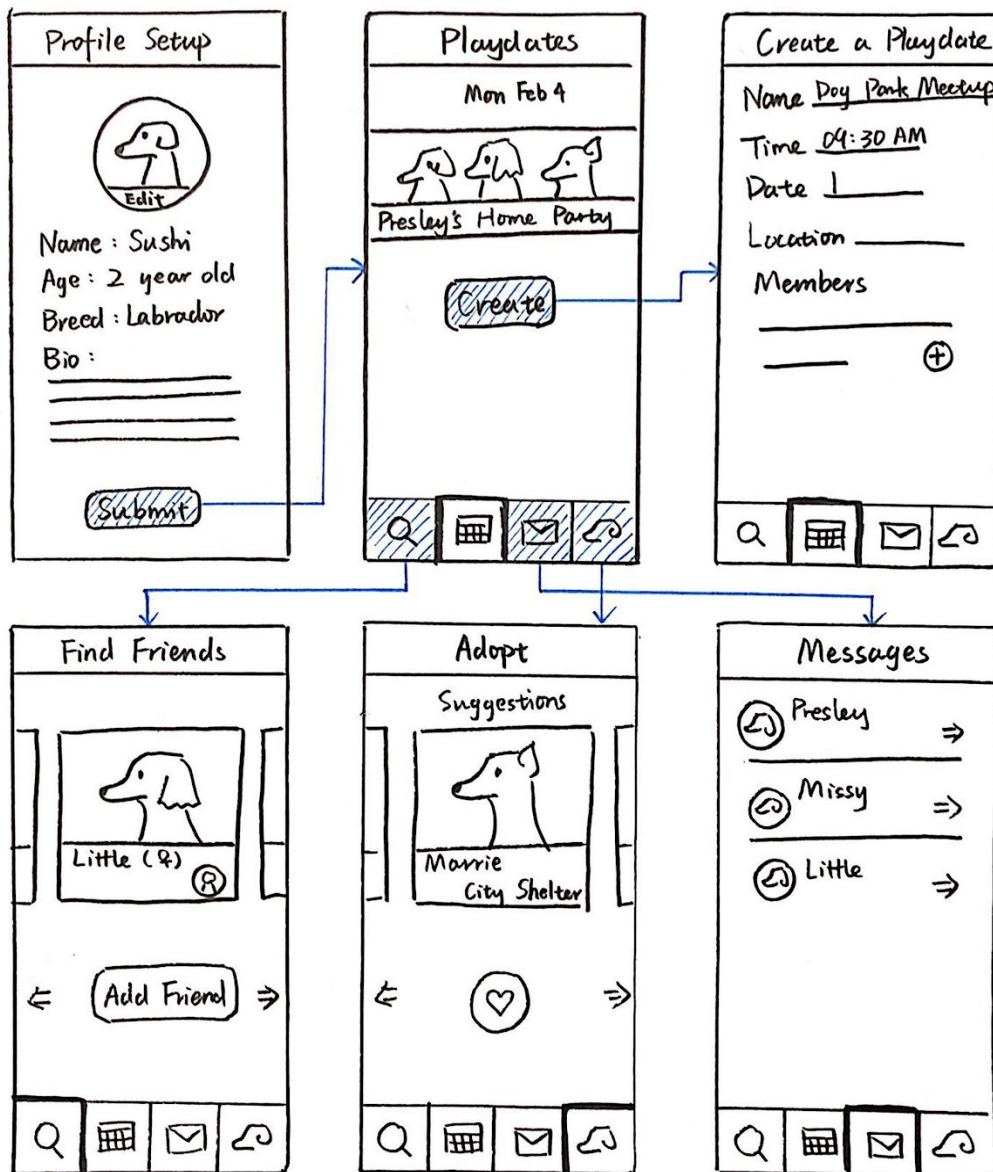


Figure 1: Sketch for Design 1 - Mobile Playdate App

## Design 2: Collar/Leash Wearable

This wearable technology aims to identify and notify participants of the compatibility of two dogs on walks. The design will incorporate three attachable components: a device that detects the dog's mood that can be attached to the bottom of the harness, a LED light that can be attached on the top of the harness, and a button on the owner's leash wristband. Information about the dog (behaviors, likes, friendliness, etc.) is registered online beforehand and stored in the device, so that



when two dogs pass by one another their information is exchanged. The device can then determine whether they are compatible based on the information and the dogs' mood. The result will be shown by a LED light, with different colors signaling approachability of the dog. At the end of the month, the user will receive a monthly report summarizing their dog's interactions on walks (i.e. how many dogs it has interacted with, what kinds of dogs it gets along with, etc.). Please see **Figure 2** for details.

