

# PowerUP!

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## ABSTRACT

Individuals are struggling to maintain a healthy lifestyle with the already busy life that comes with family and occupation. Finding the motivation to even go out to the gym is just another problem. PowerUP! is a fitness application that seeks to make fitness more relatable and enjoyable, by intermingling the real and fantastic world. So what is PowerUP!? The user completes workouts obtaining points in attributes attached to them. By obtaining enough points in a specific attribute, the user can PowerUP!, changing the character and the interface of the application to a superhero that reflects these stats. PowerUP! has met some success with its layout and usability. However, there are some mixed reviews on the satisfaction level of the ranking up process. By exposing the user to the application over a longer term, we feel that the user can gain a greater satisfaction from the interface. PowerUP! combines the real world and Marvel world, making working out more enjoyable.

## INTRODUCTION

In this paper we look to outline the iterative design process of constructing Power Up!, the pinnacle of comic book themed workout applications. This design process consisted of three distinct cycles, Ideation and Observation, Prototyping, and Evaluation, with each highlighted in detail in the paper. We start off by walking through the Ideation and Observation phase of our design cycle focusing primarily on task analysis, initial interviews and crafting personas. Following this we proceed to Prototyping where we discuss the initial sketches, scenarios, storyboarding, wireframe, code skeleton, feedback, and refined demo able prototype. Next we move onto evaluation where we discuss the results of user interviews and Likert scales test when using our prototype. Finally, we wrap up the paper with some final thoughts on the experience of crafting the app and where we see it going in the future.

## IDEATION AND OBSERVATION

### Task Analysis

To start off our design process we performed a task analysis on two processes, going to the gym and working out at the gym. For these task analyses, we started out using our own knowledge of these two processes to construct hierarchical trees (see, figure 1: Task Analysis and figure 2: Task Analysis 2).

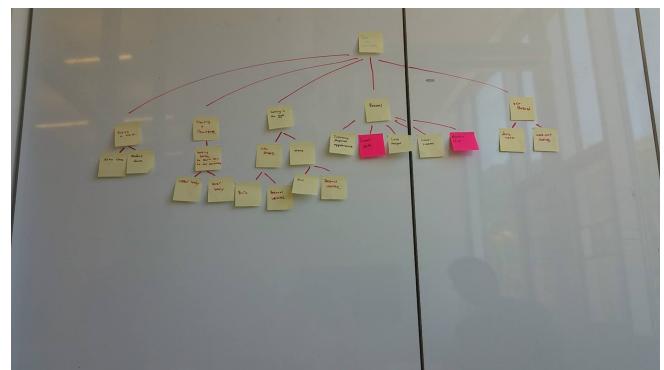


Figure 1. Task Analysis

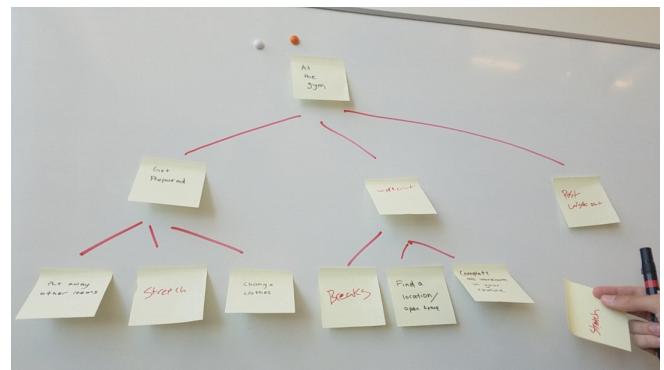


Figure 2. Task Analysis 2

From there we dissected the hierarchical trees for questions/aspects of the gym going experience such as finding the time to go, who you go with, and planning workouts. We then used this information to come up with concrete themes or areas of focus for our application.

### Interviews

Using the areas of focus from are task analysis we constructed questions for an initial round of user interviews. These questions ranged from What motivates you to go to the gym? to Does your job promote a healthy lifestyle (An example of the interview protocol can be found in figure 12). We then went out and found a variety of potential users all of whom were in there 30s to interview.

