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OneMile: An Interactive Journey to Wellness for Those with Chronic Illness

Keli M. DiRisio
kmd3809@rit.edu

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OneMile: An Interactive Journey to Wellness for Those with Chronic Illness

By Keli M. DiRisio

A Thesis submitted in partial fulfillment of the requirements for the degree of

Master of Fine Arts in Visual Communication Design

School of Design | College of Imaging Arts and Sciences
Rochester Institute of Technology
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THESIS APPROVALS

Chief Advisor: Chris Jackson
Professor, School of Design
College of Imaging Arts and Sciences

Signature of Chief Advisor, Chris Jackson  Date

Associate Advisor: Daniel DeLuna
Associate Professor, School of Design
College of Imaging Arts and Sciences

Signature of Associate Advisor, Daniel DeLuna  Date

Associate Advisor: Nancy Ciolek
Associate Professor, School of Design
College of Imaging Arts and Sciences

Signature of Associate Advisor, Nancy Ciolek  Date

Administrative Chair: Peter Byrne
Professor, School of Design
College of Imaging Arts and Sciences

Signature of Administrative Chair, Peter Byrne  Date

Thesis Candidate: Keli DiRisio
Visual Communication Design, School of Design
College of Imaging Arts and Sciences

Signature of Thesis Candidate, Keli DiRisio  Date
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1.0 ABSTRACT
1.1 ABSTRACT

OneMile: An Interactive Journey to Wellness for Those with Chronic Illness

Using interaction design, video, and social media to create an application that will encourage people to maintain or improve their quality of life when dealing with a chronic illness.

There are many tools, both tangible and online, for people with debilitating illnesses. There are websites and apps that focus on symptom management, medication monitoring or general wellness. The majority of these resources are mainly used for rehabilitation. There is technology used to help people, both healthy and those with an illness, to improve their health—featuring exercise, eating healthy, tips and tricks. Most people with a chronic illness are looking for ways they can be healthy, or ways to maintain their health; they want to be pro-active in their healthy journey. Multiple Sclerosis is one of these chronic illness—the people who have it may be active and mobile and they are looking for something to help them stay motivated and/or to improve their health. They are not looking for something to help with rehabilitation, because most of these people do not need rehab; they want something to encourage them on quest to healthy and wellness.

The needs of the target audience (people with MS) would benefit from a combination of mediums that would lend itself to the idea of activities to fully explore all of the potential aspects of a person’s illness and to motivate them to live a healthy life.

The purpose of the activities would be so each user could choose exactly what he or she wants and needs to work on. Cognitive exercises, fine motor skill exercises, social connections and suggested physical movement and recipes will help the user stay motivated. Elements of gamification will help create an active environment for the user and allow them to be motivated and excited to pursue wellness in their lives.

KEYWORDS: Rehabilitation, MS, stroke, interactive design, interactive game, journey, cognitive, fine motor skills, chronic illness, exercise, education, gamification

BLOG: https://kdirisio.wordpress.com
1.2 INTRODUCTION

Having a healthy lifestyle is important to many. There are many tools to help men and women stay fit, such as wearable devices, like the FitBit or apps and websites that do a variety of tasks, from track your diet and give you recipes to suggest an exercise everyday. You can count how many steps you’ve taken or count how many calories you’ve consumed. There is every type and style of exercise, from yoga to dance. While all of these resources exist, there is something missing: an app or website for people who deal with chronic illnesses and specific symptoms. There is nothing to help them improve their wellness levels. There are websites that suggest exercises and activities for rehabilitation, mainly for stroke patients. There are apps that can help people track their symptoms or manage medication intake. There is nothing that recognizes those with a chronic illness as people who want to improve their healthy and be motivated to continue their journey to wellness.

There is a 'stigma' that is attached to chronic illness; everyone pictures someone in a wheelchair or bed-ridden. That is not always the case, in fact it is rarely the case, as many of those suffering from an illness are pro-active in their exercise and diet regime. One woman was interviewed who had just finished a marathon while dealing with the symptoms of MS. People with a chronic illness often work hard at maintaining or improving their overall well-being and because of this, it was established that there was a need for a resource that was accessible to those who are active and mobile along with those who have trouble leaving their homes due to mobility issues. This resource needs to help develop skills for some and to encourage more advanced action from others. While developing their skills and improving, the user can see their progress which will help in their motivation.

Most people who have a chronic illness work hard at maintaining or improving their quality of life. Through exercise, diet, meditation, or many other methods, they work at maintaining their health and oftentimes they work even harder to improve their health.
1.3 PROBLEM STATEMENT

While there are many interactive tools for people who suffer from debilitating illness or injury, there are not any that help people who are active, in spite of an illness. This subset of patients is often over-looked, often being seen as not needing assistance. Many people with a chronic illness are labeled as “disabled” or “handicapped”. While some people do have mobility issues, many of the people with a chronic illness and specifically MS, are just as active as someone without a chronic illness. As a focus area, people with multiple sclerosis (MS) will be the main component of this thesis project, OneMile.

Through a comprehensive design, the goal of this thesis is to provide a product that people with MS (and eventually other illnesses) can use to improve their quality of life and their wellness level. By allowing people to be self-equipped, they will be more apt to exercise at home and be better able to follow an exercise routine and a healthy lifestyle. A variety of interactive tools will be used to help people with MS improve or maintain their level of health.

There is a need for a product such as this as there is nothing similar on the market. While there are many apps and websites for people with MS or other illnesses, none of them are goal-specific in targeting wellness levels. Most of the users of these apps or websites are managing their current illness with tools like a medication reminder, a symptom tracker or a journal to record their thoughts.
As part of a preliminary study, a survey was presented to two separate MS organizations along with individuals with MS. They were asked a few basic questions:

1. Would you find a website to help you with rehab useful?
2. Would you find it beneficial and appealing to have a home-based rehab/maintenance health system?
3. What type of rehab would you find useful and how would you use it?

RESULTS

1. 9 out of 12 survey takers did not want a website, they preferred an app on a tablet or phone.
   • It is transportable
   • Easier to hold a phone/tablet

2. The overwhelming response of survey takers (12 out of 12) was they wanted to have some form of program that could be performed at home, at their convenience. This was for a multitude of reasons:
   • Convenience
   • They are not in close proximity to a physical therapist/occupational therapist
   • Financial (sometimes insurance does not cover PT or OT for reoccurring illness such as MS)
   • Mobility issues affecting their ability to get to therapy

3. All of the takers wanted activities that would help them with their prevalent symptoms:
   • Cognitive issues (short-term memory)
   • Fine motor skills, dexterity
   • Vision acuity
   • Social connections
There are some products on the market that are meant for chronic illness, some are for MS in particular and many for general wellness and exercise. After reviewing many of the websites and apps that were for people with illnesses, especially the ones geared toward MS, it became apparent that they all fell into two categories:

1. To evaluate and record the user’s mood/feelings.
2. To keep track of medications and/or symptoms

The market is sorely lacking for tools that can help people improve their wellness and directly and positively affect their quality of life.

Through a competitive analysis, some apps and websites were discovered that exist or are being developed for rehabilitation, specifically for stroke victims.

The National MS Society website (nmss.org) has a section on their site entitled ‘Living Well with MS’. This section gives diet suggestions, and has articles about the benefits of exercise and healthy living. While it provides useful and helpful information, this website is not interactive; there is nothing that helps motivate people to improve their lifestyle. The information is static and never changes.

This thesis project will contribute not only to the field of design, but to the fields of health and lifestyle. In regard to design, OneMile will be a website (see section 1.5 Addendum to Thesis Proposal, page 9) with corresponding components. Through user interaction, user experience, motion graphics, and interactivity, patients can explore many different facets of the site, based on their wants and/or needs. Motion graphics and interactivity will be used to help develop cognitive skills and memory along with comprehension and education. Interactivity will be used to help with fine motor skills.

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1 "The American Heart Association/the American Stroke Association," (http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/HealthyLivingAfterStroke/Healthy-Living-After-Stroke_UCM_308568_SubHomePage.jsp)
1.5 ADDENDUM TO THESIS PROPOSAL

- Changing from website to app
- Using gamification to encourage use of app
- Creating a theme for the app: taking a journey
- The overall goal is a MILESTONE, while each activity is an OBJECTIVE
- Must complete certain number of OBJECTIVES to finish the MILESTONE
- Must obtain inventory items to continue to the end goal
- Must complete first 4 sections (think, touch, connect, act) to unlock the 5th section (discovery)
- Keeping the 5 sections, focusing on areas, prototyping others
- Overall app: UX/UI focus
- Sections:
  - Cognitive ‘objective’ - game
  - Fine Motor Skills ‘objective’ - game
  - Exercise – video
  - Social - journal and video/social media
  - Discovery - prototyped
- Implementing:
  - icons
  - backgrounds
  - map/journey
  - inventory items
  - tasks/objectives to complete
- Assets:
  - icons
  - map
  - inventory items
  - voice over for journey (see script Appendix D)
  - cognitive game (prototype) graphics
  - fine motor skills game (pinch the bug prototype) graphics
  - video for journal (social section)
The initial idea for this thesis project was to be a website (see Figure 1) that people with a chronic illness could use on a daily basis, and be able to exercise and connect to others with similar health issues.

After extensive research into the market and seeing the lack of websites or apps for people with chronic illness, I realized there was a niche in the market that was largely being ignored. Exercise is such an important part of a healthy life for those with chronic illnesses and there is a definite need for this audience.

Figure 1. Original flow chart for website.
The name OneMile was chosen due to a common phrase that many with a chronic illness use when someone tells them they look healthy, they can’t be sick: “Don’t judge me until you’ve walked a mile in my shoes.” While many chronic illnesses can be invisible, many people suffering from one of these diseases can be wrongly judged by those who don’t understand. Anyone dealing with an illness has an uphill journey ahead of them, and that journey begins with one step, one mile at a time. As a result, the name OneMile seemed the logical choice for this project as it is a resource for those with chronic illnesses or even for those who are healthy.