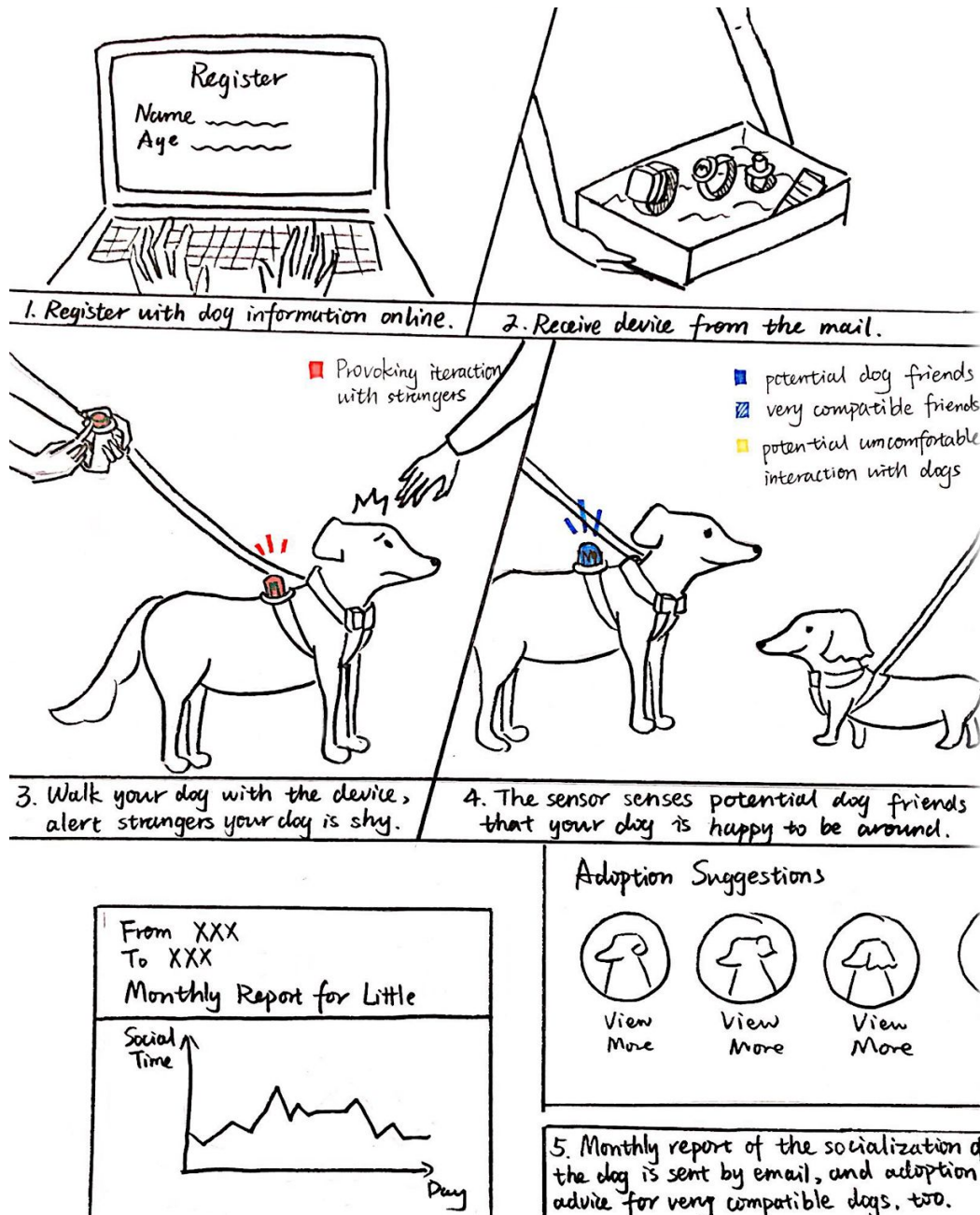


Figure 2: Sketch for Design 2 - Collar/Leash Wearable

### Design 3: Pop-up Event Scheduler Website

This website will provide a medium for dog owners and dog lovers to connect and build community. Every two weeks, a pop-up event will be held in a different Seattle neighborhood. The first week involves registered participants suggesting places and voting to create events that can be tailored to certain types of dogs by personality. The design also allows for the community to connect with dog owners by allowing neighborhood businesses to offer their space for events. During the event, dog owners and attendees can discuss the dogs while dogs play with one another or receive attention from other attendees. Please see **Figure 3** for details.