Question	Answer
Roughly how old are you ?	33
When you are in the gym, what type of workouts do you pursue?	Mostly just the Elliptical
What time do you go to the gym? How difficult is it to find time to go to the gym? Why?	It varies, but usually 2-3am, not very. Because works on India time.
Do you have a weekly routine when you go to the gym or do you just go when you have the chance?	Just go whenever
What motivates you to go to the gym?	Gains, highly functional lungs, having good health for a longer portion of his life. Going to the gym makes him program and game better.
What do you consider working out?	Like a solid hour
What deters you from going to the gym to work out?	Working and don't get to it, and then it gets too late. Also it gets loud and less pleasant later in the morning.
How active are you right now? How active would you like to be?	He likes going to the gym 4-5 times a week, but sometimes makes it fewer
How often do you work out?	He likes going to the gym 4-5 times a week, but sometimes makes it fewer
Do you work out with other people? If not, why don't you. If you do, what type of people do you work out with?	Rarely, because other people flake. Also usually reading while on elliptical, which lessens social aspect.
Does your job promote a healthy lifestyle? If yes, in what ways does it do that and does it benefit your individual lifestyle?	No, not at all. Software dev that works from home.
How long do you typically spend at the	1 hour. That just feels right. If he doesn't

Figure 3. Interview 1

### Personas

Using the areas of focus from our task analysis we constructed questions for an initial round of user interviews. These questions ranged from "What motivates you to go to the gym?" to "Does your job promote a healthy lifestyle?" (An example of the interview protocol can be found in figure 12). We then went out and found a variety of potential users all of whom were in their 30s to interview. These users ranged from single mothers and graveyard shift workers, to RSF gym rats and world travelers. Surprisingly, despite the differences in the users, common areas of need in the 30 year-old gym going experience became quite clear. 1) Motivation to go to the gym

Question	Answer
Roughly how old are you ?	32
When you are in the gym, what type of workouts do you pursue?	I do anything that will make me more muscular.
What time do you go to the gym? How difficult is it to find time to go to the gym? Why?	I usually go in the afternoon. It is not too hard because I can find time to do it right after work. I keep my gym clothes in my car.
Do you have a weekly routine when you go to the gym or do you just go when you have the chance?	Yes, I have a routine when I go to the gym. I do a push, pull, and leg day, with a day for rest in between.
What motivates you to go to the gym?	My friend motivates me to go to the gym. I also go because it is the only time of the day where I don't have to stress about problems with work.
What do you consider working out?	Anything that is a challenge is working out. If it isn't challenging then it isn't working out.
What deters you from going to the gym to work out?	It looks like I am just starting everytime I go. It feels like I don't have a lot of progress.
How active are you right now? How active would you like to be?	I am decently active. I don't do a lot of cardio, so I wish I did more of that.
How often do you work out?	I work out five days a week.
Do you work out with other people? If not, why don't you. If you do, what type of people do you work out with?	I used to work out with other people, but our schedules didn't match up.

Figure 4. Interview 2

and to keep going and 2) Social support, like trying to work out with friends

*Dan is a 35 year old cashier who works at Games of Berkeley on Durant. For most of his life Dan has been engulfed by comic books, video games, and TV. Dan lives in Oakland with his dog Dr. Strange. After work he heads home to post on his YouTube page, DanTheComicMan. This site is where his twitter fans tweet him to cover certain comic arcs, character development, and other comic books theories that are in the Marvel and DC universe. This is a true passion for Dan and he spends a lot of his free time writing and editing videos for his fifty thousand plus subscribers. Dan is well out of his young adulthood and well into the autumn of his life. Sadly with his sedentary lifestyle, his health has been in progressive decline these past few years. Because of his inactive lifestyle and poor eating habits, Dan has developed diabetes, and he needs to add in more physical activities so that he can keep doing the things he loves.*

### PROTOTYPING

#### Sketching

For our sketches, we each tried to come up with layouts for an application that would encourage going to the gym. In this first example we aimed to have a custom fitness section. What we had in mind was for users to scroll and see what they could choose to workout on. Once they choose a workout they can add it to their workout regime.