While OneMile was initially planned to be a website, after the first round of surveys with potential users (12 people with MS), it quickly became evident based on the results of the survey that almost everyone was not interested in a website that would be a form of rehab. Most of those surveyed wanted something that was portable, transportable, like an app. They didn’t want rehab, they wanted something that would encourage them, motivate them and push them to exercise and push themselves to continue on their paths to wellness. The conclusion was made that people with chronic illnesses did not want to be labeled as “disabled” or “in need of rehab”. They wanted to be given the same opportunities that able-bodied people had in terms of determining the course of their health and wellness.

One of the survey-takers, (Katie Cicone) had this comment, “I will say this: with MS we have to give up 'dreams', we still have them but modified . . . yes? I’d like to play a game that might remind me of the me pre MS; yet the game enables me to discover the me; the me with BIG DREAMS...... I think every one with MS would like to ‘remember’”. This perfectly sums up the new direction that OneMile began to take.
In most video games, player decisions are the core of what makes a game. Some games have a strong narrative intertwined with gameplay. For these games, it is effective to have the player’s decisions not only affect the automatic outcome of the game, but to also affect the narrative. Based on this, the original idea of a website for OneMile not only evolved into an app, but needs to have elements of gamification to encourage the user to come back again and again. The users need to experience the full capabilities of the app, utilizing all aspects, and the way to achieve this is to create a narrative for the user that he or she can follow to accomplish goals, to complete a task, or to acquire supplies. The narrative can keep the user involved as it is now an interactive piece, where the user’s actions are influencing the action on-screen and through the audio.

Based on user surveys, the idea of having a goal to reach was extremely appealing. The app started to take shape as more of a game that will still have the original elements (cognitive, fine motor, social, wellness and discovery) but now as they complete exercises or post on social media, they will earn credit to move on to the next parts of the game. According to user feedback, the idea of exploring an area and acquiring items along the way appealed to them (see survey Appendix B).

User interviews also helped narrow down the scope of the project. Questions were posed in this initial interview and the results helped formulate the new direction of the app.

**What symptoms need addressing?**

One interviewee, KC, stated the following, “My current physical deficiencies are my eyesight, walking/running (leg/foot numbness) and bladder related. I am still able to write, pick objects up, etc. but find when I have a flare it is more difficult to see, write (I mostly type), walk/run, and focus (cognitive). Therapy that could help with focus, walking/running, eye strain, would be useful to me.”
If and how do children deal with a parent with MS?

One interviewee said, “My kids are 11 and 14. They sort of get it. I try not to let it “show” so to them it’s kind of just normal life. It impacted them most when I was so sick I was in bed most of the time (a few years ago). Now I know how to deal and balance life better so they don’t really see it. An interactive website for kids of all ages would be great. Especially talking about their fears. My son was afraid he would “catch” it. Lol”

What types of activities would be helpful?

“Don’t laugh but I think simple repetitive tasks for fine motor and focus are helpful. Coloring. Word searches. Logic puzzles. Fit to dot. Painting. My symptoms are eyesight loss one eye, cognitive focus and clear thinking, numb legs some good days some better days but can still jog. Would like to work on all of these. For walking I wear a Fitbit and try to get 10,000 steps per day and also bike and run. I like challenges and goals”

WM said, “I like being able to do my own regime of exercises on my own. Not with OT or PT. UNLESS it was a really bad flair [sic]. I would enjoy a tool that gave me a regime to follow and build upon. I have high capability right now. Would you have all levels? For example, I can jog a mile at a time now and ride my bike 8-10 miles. If the tool could progress at current level and move forward. Yes, I would use again. Also have capability to go back to beginning level if have to restart or have setback.”

“I think [there] are definitely several populations of MS patients. Statistically most have RRMS (relapsing-remitting MS) and tend to be taking the more proactive health, maintain current level of functioning approach.

Then you have the smaller populations of other MS categories that could benefit from a more therapeutic rehabilitate approach.

I think both could use a tool you are suggesting but just at different levels.”
“I just attended the National leadership conference for the MS society and was so inspired by everyone I met that had MS. THE ONE COMMON thing I found was that no matter what the level of disability, we were all fighting to proactively keep our current function whatever way we could. Exercise, crafts, cognitive therapy.”

This interview, conducted with a selected group of people, helped change the scope and direction of this thesis project. Starting as a website dealing with health and wellness, it started to take a different shape. As it became apparent that an app would work better, the content also started to change. And due to this interview, the thesis began to take shape as a motivational tool to help encourage wellness for those suffering from MS. Different 'modules' would focus on the areas they wanted most: cognitive, fine motor skills, eyesight and possibly something to help educate others, especially children.

Creating an app with gamification, challenges to complete and rewards to earn was very appealing to the target audience.

What features would you like to see in an app?

“A motivator to promote or improve wellness thru cognitive and dexterity games, a social section (journaling, social media), and educational component and a wellness section (recipes, exercises).

All good!

"missions", kind of like a game - sounds good.

Finishing game segments (missions) or doing exercises to get "points" are both good. I think climbing, exploration (travel), or hiking are all good options.

Maybe open ended points/progression through the game without being 'blocked' if you can't finish all segments or do a particular exercise, etc."

“I love the concept of finishing challenges to gain points, or even better badges (like girl or boy scouts). I think having different categories of missions to complete would appeal to a larger audience. For example - Have the following areas where missions can be completed: 1) cognitive - all brain games 2)
fitness - all movement motivating (have all levels that so more people can use) - i.e.- Level a) wheelchair or limited movement Level b) walker Level c) runner; Level d) fitness freak (do these people exist)?? 3) Social - gain points for social postings (post what you accomplished today for 2 points) 4) Talent - Have a variety of talent challenges and allow people to share successes. 5) Art/Crafts"

As the results of the surveys came in, it became apparent that the direction of the app needed to change.
2.0 RESEARCH
2.1 COMPARATIVE ANALYSIS

There are currently many applications on the market for various illnesses and for rehab and/or exercise. There are very few directed specifically at MS, and most of them are more for ‘tracking’ the illness and medications or symptom management.

My MS Manager
Illness tracking:
- Symptoms
- Medications & Medical history
- Journal

Multiple Sclerosis @Point of Care
Clinical-decision making tool, mobile reference.

National MS Society
Info on diagnosis and management.

MS Self
A wellness indicator:
- Journal entries
- Educational cards
- Achievements
- Track your mood/wellness level

MedImages Cases
eTextbook and 26 biweekly MRI studies.

Multiple Sclerosis & Related Disorders (MSARD)
Clinical research of diseases that affect the central nervous system.

Multiple Sclerosis Attack App
Learn about MS symptoms and how symptoms may present themselves during an attack.
2.2 TARGET AUDIENCE

The target audience for the OneMile app is mainly adults, aged 18 and up (see Figures 2-3). While this app can be used by children, as pediatric MS is become more prevalent, the main audience is adults. They will have a moderate to active lifestyle, try to do some form of exercise and watch their diet. They are conscientious about their health and their lifestyle. They may be looking for something to help encourage them in their path to wellness or they may be looking for something that can encourage them to begin their journey.

Many people with MS don’t realize how important a healthy lifestyle until after they have seen the effects the disease is having on them, both mentally and physically. As the disease progresses, many people think it’s too late for them to adopt a healthier life because they may have mobility issues or have other issues, such as bladder and bowel problems, which can sometimes make it difficult for those with these problems to leave the house. Due to OneMile having multiple levels, every level of activity can benefit. Allowing the user to choose the level and activity they are more apt to return to the app and do more of the activities and exercises.

While many people are technologically savvy, the OneMile app is easy to navigate and understand, even for those with a rudimentary knowledge of computers and/or tablets.
2.2.1 PERSONAS

Maura Hyatt

Age: 21
Occupation: Student
Status: Dating
Location: Rochester
Home: North Carolina
Diagnosed 8 years ago

Motivations:
- Incentive
- Leadership
- Health
- Social
- Fear

Goals:
Maura wants to stay healthy. The demands of school contribute to her fatigue and her general sense of weakness. She wants encouragement to be healthy and have more energy.

Actions:
To find an app that will let Maura exercise and encourage her to continue to exercise.
She needs encouragement and motivation to continue.

Bio:
Maura is an A student, and very concerned about her health. She knows she needs to be active to stay healthy, but sometimes the fatigue gets to her. She often feels weak and she notices it in her hands and fingers.

Personality:
- Health Conscious
- Wellness Level
- Extrovert
- Intuitive
- Socially active

Technology:
- Tech Savvy
- Visually Driven
- Social Media
<table>
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<th>Age: 42</th>
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<tr>
<td>Occupation: Construction</td>
</tr>
<tr>
<td>Status: Single</td>
</tr>
<tr>
<td>Location: Rochester</td>
</tr>
<tr>
<td>Education: MBA</td>
</tr>
<tr>
<td>Home: New York</td>
</tr>
<tr>
<td>Diagnosed 15 years ago</td>
</tr>
</tbody>
</table>

**Kevin Sullivan**

**Social**
- Friendly
- Comical

---

**Motivations:**
- Incentive
- Leadership
- Health
- Social
- Fear

**Goals:**
To find an app that will encourage Kevin to stay healthy, on his own time and that fits his schedule.

**Actions:**
- To find an app that will help Kevin maintain a steady wellness program
- To use an app that will let him connect with others.
- To have some game aspects.

**Bio:**
Kevin is the owner of a construction company. He enjoys spending time with his friends, and his MS doesn’t come up much in conversation. He is focused on getting healthier and staying healthy. He enjoys socializing and he enjoys playing video games.