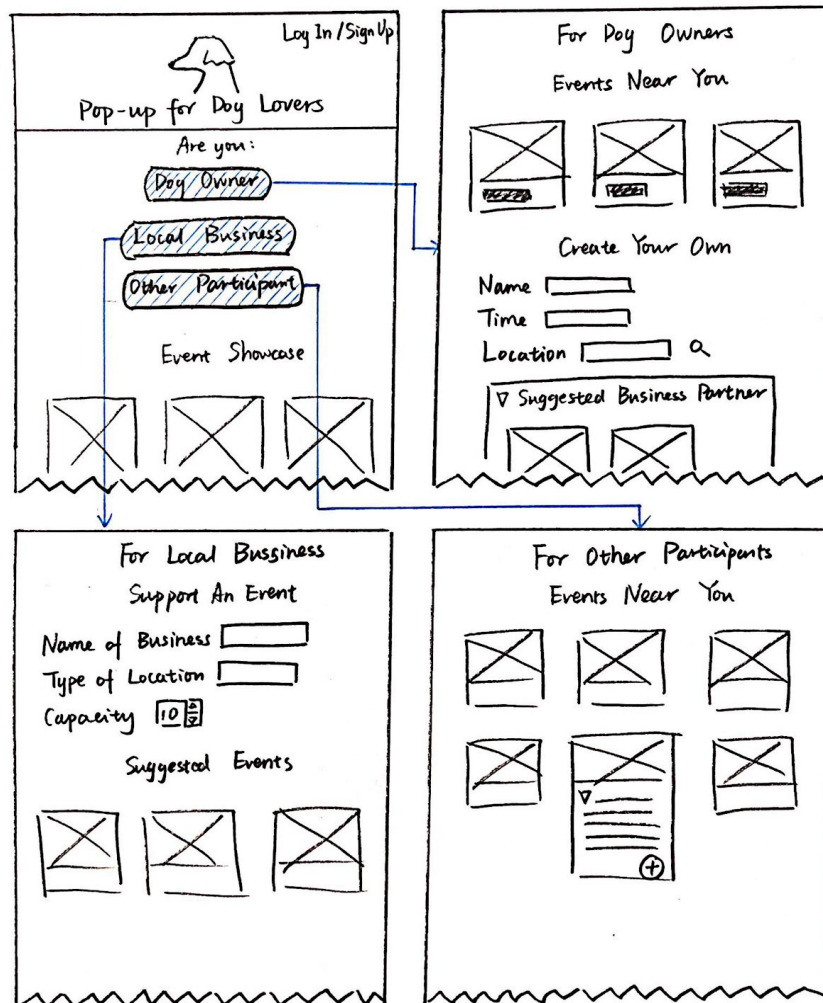


Figure 3: Sketch for Design 3 - Pop-up Event Scheduler Website

We selected the collar/leash wearable technology (Design 2) as our design direction, and finding neighborhood dog friends (Task 1) and avoiding unfriendly/awkward interactions between dog owners (Task 4) as our focused tasks. We chose the collar/leash wearable technology design because it can be easily integrated into the daily routines of owners. This design better accommodates for the owners' busy lifestyle, displays the dogs' preferences in a subtle way, works with different types of existing gears, and most importantly, does not automate any essential caring procedures but enhances communication between the dog and those unfamiliar with them.

According to our research, our participants show strong demand for socializing their dogs positively but also trying to avoid awkward interactions with other dog owners at the same time. For the selection of tasks, we decided to focus on Task 1 and Task 4 because they are more challenging and more important to the owners; Task 2 and 3 are easier to tackle by the owners themselves and Task 5 and 6 are less relevant, long-term goals. We found that owners need a tool to connect and build community in their neighborhood in order to solve the tasks. In addition, once a dog owner has had unfriendly experiences with other dogs and dog owners, they are more likely to pull their dog away from others on walks and restrict social opportunities for their dog. This leads to a loss in social opportunities for their dogs, so Tasks 1 and 4 are inherently connected.

## Written Scenarios

### Task 1: Finding neighborhood dog friends to increase exposure to socialization

Grace is a full-time undergraduate student who just came to study at the University of Washington and moved into an apartment in Capitol Hill, with a 1.5-year-old Australian Shepherd named Presley. Grace and Presley used to have close access to a dog park in the International District that usually has many dogs. Since moving, Presley has not met any dog friends because there is no dog park nearby. Even though they have met some dogs while walking, Grace was not sure whether they would be compatible with Presley and felt awkward to ask the other owners for a playdate. Moreover, Grace has noticed some signs of loneliness such as chewed slippers and excessive barking when she comes home. To combat this, Grace took her friend's suggestion and purchased *Pawsitive* online to help understand Presley's social interaction and increase Presley's exposure to social situations. After a few days, Grace received a package with an attachable light and device. Grace attached these devices on Presley's harness. Then she downloaded *Pawsitive* on her mobile device and started to register an account for Presley by inputting Presley's information including name, gender, compatible types of dogs, etc. One day, Grace and Presley met another dog Tony and his owner Emily, who were also on *Pawsitive*. When they approached each other, both of their lights turned blue! After many positive encounters, both noticed that the lights began flashing blue. Grace and Emily decided to set up a playdate for Presley and Tony so that they can maintain their friendship. Grace is grateful that Presley made his first dog friend, Tony, after moving to the new neighborhood, and Presley is able to reintegrate into the Capitol Hill dog community by meeting more dogs through *Pawsitive*. (See **Figure 4** for the storyboard)