In this prototype (figure 6.) we wanted to do a four screen app where we would have notes social screen and a challenge screen. The core of this was to use the challenge users to

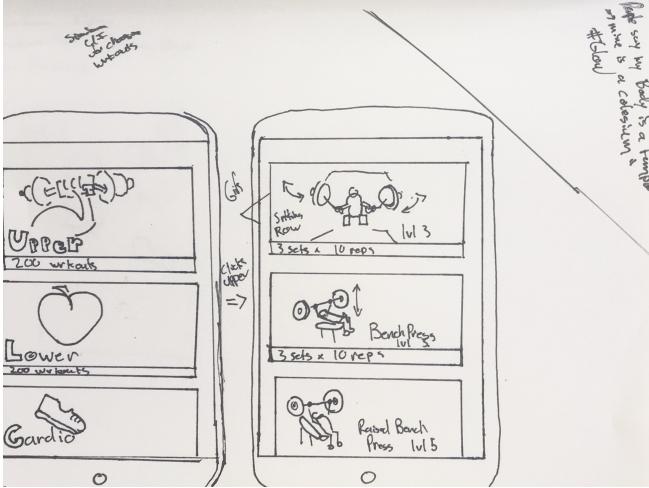


Figure 5. Sketch 1

engage in their workouts because either option A they wanted to maintain their first place position, or option B they want to take down whoever is in first place.

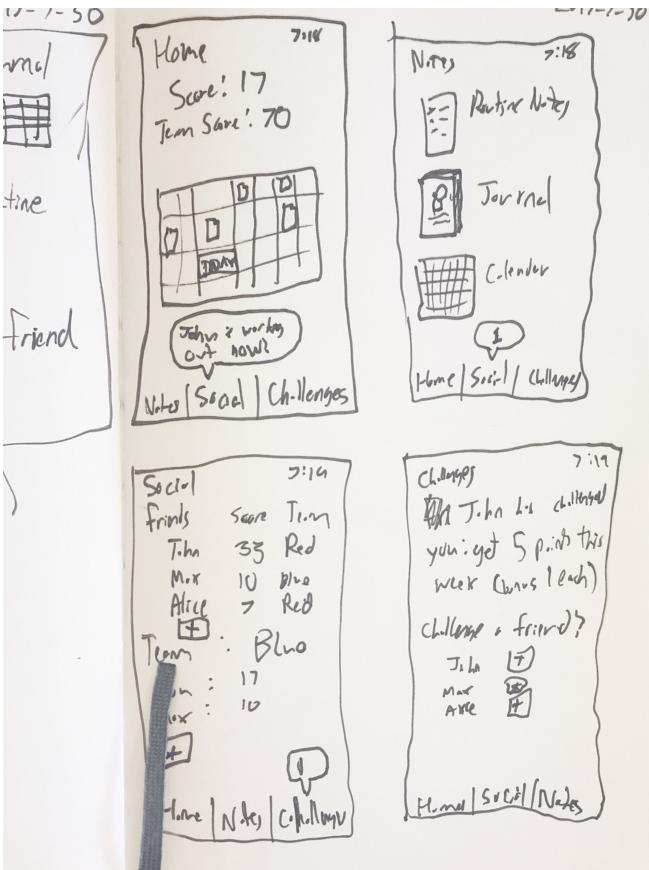


Figure 6. Sketch 2

What we liked about Figure 7 was that it was a simple interface with very little clutter. A lot of inspiration came from this

figure, specifically the use of super heroes as characters, and limiting the scope of the app.



Figure 7. Sketch 3

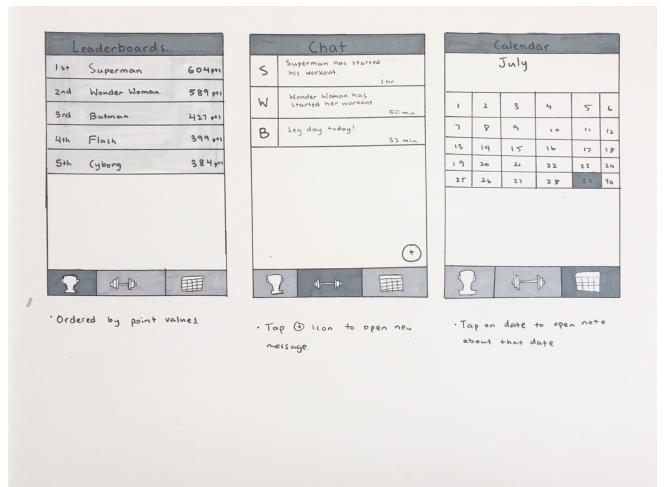


Figure 8. Sketch 4

A common theme was an application that provided communication with friends, tracking progress, and comparing progress with people in your circle. Feedback was provided by peers regarding app-layout and functionality.