---

**Personality:**
- Health Conscious
- Wellness Level
- Extrovert
- Intuitive
- Socially active

**Technology:**
- Tech Savvy
- Visually Driven
- Social Media

---

“*I just want to know there is a doctor I can call and see me when I need it.*”
2.3 SURVEY OF LITERATURE

The research completed for this thesis has been wide-spread. The main focus of the research was broken into twelve categories:
1. Multiple Sclerosis
2. Chronic Illness
3. Interactivity/theme-based interactivity
4. Gesture-based activities
5. Non-linear storytelling
6. Gamification
7. Cognitive impairment
8. Fine Motor Skills and development
9. UX/UI
10. Usability
11. Virtual Reality/Augmented Reality and its Role in Immersive Technology
12. Fitness and technology

1. Multiple Sclerosis

The Best Multiple Sclerosis iPhone and Android Apps of the Year.
Jeri Burtchell
“Healthline”

An introduction to the top apps for MS. These apps cover many aspects of tracking the disease for patients and for doctors. Patients can use the apps to highlight information, search for info, track symptoms, medication reminders, journaling, and researching medications. In addition, some of the apps are for health care providers to track a patient’s progress or to test their cognitive abilities or motor dexterity.

National Multiple Sclerosis Society
http://www.nationalmssociety.org/

National society website. Full of information on MS and various treatments methods, along with general information for newly diagnosed patients or for those who have had the illness. This site is the official site and the information is always current and accurate.
2. Chronic Illness

"Multiple Sclerosis."
Alastair Compston and Alasdair Coles.
A summary of MS, its symptoms, treatment and management.

3. Interactivity/Theme-Based Interactivity

‘Effects of Performance Versus Game-Based Mobile Applications on Response to Exercise - Online First – Springer’
Arielle S. Gillman and Angela D. Bryan,
Game based apps help recreational users disassociate from exercise more easily.

4. Gesture-Based Activities

Chris Crawford on Interactive Storytelling
A comparative analysis of visual spatial, environmental (pattern and sequential) and language based processing.

"Researchers Use Kinect Gesture Control in Stroke Rehab System."
The Engineer (2012/06/15/ 2012).
Study of using the Kinect during stroke rehab and tracking the results. Fine motor skills are more apt to be used/improved during active work with the Kinect.
Integrating Gestures: The Interdisciplinary Nature of Gesture.
Study of the how gesture-based design can affect all aspects of life: speech, social connections, cognition and how gestures have influenced the evolution of language. Gesture is also becoming an integral part of human-machine interaction.

5. Non-linear Storytelling
The New Digital Storytelling: Creating Narratives with New Media
Bryan Alexander
(Santa Barbara, CA: Praeger, 2011).
Discusses the different types of linear/non-linear storylines, the truth of interactive games and how to move the story forward through gameplay.

Linear Logic for Non-Linear Storytelling
A-G Bosser, M.O. Cavazza, R. Champagnat
19th European Conference on artificial intelligence
IOS Press
This article discusses the renewed interest in interactive narratives. The planning in imperative in a successful narrative, especially in interactive pieces. Bridging the gap between descriptions and narrative concepts using Linear Logic.

"The Combinatorics of Storytelling: Mystery Train Interactive."
Amy Bruckman
This article discusses the different types of interactive storytelling and when certain types are necessary and applicable.
6. **Gamification**

*Encyclopedia of Video Games: The Culture, Technology, and Art of Gaming.*

Mark Wolf
Westport, CT, USA: Greenwood, 2012.

*An encyclopedia that organizes theoretical and historical content on the topic of video games, discussing the theory behind the creation of games.*

"ContextControl - Game Based Interaction."

Diener, Holger
http://www.ercim.eu/publication/Ercim_News/enw57/diener.html

*Game-based user interface for keeping the user engaged and encouraging them to return. It uses level and customization in games so that the usability is easy and effective.*

7. **Cognitive Impairment**

*Living with MS*

George H. Kraft, MD, Marci Catanzaro RN, PhD. Living with Multiple Sclerosis. 386 Park Ave., South, New York, New York: Demos Vemande, 1996.

*A comprehensive guide to living with MS.*

8. **Fine Motor Skills and Development**

*Loss of Hand Dexterity and Coordination.*

HealthCare Journey

*Information about MS (symptoms, treatments) but focuses on the loss of motor dexterity. Exercises are suggested that can help improve fine motor skills that have deteriorated.*
Excerpted from "Fine Tuning: Tips for Improving Fine Motor Skills",


Information on exercises to improve fine motor skills, focusing on post-stroke rehab. Encourages patients to work toward regaining independence through exercises that can be done at home.

9. UX/UI

Sketching User Experiences: Getting the Design Right and the Right Design.


A holistic and focused approach to design. This book has appeal to many different industries. There is an emphasis on balancing the back-end concern with usability and getting the design right with investing in the process with sketching and ideation.

UX for Dummies, a Wiley Brand.


A guide to UX from beginning concepts to advanced.

10. Usability


Steve Krug

San Francisco, CA, Peach Pit, 2014.

This book discusses web usability and how designers need to be aware of what their audience wants/needs. Krug focuses on how designers need to keep in mind what they are designing and how they are implementing the content, and how to make it the most effective for their audience.
The Design of Everyday Things.
Don Norman

Don Norman discusses the concept of usability in design. Bad design is prevalent and the need for thoughtful design with the user in mind is a necessity. Norman points out why some designs are successful and how the designs and the design decisions affect their users.

11. Virtual Reality/Augmented Reality and Its Role in Immersive Technology
Immersive Design.
Matt Sundstrom
https://medium.com/backchannel/immersive-design-76499204d5f6

This website discusses the rise of the digital landscape and where it is headed. A comprehensive guide to video games, from a historical viewpoint and an advancement in technology viewpoint. Gives gives a wide range of information on all aspects of video games: design, character development, technology, kinesiology, physical and mental impact, to current day games and the future.

12. Fitness and Technology
"JMIR-Apps for IMproving FITness and Increasing Physical Activity Among Young People: The AIMFIT Pragmatic Randomized Controlled Trial."
Artur Direito, Robyn Whittaker, Ralph Maddison, and Yannan Jiang.
Journal of Medical Internet Research.

Analysis of physical activity in relation to game play. Zombies, Run! Is specifically discussed and how its gameplay influences and affects physical activity.
"Effects of Performance Versus Game-Based Mobile Applications on Response to Exercise - Online First - Springer."
Arielle S. Gillman and Angela D. Bryan.
Athlete vs. non-athlete and associative and disassociated exercise analysis. Do people exercise more during associative exercise-based activities/apps or disassociated?

"Harnessing Different Motivational Frames via Mobile Phones to Promote Daily Physical Activity and Reduce Sedentary Behavior in Aging Adults."
Mobile devices are a promising channel for delivering just-in-time guidance and support for improving key daily health behaviors. Despite an explosion of mobile phone applications aimed at physical activity and other health behaviors, few have been based on theoretically copied constructs and pragmatic evidence.
2.4 FACTS ABOUT CHRONIC ILLNESS AND MS

As of 2012, approximately half of all adults in the US (117 million people) have one or more chronic medical conditions. One in four has had two or more chronic health conditions. ²Multiple Sclerosis is believed to affect more than 2.3 million people world-wide. Over 400,000 people in the US have MS and about 200 people are being diagnosed each week.

Multiple Sclerosis (MS) is an unpredictable disease that affects the central nervous system, interrupting the flow of information between the brain and the body. The myelin sheath, the coating of the nerves, is damaged and this disruption of the nerves is what causes the symptoms of MS, and why everyone inflicted with the disease may have a different set of symptoms.

The causes of MS are unknown, but many think environmental factors, a viral exposure or people with certain genetic markers may be contributors.³ There is a higher percentage of diagnoses between 40° and 60° N latitude and North European countries have a higher incident of diagnoses.⁴ MS is twice as common in women as it is in men⁵, and some current studies have suggested that the female to male ration is 3-4 to 1, suggesting hormones may have some affect on a diagnosis. Because symptoms can be completely invisible, the prevalence of MS in the U.S. can only be estimated.⁶ The average person in the US has about a 1 in 750 (.1%) chance of developing MS. The 1st generation relative of someone with MS rises to 2.5 -5%. ⁷

Most people are diagnosed between the ages of 20 and 50, but this disease is not confined to just that age range. It can also affect any ethnic group; the largest percentage is in Caucasians.

³ MD George H. Kraft, Marci Catanzaro RN, PhD, Living with Multiple Sclerosis (386 Park Ave., South, New York, New York: Demos Vermande, 1996), 3.
⁴ Ibid., 3.
⁵ Ibid., 4.
⁶ Ibid., 4.
⁷ Ibid., 4.
Multiple sclerosis causes a body’s immune system to attack the central nervous system (brain, optic nerve and spinal cord). When the immune system attacks the myelin, which is the coating that surrounds the nerve fibers, or the nerves, the damaged myelin forms scar tissue from which the disease is given its name (sclerosis). The nerve impulses are interrupted at these damaged areas and can produce a wide range of symptoms, such as the loss of fine motor skills, loss of mobility, cognitive impairment, vision problems, just to name a few.
2.5 SYMPTOMS OF MULTIPLE SCLEROSIS

Multiple Sclerosis does not have “typical” symptoms as the illness can manifest itself differently in different people. Some of the most common symptoms are: overwhelming fatigue, visual problems, mobility issues, an impairment of cognitive and fine motor abilities, weakness, dizziness, pain and depression. Other symptoms that present themselves are a deterioration of balance and coordination, which is the result of muscle weakness. Symptoms are often invisible, and to an outside viewer, it may look as if the person has nothing wrong. Symptoms may come and go, depending on the type of MS a person may have. Some have relapsing-remitting, (RRMS) where symptoms will flare up and then the person will enter a phase of remission. Secondary-progressive (SPMS) follows the path of relapsing-remitting, as most people eventually transition to SPMS, where the disease starts to progress more steadily. Another type is primary-progressive (PPMS), which is characterized by steadily worsening symptoms from the onset of diagnosis. The fourth type of MS is progressive-relapsing (PRMS), the least common type, is characterized by a steadily progressing with exacerbations throughout the illness. There may or may not be recovery, but the disease continues to progress without remissions.