### Task 4: Avoiding unfriendly or awkward interactions between dog owners

Louis is a 25-year-old DX Arts researcher and grad student who owns a 4-year-old terrier named Latte. Louis and Latte both live in a first-floor apartment 20 minutes from the UW. On one occasion, Latte was relieving herself in the front yard and another dog approached her. This dog acted out very aggressively toward Latte, which caused Latte to negatively react and aggressively bark and lunge toward the other dog. This resulted in the other owner threatening Latte and Louis. Louis was very concerned and did not want to have such awkward interactions with other dog owners. Since he did not want to verbally ask other owners whether their dog is friendly, he searched online and discovered *Pawsitive*. With *Pawsitive*, anytime the device senses that an approaching dog and Latte may not have compatible interactions, the light attached to the harness on the back of Latte lights up yellow. Louis then directs Latte away from those dogs, thus avoiding a possible provoking situation and unfriendly interaction with the owner. In addition, when other dog owners see Latte's warning lights, they tend to avoid her so threatening situations are prevented. (See **Figure 5** for the storyboard)

## Storyboards of the Selected Design

Task 1: Finding neighborhood dog friends to increase exposure to socialization

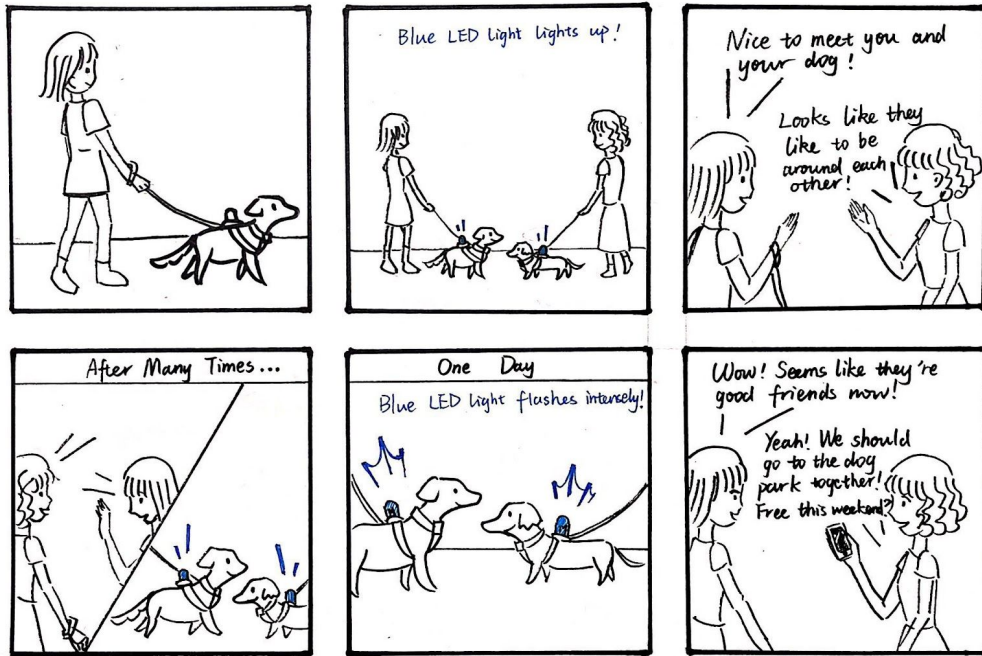


Figure 4: Storyboards for Task 1

Task 4: Avoiding unfriendly or awkward interactions between dog owners

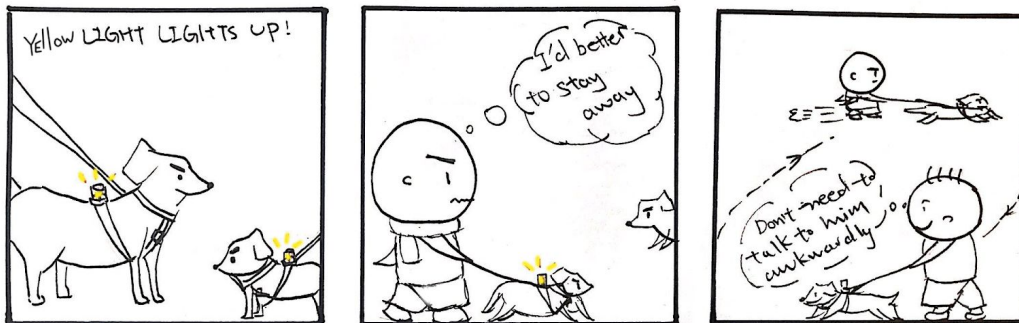


Figure 5: Storyboards for Task 4