### Scenarios

To create a story board we had to first come up with scenarios in which we wanted to have to show what problems will be solved using the PowerUP! app. Below we showed our initial scenarios and scope of what our PowerUP app would entail.

### Scenario 1

John just finished dropping his kids off at school and wants to spend some time at the gym with his friends. However, his friends don't have time during the day, so instead he uses his \*insert name here\* app to set up a workout competition with his friends. This way, John and his friends can have cooperative gym sessions despite their varying availabilities. While John is at the gym, his friends can see his progress and send him tips to help him improve. Similarly, when his friends go to the gym later at night, John can do the same. At the end of the night, they can compare their results and award points to each other. At the end of the month, a winner is selected, and everybody has to treat him out to food.

### Scenario 2

John has been feeling down about his progress at the gym lately and doesn't feel like going today. However, his PowerUP! app gives him a reminder to reflect on his progress so far. He goes back to the app and reviews his journal entries from the previous month. On the journal entries, John reads data on his physical progress as well as small personal notes on how he felt each day. After being reminded about how great he felt after a good gym session, John has newfound motivation to go back to the gym and heads out for a good workout.

### Scenario 3

Today, John is unable to find someone to watch his two kids, Samantha and Jerry, and so he is unable to go to the gym to add points to his team for the \*insert name here\* app. Luckily, the \*insert name here\* app allows John to contribute as long as he is exercising. He decides to do a set of 15 body weight squats and 50 pushups. He also does 500 crunches and planks for 17 minutes. After he collapses from exhaustion, he looks at his phone and sees that his efforts have placed his team in first place on the \*insert name here\* app. Satisfied, John collapses on the sofa and hugs his children as they do their homework.

### Scenario 4

John and his high school buddy Oliver ran into each other at the gym the other day. They talked and found out that both of them frequent that gym, but their schedules are so different that they've never met each other there before. They decide to challenge each other to a monthly health and fitness competition, rekindling an old friendship. Even though they aren't able to physically work out with each other, they can encourage and monitor each other's progress through the \*insert name here\* app. Three years later, Oliver is his best man at John's marriage to Jenny.

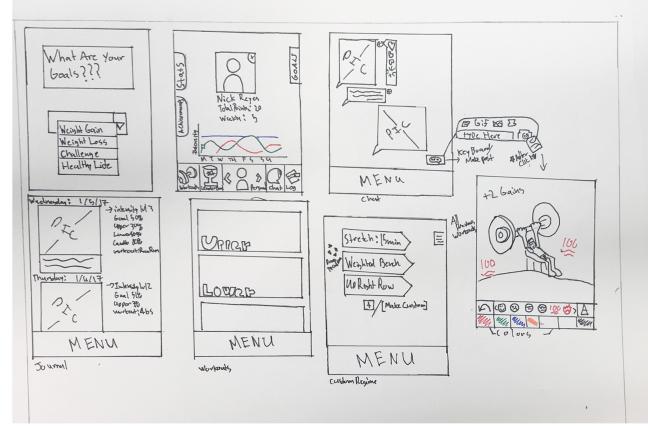
### Storyboard

For the storyboard, we follow a scenario in which a social middle-aged man, John, has to fit in his workouts

throughout the day even when there is no one around to workout with. The storyboard follows John dropping off his kids at school and realizing that he has some time off. He heads to the gym and records his workout on the application. John is awarded the monthly workout challenge for his efforts. He has successfully gone to the gym while also feeling as if he is competing with friends.

### Initial App Wireframe

For our wireframe we came up with seven screens that we thought would best represent our application. The first screen narrows down on the goals of the user. The second screen depicts the stats and achievements obtained by the user. The third screen provides an interface to communicate with friends. The fourth screen is a series of panes that describe the workout and intensity of the workout for each day. The fifth screen provides a selection of workouts based on muscles worked. The sixth page is a way for the user to plan out their workout routine. The final screen provides the user a method to edit photos from their workout and send them to friends.