While the cause of MS is unknown, there are factors which are believed to cause exacerbations with stress, lack of sleep, and poor nutrition to name a few. Many people with MS suffer from pain and muscle spasms. The most common symptom of MS is fatigue, which can be debilitating for many. While there are medications to combat this, once again, exercise is the most-recommended treatment.

Depression can be a debilitating part of MS. Demyelination of the brain’s nerves can cause depression or it can be from the result of personal loss of the quality of life that the patient was used to having.

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8 Ibid., 25.
9 Ibid., 11.
10 Ibid., 15.
11 Ibid., 19.
Spasticity, which refers to muscle stiffness and involuntary muscle spasms, is a common symptom of MS. This can be a debilitating symptom that can affect fine motor skills and mobility. In addition, spasticity can be noticeable and many who suffer from it are embarrassed and can become homebound due to fear of injury outside the home or because of their lack of movement control.

Spasticity is generally evident in those whom have had an injury to the central nervous system, as evidenced in spinal cord injury, stroke, head injury, cerebral palsy and MS. As stated in an article in *MS in Focus*, “In a 2001 survey of the North American Research Consortium on MS (NARCOMS) registry, approximately 85 percent of people with MS reported experiencing some spasticity.”

It has been proven that in many cases, initial medications such as active stretching, mild exercise and rehabilitation can all be helpful to someone suffering from spasticity. While a therapist or doctor may diagnose spasticity in a patient in the early stages of their MS, many do not seek immediate therapy for spasticity or it is not diagnosed and as a result, is not treated. Preserving muscle tone and fitness level is encouraged for anyone with MS, but once spasticity is being treated, stretching particular muscle groups to improve range of motion may be recommended.

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13 ibid., 6.
2.6 THE IMPORTANCE OF EXERCISE

Exercise is important for everyone, not just those with MS. “Less than half of the US adults meet the requirements for recommended physical activity of 30 minutes or more of moderate intensity activity per day in all or most days of the week.” 14 As a society, we are becoming more aware of health and healthy living. Along with this awareness is an ironic increase in technological use: computers, video games, and phones which can all contribute to a sedentary lifestyle. There is an interest in future use of “physical activity” apps and this interest highlights a potentially important role of these types of apps. In a multifaceted approach to increase fitness, promote activity, and consequently reduce the adverse health outcomes associated with insufficient activity, applications can be beneficial. One way to encourage usage is through the development and promotion of mobile health technology, including smart phone and tablet applications, designed to increase exercise participation. Trying to find ways to motivate a user is the challenge, and it has been proven that using elements of gamification will help users become more consistent in their app use. Using a app with gamification elements will help the user disconnect from the idea of exercise.

Elements of gamification, giving the user a goal to reach, have been shown to increase user interest and the amount of exercise they complete. The theory of psychological reversals, or reversal theory, is one promising structure that might help direct predictions regarding the effect of mobile healthy technology on psychological response to exercise. “According to Svebak and Murgtroyd, the telic state is described when a behavior is interpreted as a means to an end, and pleasure is derived from achieving a goal or in the anticipation of the achievement. Conversely, the paratelic state is experienced when a behavior is focused on the "here and now," and pleasure is derived from the behavior itself; achieving a goal is a by-product.”15 Therefore, the telic state is achieved when a goal is reached, and in contrast the paratelic state is pleasure for the activity that is happening at that moment, without much

15 Ibid., 158.
credence put on the end result. While exercising, some may experience the paratelic state but it will quickly wear off, while those who fluctuate from paratelic to telic tend to push themselves and want to continue.

It is believed that one should set specific goals before an exercise session, if this puts an individual in a telic state in which he or she is thinking about those goals throughout the duration of the session, it may cause the individual’s perception of difficulty to increase.

It is proven that casual athletes benefit from dissociating during exercise. Making the subjective experience of exercise more enjoyable is imperative, and thus, the possibility that different categories of mobile apps might influence goal orientation and/or focus during exercise. Disassociation during exercise is imperative for the athlete who is not as focused or as dedicated as others. This disassociation will allow them to enjoy the aspects of a game or to succeed in challenges, therefore the exercise will become secondary in the user’s consciousness. These purposes seem to be principally centered on intrinsic motivation, or how someone feels emotionally before, during and after an activity.

Exercise is an integral part of life for those with chronic illness, specifically those with MS. Exercise is recommended as an effective way of boosting a patient’s mental health as well as helping their overall physical stamina. While exercise will not alter the course of someone’s MS, it can improve their well-being, both mentally and physically. The most recommended exercises are ones to improve range-of-motion and resistance exercise for weakened muscles. While aerobic is beneficial in conditioning the cardiovascular system, fatigue can often interfere. Modified exercises, such as seated activities, can be helpful for those with mobility or balance issues. Bone metabolism can benefit from weight-bearing exercise, but the user must be aware of muscular fatigue. The best type of exercise depends on each person’s personal situation in regards to their illness progression.

It has been proven that exercise can help alleviate the effects of stress on a person with MS as many exacerbations escalate after a period of high stress. In addition, exercise can help with
depression, which is prevalent among those with MS. They can also suffer from musculoskeletal and nerve pain; this is where exercise can also help.
2.7 MOST TROUBLING MS SYMPTOMS

Since this application focuses on people with MS, specific questions were asked of them as to what they wanted/needed in a wellness resource. An initial questionnaire was given to the user group. One question that was posed was “What symptoms are the most problematic for you?” Two symptoms quickly became evident as common among all of the users:

- Cognitive problems: loss of short-term memory, also known as ‘cog-fog’
- Loss of dexterity: decrease in fine motor skills

Cognitive problems plague many with MS. Loss of attention and concentration, memory, problem-solving, learning, thought, visual perception, comprehension and speech. A person’s moods may be affected and this can be very troubling to a person suffering from MS. Their attitude and demeanor can change due to the malfunctioning signals in the brain. Being able to focus, especially on more than one thing at a time is difficult. Distributed attention, the ability to focus and concentrate when there is more than one stimulus competing for attention, is extremely difficult for some people with MS. In some studies 10-90% of people with MS suffer from some type of memory impairment.16

Research shows that most cognitive impairment is caused by damage done to the brain tissue. Scarring in the higher areas of the brain, the cerebral hemisphere causes the most noticeable cognitive symptoms.

Tools and games are available to help with cognitive improvement, from applications to simple games, such as matching, memory, arranging, and brain teasers are among the types of games that can help improve cognitive abilities. The National MS Society recommends working on focus and concentration, use mental pictures to aid in memory and to keep challenging your brain with games, puzzles and activities. There are websites and applications to help improve cognitive abilities: Lumosity, Brain Trainer, Remember Dots are just a few.

16 George H. Kraft, Living with Multiple Sclerosis., 29.
Motor skills are the result of cognitive and physical processes. “Smooth, targeted, and accurate movements, both gross and fine, require the harmonious functioning of sensory input, central processing of the information in the brain and coordination with the high executive cerebral functions, such as volition, motivation, motor planning of an activity.” 17 There are three types of motor skills: gross motor skills, fine motor skills and ambidexterity. Gross motor skills include large muscle groups such as lifting a head, sitting up, balance and mobility. Fine motor skills use the smaller muscle groups and tends to include the pinching and picking up of small objects and hand-to-eye coordination. Ambidexterity is the ability to use either hand with no dominance.

Fine motor skill decline can be a serious symptom in those with MS. Weakness and loss of coordination often results in a marked decline of fine motor skills and dexterity. Picking up items, holding onto items, writing, buttoning a button, pinching things and even eating can become near impossible tasks. Some people will experience ticks or spasms in their hands, which can become uncontrollable. While motor symptoms such as loss of balance, problems with coordination and walking, and tremors and spasms also affect those with MS, the loss of fine motor skills can be devastating to quality of life.

There are many exercises that can help improve fine motor skills: stack coins, pinching clothespins, do puzzles, type, pick up toothpicks with tweezers, button a button, timed putting pegs in a pegboard, using a rubber band to exercise the fingers, tracing, are just a few. There are also applications that can help improve dexterity: Dexteria, Fruit Ninja, Pocket Pond are some games that can be played on a phone or tablet to help increase fine motor skills. There are also products, referred to as “exergames” that are geared toward children with dexterity problems. “Exergames” encourage children to move along with the game they are playing. They are often unaware of the activity and what is a necessary task now becomes a game. Children must move to cause action and reaction within a game. In addition, researchers from Southampton University and Roke Manor Research in the United Kingdom used a Kinect to track hand joint angles and finger movements to encourage precise exercises in people who had suffered from a stroke.

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They found that people who had trouble moving their hands needed some type of encouragement to try harder at their exercises. By using the Kinect, they could engage the user with the interface.

Many people with MS are initially diagnosed with vision problems, specifically optic neuritis, which is a swelling of the optic nerve. The optic nerve submits visual information from the eye to the brain. Optic neuritis can result in a loss of vision and loss of color perception. Vision loss is usually temporary, but can be permanent in some cases.

Another point that came up from multiple users was they wanted the opportunity to have some social association to others with the same illness. They wanted a social media connection, in a private manner, where they could reach out and connect with others with the same illness.
2.8 VIDEO GAME USEAGE AND CHRONIC ILLNESS

In many studies, it has been proven that playing video ‘games’ can increase motor skills, spatial relationship analysis along with reflective decision-making. All of these capabilities can have a profound effect on MS patients and the course of their illness, as many suffer from loss of coordination and a decrease in fine motor skills. Video game play used to be blamed for a sedentary lifestyle; hospitals and therapists are now using gesture-based technology, such as Wii and Kinect for rehab and exercise.

While video game play has a negative reputation, especially for children, it has been proven that it can benefit people with MS. A significant body of work suggests video game play has many neurological, cognitive, and psychological benefits, and may be able to enhance the lives of people with different illnesses, including multiple sclerosis (MS).

So far, studies of video game use by people with MS have focused mainly on balance. Other research has indicated that certain types of video games may help with symptoms that are often associated with MS, such as loss of fine motor skills, depression, and memory loss.18

Gaming accessories, such as the Wii Balance Board have been proven to help reduce the risk of falling due to lack of balance. In addition, it has been proven that the patient must continue to use the accessory and practice to maintain their balance improvement. "However, the clinical benefit tends to disappear after stopping the training, probably because certain skills that are related to structural changes in the brain and are acquired or reacquired after an injury need to be kept trained constantly."19

Aware of large increases in sedentary lifestyles and obesity rates being due to video game play, many companies have begun creating physically interactive games and equipment. The Nintendo Wii, Sony PlayStation, and Microsoft Xbox 360 gaming consoles now have the capability to use motion

19 Ibid.
sensors that allow the player to perform physical movements registered by the sensors, employing the use of “exergaming”. Because of the popularity of cellular phones in today’s society, exergames have begun utilizing this new medium as well. “Exergaming” promotes physical activity without the user being fully aware of their movements and their motivations. Similar to what is done in “exergaming” for children, the same distraction motivations are employed.

Also, research has proven that not just people with MS can benefit from balance games; illnesses such as cerebral palsy, Parkinson’s, and head-trauma can also benefit. It is believed that video games can help those with MS due to the neural plasticity, or the brain’s ability to adjust and to form new relations.

In addition to helping mobility and balance issues, video games, specifically controller-based can help those who suffer from loss of dexterity and fine motor skills. People with MS often suffer from a decrease in dexterity, hand coordination and hand strength as the signals from their brains to their hands become disrupted.

There are also some positive results that show the improvements of short-term memory and working memory, but while there are no results that show improvement in long term memory. Andrew Latham, a philosophy doctoral candidate at the Brain and Mind Research Institute at the University of Sydney, Australia, states that there are no long-term memory benefits to playing video games.

According to the National MS Society approximately half of the people with MS suffer from some sort of pain. The pain can range from a stabbing sensation, to an all-over ache or burn to a tingling feeling. Video game play can help distract someone from their pain. Scientists have also discovered that immersive virtual reality games can reduce discomfort (a phenomenon

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known as “VR analgesia”) and decrease the time spent thinking about the pain they are experiencing.23

Depression is also a symptom of MS. While some ultra-violent video games are thought to contribute to depression, some games can be tailor-made for people with MS, specifically for those battling depression. One game in particular, SPARX, is a role-playing game for people ages 12-19. The goal is to teach the user how to relax, develop cognitive skills and how to recognize signs of depression in themselves. It uses cognitive behavioral therapy (CBT), which focuses on how people think, what they do and how they feel. SPARX gives them tools to deal with negative thoughts and feelings.

More and more, technology is being used to help those with chronic illnesses. Many tools have been and are being developed to help people cope with the problems that arise due to their illness. The evolution of electronic media continues to grow at an astounding rate. Today’s apps feature a large array of functionality, as user expectations have continued to grow. As a result of this evolution, sometimes menu items or gameplay can become confusing due to the complex structure. While advanced game-players may understand, new users may be deterred. In an interview, Dan Saffer, author of “Designing for Interaction”, states that the one law that is unbreakable in interaction design is Tesler’s Law, the Law of Conservation of Complexity. Designers must keep their audience in mind and keep things understandable and logical for the users.24 Users only need a very limited set of functionality for certain tasks.

23 Ibid.
2.9 DESIGN PROCESS & USABILITY TESTING

OneMile's interface design has been influenced strictly by the user, through extensive testing and questionnaires. Based on user feedback, the device to be used for this project changed from a website, to a smart phone app to a tablet app (See Figure 4). A user survey asked the following questions:

1. Do you prefer a website or an app?
2. Do you prefer a smart phone app?
3. What features are important to you?

**Device Preference (13 takers)**

![Device Preference Chart]

Figure 4. First usability testing survey.
A new usability chart (see Figure 5) was developed when the initial website concept changed to an app. The flowchart (see Figure 5.) shows a user scenario and how the user will deal with the app, problems and questions. This chart also shows what will be prototyped, what are simple app components and what will be working games/videos/motion.

Figure 5. Final flowchart.
2.11 SKETCHES

Sketches were created for a smart phone app. The user scenario was mapped out and ideas were being developed as to navigation and user flow. Sketches were extensively explored, before moving on to the paper prototypes (See Figure 6.). (See Appendix A for more sketches)

Figure 6. Initial sketches, iOS app.
2.12 PAPER PROTOTYPES & USABILITY TESTING

From there, paper prototypes were developed. The iPhone paper prototypes (see Figure 7.) were tested on 15 people and consequently the user feedback created the next iteration: they didn’t want an app for an iPhone as it was not big enough for those with fine motor skill problems or with vision limitations.

![Figure 7. iPhone paper prototypes.](image)

Paper prototypes were then designed and tested to collect user feedback on navigation and flow for an iPad app (see Figure 8). Feedback at this stage was mainly done through observation and eventually through a questionnaire (see Figures 9-10).
Figure 8. iPad paper prototypes.
Figure 9. iPad paper prototypes and usability testing.
Questionnaire 1: 18 testers (Tablet testing)

Comments:
- I like the idea, but I would definitively want a horizontal format
- I like rectangular shaped buttons - easier for my fingers
- Want to see actual type samples

Figure 10. Usability testing results.
2.13 LOW & HIGH FIDELITY PROTOTYPES & USABILITY TESTING

Low-fidelity wireframes were developed using Sketch (see Figures 11-17) and Illustrator. Different layouts, type styles and sizes and formats were all presented to the usability group. These were then again tested and the results were recorded.

Sign Up

User name: mdrunner24
Password: •••••••
Re-enter password: •••••••
Email: mdrunner24@gmail.com
Receive the OneMile Newsletter [X]

*Standard header with centered buttons*

*Figure 11. Low fidelity prototype*
Objectives

- Task 1: Mind Games
- Task 2: Motor Skills
- Task 3: Connectivity
- Task 4: Wellness 0/2
- Task 5: Discovery

*Standard header with centered buttons, hamburger menu on upper left*

*Figure 12.* Low fidelity prototype
Standard header, hamburger menu on upper right, icon-driven navigation

*Figure 13. Low fidelity prototype*
Alternative header with centered buttons,
hamburger menu on upper right,
Icon-driven navigation

Figure 14. Low fidelity prototype
Standard header with full-screen game, hamburger menu on upper right, icon-driven navigation

**Figure 15.** Low fidelity prototype
Standard header with centered buttons, hamburger menu on upper right, using iPad prototype

**Figure 16. Low fidelity prototype**

Standard header with centered buttons, hamburger menu on upper right, icon-driven navigation, using iPad prototype

**Figure 17. Low fidelity prototype**
User testing, questionnaire feedback

**Figure 18. Low fidelity prototype**

User testing, questionnaire feedback

**Figure 19. Low fidelity prototype**
As low-fidelity wireframes were developed, the next round of user testing was analyzed (see Figures 18-19). The next questionnaire contained the following questions:

**Questionnaire 2: 17 testers (Tablet testing)**

<table>
<thead>
<tr>
<th>Question</th>
<th>YES (%)</th>
<th>NO (%)</th>
<th>SOMEWHAT (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the type large enough?</td>
<td>94</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Do you find the button size appropriate?</td>
<td>94%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Was the game easy to follow?</td>
<td>94%</td>
<td>6%</td>
<td>2</td>
</tr>
<tr>
<td>Was the format easy to learn?</td>
<td>97%</td>
<td>1%</td>
<td>2</td>
</tr>
<tr>
<td>What would you change?</td>
<td>MORE NAVIGATION ICONS FOR MENU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:
- Nice, clean look
- Easy to navigate

*Figure 20. Usability testing results.*
High-fidelity testing, iPad prototype, immediate questionnaire feedback

**Figure 21.** High fidelity prototype

**Figure 22.** High fidelity prototype
Figure 23. High fidelity prototype

Figure 24. High fidelity prototype
Figure 25. High fidelity prototype

Alternate layout options

High-fidelity testing, different formats, special screens, immediate questionnaire feedback

Figure 26. High fidelity prototype
Figure 27. High fidelity prototype

Figure 28. High fidelity prototype
Beginner.
Level 1 will teach you the basics of Brain Games and start you out at a simplified level. You will not have a time limit to complete the tasks.

Intermediate.
Level 2 will challenge your brain with moderate games. You will have a time limit to complete the tasks.

Advanced.
Level 3 will challenge your brain with complex games. You will have a time limit to complete the tasks.

Figure 29. High fidelity prototype
The use of physical activity apps declines as the users get older. While this age-related decline is apparent, the one area that it is not prevalent is in apps for the phone or iPad, where it is transportable. Physical activity apps have a multi-faceted approach to fitness, wellness and exercise. Standard apps with tips and hints are not used consistently in most cases.

An interesting concept in an article in the US National Library of Medicine from the National Institutes of Health states that “Despite an explosion of mobile phone applications aimed at physical activity and other health behaviors, few have been based on theoretically derived constructs and empirical evidence.”