PhotoScan by Google Photos

Figure 9. Wireframe

### Code Skeleton

For our code skeleton, we started with a base grayscale template that layed out all the key features we wanted in our application. On the stats page, we had a record of what workout the user completed along with the points they gained from the workout. In the second page, we have our challenge page. Here, the user can see their current challenges and points obtained by their team along with the points of the opposing team. On the third page, the user would be able to see their activity data using Fitbit api. On the fourth page, we would have our social interaction. Here, the user can communicate with their friends, leaving comments on the workouts that they have completed for the day. On the final page, we would have our journal. Here, the user would be

able to record workouts and track their progress over time.

#### *Feedback and Refinement*

After going through our first two milestones, and countless feedback from our mentors we limited our scope of the app and changed our focus. Our initial design was an all inclusive fitness app that tried to track all of our data as well as encourage fitness through competition. Instead, in our final design we decided to focus on creating an app that motivated users to go to the gym through self reflection within a superhero framework.

#### *Refined Prototype*

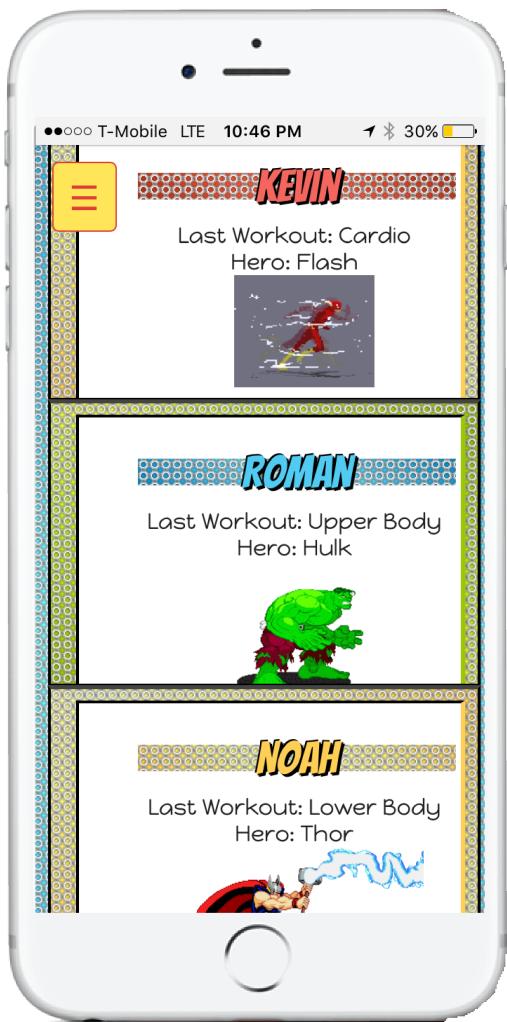


Figure 10. Social Page

For our refined prototype we cut our initial wireframe down to three panels. Instead of relying on competition to fuel our user, we instead focused in on personal growth. With our refined prototype, the user can: record daily workouts; view stats

based on workouts recorded; and view the primary stats of their friends. The user's layout and 'character' also change to a superhero depending on the workouts they have accomplished. For example if a user has done a lot of cardio work outs the user's hero transforms to Black Panther, or if the user does a lot lower body the user transitions from the Black Panther to Thor.

Thematically we wanted to give our users an extra boost to get started. So the user begins as a villain, who has no powers. Our character, Ghost Rider, is a ghost at the gym; you never see him there. This villain effect also happens when you stop working out for a week, your profile resets to a villain.



Figure 11. Hero Page

Users aspire to become heroes like Captain America by doing certain exercises. Captain America represents a more balanced workout of equal parts, upper body, lower body, and cardio.

#### **EVALUATION**

##### *Likert Scale*

In order to evaluate our application, we conducted a

user evaluation with the following interview protocol (see figure 12).