As some of the audience may be new to mobile technology, most are willing to utilize it if it will help their well-being. People need to be able to make sure that they can easily figure things out. Don Norman came up with the phrase “perceived affordances”, if you want people to take action, either in life or on a computer, they need to be able to figure out what they are supposed to do. Player decisions are the fundamental to what makes a game.

Most video games are played through linear storytelling: a story is broken up into smaller parts. Linear stories are the conventional narrative, with some gameplay elements involved that do not affect the story. In this case, the story and gameplay must be separate units, because the story itself has no choices and the gameplay must include some type of decision-making. Linear stories can have drawbacks, due to the lack of player interaction, so the story does not take on the role of a game.

OneMile has narrative that doesn’t necessarily impact the game; the user’s actions (solving a puzzle quicker, doing an assigned task) will trigger the narrative that advances the game. While the player must complete each section to move on in the game, narratives pop up telling the user to solve a certain puzzle, such as Code Breaker to obtain a code with a hint to advance.

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OneMile incorporates parts of linear storytelling as the user much complete Objectives to be able to advance and to move onto the next Milestone. Some games have a strong narrative and the player’s choices affect the gameplay. OneMile contains narrative that the user hears as he or she attempts certain areas of the game. Different parts of the narrative will be heard, depending upon where in the game the user is. Traditionally, linear stories are not affected by the gameplay—the storyline and the play are two very different and separate elements. The users’ decisions superficially affect the game: where the user is going, if they advance or not. There is only one story in OneMile: you must advance through the island, accomplishing Objectives, avoiding the Others to make it through and unlock the 5th section, DISCOVER, before you can complete the Milestone. While linear storytelling can be considered not very “game-like” this format suits the users of OneMile as the focus is the motivation of wellness and the gameplay is secondary.

While the theme is carried though in the linear story, gameplay cannot and will not influence the storyline. A technique that can be employed to create some excitement in the linear story is to employ ‘branching’, to give the user choices at various places in the game. This way, the game takes on a new direction, based on user decisions.

The use of narrative is important in OneMile. Often people will only understand what they read based on their experiences, their point of view and on written instructions. In contrast, people often don’t remember what they read, especially if it is something new. OneMile has both verbiage and an audio narrative to help with cognitive comprehension. Users can’t be expected to remember things from one screen to the next. That is why there are dual menus (see Figures 30-31) and in addition there are labels.

Figure 30. Secondary menu
In addition, game elements need to be designed with the audience in mind. Since people with MS often struggle with vision issues and color perception loss, these affordance cues need to be taken into consideration. Type must be larger than in most apps. Even though type is usually larger on-screen in most cases, people with MS must have a consistent type size to help with legibility. Also, it is easier to read shorter line lengths, usually 45-72 characters per line. Any more than that and the viewer will tend to skim through the words. Colors must be high contrast, to each other and to the background. While many people have color deficiencies, color choices are critical to the success of the design.

A study was done by Arielle S. Gillman and Angela D. Bryan on an app, ‘Zombies, Run!’ to test it’s efficacy with using gamification and motivation to encourage exercise. As this app turns running into something of a reality game, they learned that users disassociated from their exercise goals. Users tended to focus more on the game-play than on the actual process of exercise. Through their studies, they proved that using game-based apps, people were more apt to disassociate themselves from what many consider the “chore” of exercise. Many apps are being developed to promote exercise, but many fall short as they don’t focus on the user as much as the actual content. An app, such as ‘Nike + Running’ monitors and provides live-time feedback on different aspects of the user’s workout (distance, calories burned, etc). This is allowing the user to be self-motivated and set their own goals.

‘Zombies, Run!’ strives to market itself as a game first, and an exercise app second. The exercise goal is not of primary importance, but, rather, is being accomplished as a by-product of the individuals’ participation. Exercise and healthy-living apps need to be recognized as an effective tool to promote healthy and exercise behavior; being able to focus on this important aspect of life.

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26 Gillman, "Effects of Performance Versus Game-Based Mobile Applications on Response to Exercise ", 157.
ability the app has to motivate the user, apps in this category can have a profound effect on the users.

While these apps can promote healthy living, attention must also be given to the two different categories these apps can fall into: ones that remove the idea of exercise from the workout, or ones that direct the users’ attention to the workout.
3.0 DESIGN PROCESS
3.1 ONEMILE SKETCHES

Figure 31. Preliminary sketches.

Sketches were done to develop ideas and to offer different alternate solutions to some of the design problems. Navigation,
layout, format, icons, and the basic flow of the app/game were all explored through sketches (see Figure 31) (see additional sketches in Appendix A).
3.2 ONEMILE PAPER PROTOTYPES

Figure 32. Paper Prototypes (iPhone)
Figure 33. iPad paper prototypes.

Paper prototypes were constructed for the different formats (see Figures 32-33), such as iPhone and iPad and layouts. Usability testing was completed at this stage.
3.3 ONEMILE WIREFRAMES

**OneMile Logo**

User Name:

Password:

**Objectives**

- **Task 1: Mind Games**
- **Task 2: Motor Skills**
- **Task 3: Connectivity**
- **Task 4: Wellness 0/2**
- **Task 5: Discovery**

**MISSION 1: THE PATH**

Map

*Figure 34. Low-fidelity wireframes*
Wireframes were mocked up using Sketch software (see Figure 34). Exploration of type, layout and sizes was explored at this stage. Usability was tested at this stage.
3.4 ONEMILE FINAL PROTOTYPE

OneMile consists of five Objectives: THINK, TOUCH, CONNECT, ACT, DISCOVER. The first four Objectives must be met before DISCOVER can be unlocked (see Figure 35).

Figure 35. Objectives screen.

THINK has cognitive games such as Code Breaker and PuzzleMania. TOUCH is fine motor skill games. The user can play games like SPECTRAKILLER (pinching), or TRACE THE LETTER (tracing).
These games are all leveled and are timed. The user can keep track of his or her play by checking in the PROGRESS section (see Figure 36).

*Figure 36. Progress screen.*
An important part of OneMile is the CONNECT Objective (see Figure 37). CONNECT allows the user to socially connect with others who are also dealing with chronic illnesses. They can reach out through social media, through the OneMile Facebook page, Twitter or Instagram account. The user can choose to share their journey, or share a post with others. In addition, the user can videotape a message that they can choose to share or keep private, along with written journal entries. According to an article by Martin J. Moran and John N. Coons, “the primary purpose of playing video games is to provide an outlet for socialization, and coping with stresses of life”27

Figure 37. Connect screen.

27 Martin J. Moran, "Effects of a Smart-Phone Application on Psychological, Physiological, and Performance Variables in College-Aged Individuals While Running."
In the ACT section, a leveled exercise can be chosen, with tips from a certified personal trainer (see Figure 38). The Recipe of the Day features specific recipes that are tailored for the specific illness of the user. Healthy Living Tips are tips and tricks to help the user make their lives easier.

**Figure 38.** Act screen.
The final section, DISCOVER will be unlocked after the objectives for the first four sections are completed (see Figure 39). The DISCOVER section contains educational information: an informational video for children, new advances in medicine and any pertinent news regarding that specific illness.

Figure 39. Final screens, Discover section.
The user will progress on a journey, to explore the island of Turas. The map can be checked at any stage to see the progress the user is making (see Figure 40).

Figure 40. Final map.
The user will be able to track their progress at any stage, either on the map or through the PROGRESS section (see Figure 41). The user can check their progress on any of the sections, or tap on the LEADERBOARD or BADGES buttons to view their standings in the game, or against other players.

*Figure 41. Progress screen.*
The user can also check how their standing are on the leaderboard or how many badges they have acquired (see Figure 42-43).

![Progress leaderboard screen](image)

<table>
<thead>
<tr>
<th>RANK</th>
<th>USERNAME</th>
<th>OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MDGAMER24</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>KATATTACK</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>CHICKMAGNET</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>LILAC</td>
<td>5</td>
</tr>
</tbody>
</table>

*Figure 42. Progress leaderboard screen.*
Figure 43. Progress badges screen.
4.0  USABILITY TESTING AND RESULTS
4.1 IDEATION AND RESULTS

In the search for a name, many options were explored. Many associated words were listed to help in the formulation of a name:

active  husky
athletic  in fine feather
fresh  in fine fettle
healthful  in good shape
hearty  in the pink
lively  lusty
normal  muscular
robust  physically fit
strong  potent
tough  restored
vigorous  rosy-cheeked
able-bodied  safe and sound
all right  sound
blooming  stout
bright-eyed  sturdy
bushy-tailed  trim
chipper  unimpaired
firm  virile
fit  well
flourishing  whole
full of life  pure
hale  restorative
hardy  powerful
In the course of ideation, mind maps (see Figure 44) were employed to spark ideas for the brand and for the content:

**Figure 44.** Mind-mapping.
Possible name selections and user feedback helped narrow down the choices for a name for the app:

HealthSpark | Healthy You
HealthTrack | HealthXcite
LifePath | ExciteHealth
LifeTrack | Empower U **** (* w/o the “U”)
SuccessTrack | MPower
HealthStride | We R Empowered
InspireYou * | InciteHealth
InspireU * | incite.inspire
HealthyU * | DoMore
HealthStep | Q.O.L. (quality of life)
Make Strides | 3E (Empower. Excite. Encourage.) ****
Active You | 3E was chosen along with Empower U as the favorite names.
Full of Life * | Upon further research, there were already existing products on
Be You | the market with these names or very similar ones.

The user group was asked to share some experiences and it started a conversation regarding how people with a chronic illness feel. There is a saying “Walk a mile in my shoes”. This is often a phrase that those with a chronic illness employ, as they hear, “You look too good to be sick!”, or “You can’t be that tired. You can do it if you put your mind to it”, or “You don’t need help, you are fine”. OneMile evolved from that saying, so that people with chronic illnesses can honestly say they’ve walked that one mile, and it’s their journey to take. In addition, one mile is the first step in someone’s journey to wellness. That one mile with the first mile in a journey.
The logo has gone through many interactions and design evolutions (see Figure 45). (For additional iterations of the OneMile logo, see the Appendix, Page A).