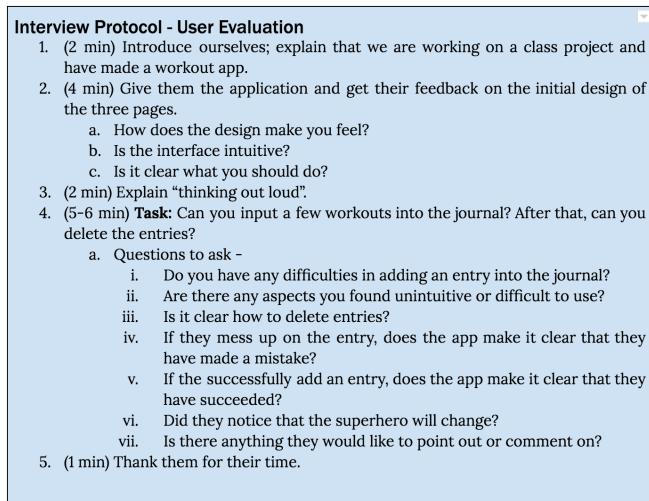


Figure 12. Interview Protocol

#### Interview:

Below we show example interviews. Some things that we took away from the interviews was that we needed more complexity in the application, button functionality should be moved to the background, and the button theme should match with the current theme of the user.

1. Do you have any difficulties in adding an entry into the journal?

No difficulties in adding entries.

2. Are there any aspects you found unintuitive or difficult to use?

She didn't understand the point of the caption and thought she would not be vain enough to take pictures of herself and post them.

3. Is it clear how to delete entries?

Yes, very clear on how to delete entries. Was triggered because the trash can didn't align with the menu button. Thought the middle part of the trash can should be white.

4. If they mess up on the entry, does the app make it clear that they have made a mistake?

Did not mess up on entry.

5. Did they notice that the superhero will change?

Yes, it was very clear that she had succeeded. She thought the text was not aligned well however.

Yes, it was clear when the hero changed.

6. Is there anything they would like to point out or comment on?

Photoshop errors. Did not like the delete page. Thought it was too plain. Thought the plus button should be similar to the menu button. Really liked the background of the sidebar. There should be a larger gap between each friend on the social page.

1. Do you have any difficulties in adding an entry into the journal?

No difficulties in adding entries.

2. Are there any aspects you found unintuitive or difficult to use?

Thought it was unintuitive to add in a survey every time you add an entry. Thought the app should guide you through filling out the survey rather than throwing it at you.

3. Is it clear how to delete entries?

Yes, clear how to delete entries.

4. If they mess up on the entry, does the app make it clear that they have made a mistake?

Yes, it was clear that he did it correctly, but the text that showed up was a little difficult to see.

5. Is there anything they would like to point out or comment on?

Point out: Thought it was hard to see the chart and what it says.

#### Summary of Likert Scales

We first gave the users our application and asked them questions about the interface. These questions were designed to gauge how intuitive and visually appealing our interface was. Then, we asked our users to add and delete entries and answer some more questions. This second set of questions was designed to assess the ease of completing tasks within our app. In order to reduce bias, we also created a Likert Scale and sent it to a different group of users for evaluation. The answers on the Likert scale ranged from 1 (strongly disagree) to 5 (strongly agree), with 3 being a neutral answer. From the feedback we received, we found that users liked the interface and the functionality of having different superheroes based on their workout routine. Noticeably, there was some low scores in the adding in pages for the journal. This may be reflected by the limited time the user had to interact with the app. We could improve the layout of the design with better positioned buttons and captions to help instruct users on how to make a post. With prolonged exposure to the application (say a week), we feel that the responses would change to reflect this.

*Summary: "Overall I like the design of this interface"*

*Summary: It was easy do a journal entry*



Figure 13. Journal Page

*Summary : I felt accomplished when I reached a new Super hero rank*

*Summary: "The user interface was difficult to understand"*

## CONCLUSION

### Future

Although PowerUP! is an amazing application, it is still a prototype, and we feel that it can be fleshed out a little further. For one, frameworking the application such that multiple users can log data we feel is an important next step. Another improvement that could be made is including real-world fitness apis such as Fitbit to engage the user more with their workouts. At the current moment users are given a link to sign in to their Fitbit data; however, we aim to integrate the data from the Fitbit to the PowerUP! App. With more heroes we would assign heroes by doing a vector similarity dot product calculation. Finally, adding more of a progression