Figure 45. OneMile logo iterations.
4.2 FINAL LOGO DESIGN

Logo and tagline exploration (see Figure 46).

*Figure 46.* Final logo, black and white and color.
4.3 TAGLINE OPTIONS

Tagline development came after the logo was finalized. People were asked which tagline they preferred. In parenthesis the number of results is shown:

It’s just the beginning (4)
Where every journey begins (12)
We each take our own journey (2)
Journey to wellness (1)
Your wellness journey (1)

Where every journey begins received the most votes with 12.
4.4 COLOR STUDIES

Color selection for OneMile was very thorough (see Figures 47-48). Colors were chosen for different criteria: first and foremost was the contrast level for those with visual impairment and/or limitations. Secondly, colors were considered and eventually chosen based on the vibrancy and contrast of color. Also, the colors needed to appeal to a wide audience: men and women and multiple age groups. Usability studies were conducted to see how the colors were received. The user group was given a select group of color palettes to choose the colors that appealed to them. They were asked to take into account the visibility, and the legibility of type on the color. They also needed to decide how the background color impacted the color choices. (For additional examples, see Appendix, Page A.)

Figure 47. Color testing.
Figure 48. Color testing.
4.5 CHOSEN PALETTE

67% of the survey takers chose this palette (see figure 49).

![Final color palette.](image)

*Figure 49.* Final color palette.
4.6 TYPE STUDIES

Type choices were made based on the audience and the contrast and legibility of the type. Due to vision problems that many with MS suffer, the chosen type must have wide strokes, with wide serifs, such as slab serifs. The sans serif that was chosen was due to the geometric qualities of the type. The user group was given a select group of typefaces to choose from. There were instructed to choose the typefaces that were most visually appealing and most legible.

Three sets of typefaces were selected for the initial user study:

1. **Proxima Nova**  
   Museo Slab 300

2. **Agenda**  
   Superclarendon

3. **Futura**  
   Adobe Caslon
4.7 TYPE SIZE

The user group was given a selection of 3 type sizes and asked to choose the one that was the most legible.

77% of the users choose type size number 2 (see Figure 50).

Figure 50. Type size testing.
5.0 FINAL SCREENS
5.1 FINAL DESIGN/SAMPLE SCREENS

SIGN IN/SIGN UP
SIGN IN TO YOUR ACCOUNT
SIGN UP TO START YOUR JOURNEY
**VIDEO JOURNAL**
Share your journey with others who understand, who get it, and who get you. A great way to connect with other OneMilers.

**VIDEO JOURNEYS**
Take some time to view some of your fellow OneMilers’ journeys. Make a connection and know that you are not alone!

**PERSONAL JOURNAL**
Want to just get down some thoughts? Tell how you’re feeling today. Write about your joys, your fears and your triumphs.

**SOCIAL CONNECTION**
Share your story with others. Log into our private OneMile Facebook page to leave a note, read a story to just to be with others who care.

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**EXERCISES**
Choose what you’d like to work on in your exercise routine. Pick something different each day to improve your health and your mood!

**RECIPE OF THE DAY**
Try out some of these delicious recipes! Healthy and nutritious, these recipes can help you in your journey to wellness!

**HEALTHY LIVING**
Some days we need some help. Take a look at these Healthy Living tips to make life a little bit easier!
Welcome to OneMile.

Are you brave enough to join our team?

You will be going on a journey to the island of Turas.

HISTORY

4/28 Joined OneMile

5/1 Made 3 CONNECTIONS

5/4 Completed 1 THINK Objective

5/5 Completed 1 THINK Objective

5/8 Completed 1 TOUCH Objective
Figure 51. Final screens.
6.0 EVALUATION
Imagine RIT on May 7, 2016 was a successful venue to obtain user feedback (see Figure 52). Verbal and written feedback were both supplied by a variety of users of varying age groups. (See Appendix B.2 for the complete set of questionnaires)

OneMile Questionnaire
IMAGINE RIT

Name (optional) __________________________

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   Very pleasing to the eye, user friendly

2. What would you want to change?

3. Is the type legible?
   Yes

4. Are the colors pleasing?
   Yes, colorful but not too bright

5. Did you find it easy to navigate?
   Yes

6. Was there anything you found to be confusing?
   No

7. Do you like the graphics?
   Yes

8. Would you be apt to come back and use this again?
   Yes

9. Would this motivate you to want to keep using it?
   Yes

10. On a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?
    
    1  2  3  4  5  6  7  8  9  10

    COMMENTS:
    Pretty cool app 😊

Figure 52. Sample of final usability test.
7.0 CONCLUSION
7.1 CONCLUSION

OneMile started as a website to help people with chronic illnesses, but has evolved into an app to motivate people with chronic illness. Through comprehensive research, and quickly realizing that there is a plethora of sites that exist for helping people improve their journey into wellness, the option of using an application for tablets became much for viable. The audience of people with chronic illness is often overlooked. While there are apps for symptom or medication management, there is nothing that sees this audience as viable, active and mobile. Something is needed to encourage people to develop healthy habits or to motivate people who are active to continue on their path to wellness.

Based on usability studies, the results overwhelmingly proved that potential users didn’t want a website as it was not portable, and they wanted an app for a tablet as it was easy to use and see, especially for those with vision issues. The direction of the app changed throughout the development. As this prototype is based on chronic illness, Multiple Sclerosis specifically, user feedback was critical. Ideas such as a reward-based game, collecting inventory, using levels, completing one Milestone and then being able to move onto the next, playing games that worked cognitive and fine motor skills, were all the result of user feedback and comments.

Designing the overall look was again based on user feedback. Questions were posted such as which typefaces were most legible, which colors were most appealing, and from these results, the design quickly developed.

In addition, usability studies influenced the type and color choices and decisions, button sizes and layout in general. While researching successful apps and how to encourage motivation in people, the concept of gamification and how it could be used developed. As people are more apt to use an app that has rewards, using a game (the journey) will encourage more and more people to use and to continue to use the app.
Overall, feedback has been positive, and minor changes have been made to the final prototype based on usability questionnaires (see Appendix B).

The OneMile app is an important tool for anyone with a chronic illness, as there is nothing like it on the market and because the audience of people with chronic illnesses is often overlooked, this app is applicable in today’s society.

Research shows that special considerations must be made for people with chronic illness. The user interface must be useable and effective for the target audience as it is imperative that certain limitations of the audience must be considered.
A.1 THESIS PROPOSAL

1mile: Helping People Maintain Their Healthy Life While Battling a Chronic Illness

Keli DiRisio
May 12, 2015
Title: 1mile: Helping People Maintain Their Healthy Life While Battling a Chronic Illness
Using interaction design with motion graphics to create "modules" that can help maintain or help improve quality of life for people suffering with multiple sclerosis (MS) and other chronic diseases
Submitted by: Keli DiRisio
Date: May 12, 2015

Thesis Committee Approval:

Chief Thesis Adviser: Chris Jackson, MFA Program Name

_____________________________ Date
Signature of Chief Thesis Adviser

Associate Thesis Adviser: Daniel DeLuna, Program Name

_____________________________ Date
Signature of Associate Thesis Adviser

Associate Thesis Adviser: Nancy Ciolek, Program Name

_____________________________ Date
Signature of Associate Thesis Adviser

MFA Thesis Candidate: Keli M. DiRisio

_____________________________ Date
Signature of MFA Thesis Candidate
ABSTRACT

Using interaction design with motion graphics to create “modules” that can help maintain or help improve quality of life in people suffering with multiple sclerosis (MS) and other neurological diseases

There are many tools, both tangible and online, for people with debilitating illnesses to use for rehabilitation. Physical therapists and occupational therapists work with patients on various areas of their body to help them improve their quality of life, or to bring them back from the devastating effects of illness or injury.

As part of this preliminary study, a survey was presented to two separate MS organizations along with individuals with MS. They were asked if they would find it beneficial and appealing to have a home-based system to help them focus on their rehab. The general consensus was they would definitely find it useful as they could use it repeatedly in the comfort of their homes. However, it wasn’t so much rehabilitation that was the interest as it was ways to develop a healthy lifestyle or to maintain the health they currently have.

The main symptoms that the survey takers wanted addressed, either to improve or maintain, were fine-motor skills, memory and cognition, and hand/eye coordination. Many of the surveys takers stated that while rehab was useful, it wasn’t always needed, and they wanted something to encourage their well-being all of the time. All of the survey takers mentioned they would rather have a combination of different technologies (game, motion, web, book). This combination of mediums lends itself to the idea of a “module” to fully explore all of the potential aspects of a person’s illness.

The purpose of the “modules” would be so each user could choose exactly what he or she wants/needs to work on. For example, with MS being the overall topic, there could be a cognitive module, an exercise module, a healthy eating module, and education module. These would each have gesture-based games to track progress (similar to brain games or a fine motor skills game), a motion feature to watch and read for cognitive recognition and memory, interactivity for the educational component, with the possibility of using augmented reality.

THESIS STATEMENT

A resource needs to be made available to those who are dealing with the devastating effects of multiple sclerosis. Using interaction design to develop a comprehensive website with corresponding modules, a user can explore different methods to help them maintain their health-level or to explore ways to improve it.
PROBLEM STATEMENT

While there are many interactive tools for people who suffer from debilitating illness or injury, there are not any that help people who are active, in spite of an illness. This subset of patients is often over-looked, considered not needing assistance. As a focus area, people with multiple sclerosis will be the main component of this thesis project, Empower.