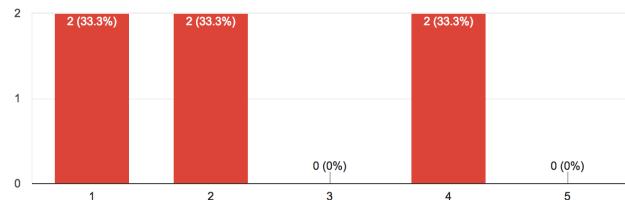


Figure 14. Difficulty of Adding Entry

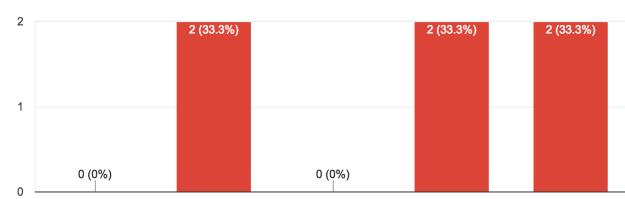


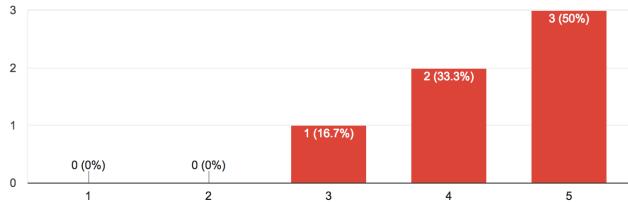
Figure 15. Enjoyability of Ranking Up

system, with awards and long term goals could also enhance the user experience. Expanding our scope of the app we did not take in the social implications of our app and how our hero lineup was solely only males. On top of that our heroes were predominately white with the exception of black panther. This lack in diversity completely throws out more than half the population of potential users that would like to aspire to become super heroes within this app. Especially for an app like PowerUP!, if we want people to imagine themselves being in the role of these characters, first and foremost the characters should reflect the entirety of the general population. In the Wired article, "It's Time to Get Real About Diversity In Comics" Laura Hudson highlights the importance of diversity in comic books:

Diverse storytellers mean diverse personal experiences being brought to the table, and more honest depictions of those experiences on the page in fiction. It's not impossible for a creator to write about an experience they've never had; that would be a silly thing to say. But Cis Hetero White Male isn't the default mode of human. Experiences influence creativity, and there need to be more than one set of experiences being reflected on the page.

Moving forward with the PowerUP! app it is important to show within our medium the multitude of default characters as well as characters to aspire to. If we were to keep the format that we have now it would only convey that only select few can become a hero or have the power to motivate themselves to make change. This goes completely against the mission of what PowerUP! should be. Moving forward getting a more realistic scope of heroes that are both gender and racially diverse should be implemented in future iterations.

*Final Thoughts*



**Figure 16. Interface Intuitiveness**

PowerUP! was our first experience developing an application with a team of devoted individuals. Getting the experience working with a team and creating an application from just an idea was an incredible experience. Moving forward, we can use the skills we have obtained to develop ideas and build applications that are useful to the world. Although PowerUP! is an amazing application, it is still a prototype, and we feel that it can be fleshed out a little further. For one, having a framework where the application can handle things such as multiple users can log data we feel is an important step. Working with a team and creating an application from just an idea was an incredible experience. Moving forward, we can use the skills we have obtained to develop ideas and build applications that are useful to the world.

## LINKS

### *Cloud9 Workspace*

<https://team10-final-project-noahlopez.c9users.io/hero/captain>

### *Slides*

<https://drive.google.com/file/d/0B-rd0WrgC4VUc1VsYXdyeHlOTg/view?usp=sharing>

### *Medium*

[https://medium.com/@rwright\\_27934/powerup-1190e34cd64e](https://medium.com/@rwright_27934/powerup-1190e34cd64e)

### *Final Video*

<https://www.youtube.com/watch?v=2y4FhJgK0ak>

### *Poster*

<https://drive.google.com/file/d/0B-rd0WrgC4VUblE0N2MzMFMJDbDg/view?usp=sharing>