Through a comprehensive design, the goal of this thesis is to provide a product that people with MS or other illnesses can use to improve their quality of life. By allowing people to be self-enabled, they will be more apt to exercise at home and better able to follow a healthy lifestyle, enabling men and women to maintain and adopt this healthy tool. A variety of interactive tools will be used to help develop a comprehensive program for people with MS.

There is a need for a product such as this as there is nothing else similar on the market. There are many apps and websites for people with MS or other illnesses, but most of the users are managing their current illness with tools like a medication reminder, a symptom tracker or a journal to keep track of their symptoms. There is also nothing on the market for people who have an active lifestyle and who want to maintain their level of health or improve upon it.

This product will contribute not only to the field of design, but to the field of health. In regard to design, there will be a website with corresponding components to help people in their quest for a healthy lifestyle. Through user interaction, user experience, motion graphics, interactivity and augmented reality, patients can explore many different facets of the program, based on their wants and/or needs. Motion graphics will be used to help develop cognitive skills and memory. Interactivity will be used to help with fine motor skills. Augmented reality will be used for comprehension and education, along with the benefits of kinesiology, the study of human movement.

In addition, it has been proven that playing video ‘games’ can increase motor skills, spatial relationship analysis along with reflective decision-making. All of these capabilities can have a profound effect on MS patients and the course of their illness. Early on, video game play was blamed for a sedentary lifestyle; hospitals and therapists are now using gesture-based technology, such as Wii and Kinect for rehab and exercise.
PROBLEM STATEMENT

As a case study for this thesis project, MS patients were surveyed to see if they would find it beneficial and appealing to have a home-based rehab/maintenance health system. A survey was provided to two separate MS groups and various individuals with MS. The survey questions were about the type of rehab people would find useful and how they would use it.

The overwhelming response was to have some form of rehabilitation that could be performed at home, at their convenience. This was for a multitude of reasons:

1. Convenience
2. They are not in close proximity to a physical therapist/occupational therapist
3. Financial [sometimes insurance does not cover PT or OT for reoccurring illness such as MS]
4. Mobility issues affecting their ability to get to therapy

Multiple sclerosis is a chronic disease that is known for its unpredictability. More than 2.3 million people are affected worldwide. Most people are diagnosed between the ages of 20 to 50, but there is an increase in pediatric MS. 2-3 times as many women as men develop MS.¹

Multiple sclerosis causes a body’s immune system to attack the central nervous system (brain, optic nerve and spinal cord). When the immune system attacks the myelin, which is the coating that surrounds the nerve fibers, or the nerves, the damaged myelin forms scar tissue from which the disease is given its name (sclerosis). The nerve impulses are interrupted at these damaged areas and can produce a wide range of symptoms, such as the loss of fine motor skills, loss of mobility, cognitive impairment, vision problems, just to name a few.

1MILE

This name was chosen because many people who suffer from chronic illnesses may look ‘normal’ to the outside world. People often don’t understand what someone with an illness is feeling or experiencing; it may be fatigue, pain, weakness, tremors, etc. Many of these symptoms are not seen by the public, but they are felt by the individual. Many of those suffering with chronic illness often hear, “You can’t be sick, you look so good!” or “Come on! Don’t cancel again! You can’t be that tired.” And every one of those people would like to answer, “Please don’t judge me until you’ve walked a mile in my shoes.” That 1 mile represents not only the journey we’ve all taken, but the first mile of the journey ahead of us that we have to and will conquer. 1mile stands for our strength and our resilience in the face of an illness.
SURVEY OF LITERATURE

Linear logic for non-linear storytelling
A-G Bosser, M.O. Cavazza, R. Champagnat
19th European Conference on artificial intelligence
IOS Press

This article discusses the renewed interest in interactive narratives. The planning in imperative in a successful narrative, especially in interactive pieces. Bridging the gap between descriptions and narrative concepts using Linear Logic.

The Best Multiple Sclerosis Iphone and Android Apps of the Year.
Jeri Burtchell
Healthline
Accessed February 28, 2015

An introduction to the top apps for MS. These apps cover many aspects of tracking the disease for patients and for doctors. Patients can use the apps to highlight information, search for info, track symptoms, medication reminders, journaling, and researching medications. In addition, some of the apps are for health care providers to track a patient’s progress or to test their cognitive abilities or motor dexterity.

Steve Krug
San Francisco, CA, Peach Pit, 2014.

This book discusses web usability and how designers need to be aware of what their audience wants/needs. Krug focuses on how designers need to keep in mind what they are designing and how they are implementing the content, and how to make it the most effective for their audience.

Affordances for Learning in a Non-Linear Narrative Medium.

This article discusses the narrative as a question and answer tool. Tests were done to see how students learned and how they absorbed information in a digital environment. Was process the focus or was content?

Loss of Hand Dexterity and Coordination
HealthCare Journey
Accessed February 18, 2015

Gives information about MS (symptoms, treatments) but focuses on the loss of motor dexterity. Exercises are suggested that can help improve fine motor skills that have deteriorated.
SURVEY OF LITERATURE

National Multiple Sclerosis Society
http://www.nationalmssociety.org/

National society website. Full of information on MS and various treatments methods, along with general information for newly diagnosed patients or for those who have had the illness. This site is the official site and the information is always current and accurate.

The Design of Everyday Things
Don Norman

Don Norman discusses the concept of useability in design. Bad design is prevalent and the need for thoughful design with the user in mind is a necessity. Norman points out why some designs are successful and how the designs and the design decisions affect their users.

Immersive Design
Matt Sundstrom
Accessed March 2, 2015
https://medium.com/backchannel/immersive-design-76499204d5f6

This website discusses the rise of the digital landscape and where it is headed. VR technology is growing at an alarming rate, but the thinking behind VR has not. While the idea is good, sometimes the tech is lacking.

Encyclopedia of Video Games: The Culture, Technology, and Art of Gaming.
Mark Wolf
Westport, CT, USA: Greenwood, 2012.

Comprehensive guide to video games, from a historical viewpoint and an advancements in technology viewpoint. This book gives a wide range of information on all aspects of video games: design, character development, technology, kinesiology, physical and mental impact, to current day games and the future.
<table>
<thead>
<tr>
<th>PRODUCT NAME IDEATION (Word Bank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>active</td>
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PRODUCT NAME IDEAS

* Feeback of favorite name

HealthSpark
HealthTrack
LifePath
LifeTrack
SuccessTrack
HealthStride
InspireYou *
InspireU *
HealthyU *
HealthStep
Make Strides
Active You
Full of Life *
MINDMAPPING

empower

- drive
- motivate
- determined
- health
- fail
- walk
- wheelchair run
- improve
- willpower
- give
- share
- help
- assist
- encourage
- succeed
- no depression
- inspire
- strength
- loss of physical mobility
- mental
- body
- cognitive
- active
- health
- food
- exercise
- mental health
- do better
- emulate
- challenge yourself
- drive
DiRisio | 10
PERSONAS

Maura Hyatt
21 years old
College student
Diagnosed 8 months ago
Very active (walks, runs in marathons)
Wants to do more for her health/maintain her health

Kristen Conners
32 years old
Stay at home mom
Diagnosed 3 years ago
Fairly active (walks, plays with kids)
Wants to do more for her health/maintain her health

Kara Draveck
44 years old
Works as a financial consultant
Diagnosed 16 years ago
Very active (runs, plays tennis)
Wants to stay active, possibly do more

Peter Mullin
51 years old
Works in construction
Diagnosed 21 years ago
Moderately active (physical work of job, runs)
Wants to maintain his level of health
HOME: EMPOWER U!

- COGNITIVE
  - brain games
  - memory games
- FINE MOTOR SKILLS
  - gesture activity
  - motor skill game
- INSPIRATION
  - message
  - stories
- EDUCATION
  - AR book
  - facts
  - animated movie
- LIFESTYLE
  - exercise
  - diet
  - journal

Video/movie
Interactivity
Gesture based
Webpage
Augmented Reality (print)
Interactive game (color/shape recognition) for the user to increase their cognitive abilities.

An interactive activity where the user focuses on mouse movement and the improvement of fine motor skills.

Video (30 seconds) to show viewer about exercise and MS.

Augmented reality book (10 pages) to teach about MS.
<table>
<thead>
<tr>
<th>Cognitive</th>
<th>Fine Motor</th>
<th>Inspiration</th>
<th>Education</th>
<th>Lifestyle</th>
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</thead>
</table>


Museo Slab 100
*Museo Slab 100 Italic*
Museo Slab 300
*Museo Slab 300 Italic*
Museo Slab 500
*Museo Slab 500 Italic*
Museo Slab 700
*Museo Slab 700 Italic*
Museo Slab 900
*Museo Slab 900 Italic*
Museo Slab 1000
*Museo Slab 1000 Italic*

Proxima Nova Thin
*Proxima Nova Thin Italic*
Proxima Nova Light
*Proxima Nova Light Italic*
Proxima Nova Regular
*Proxima Nova Regular Italic*
Proxima Nova Semibold
*Proxima Nova Semibold Italic*
Proxima Nova Bold
*Proxima Nova Bold Italic*
Proxima Nova Extrabold
Proxima Nova Extrabold Italic
Proxima Nova Black
*Proxima Nova Black Italic*
COLOR STUDIES

C: 19  M: 0  Y: 78  K: 34  R: 151  G: 161  B: 68
C: 10  M: 46  Y: 0  K: 77  R: 84  G: 53  B: 74
C: 0  M: 88  Y: 52  K: 43  R: 153  G: 39  B: 58
C: 0  M: 64  Y: 77  K: 19  R: 203  G: 103  B: 61
C: 0  M: 1  Y: 82  K: 7  R: 244  G: 224  B: 70

C: 0  M: 50  Y: 100  K: 0  R: 238  G: 143  B: 28
C: 0  M: 15  Y: 80  K: 0  R: 255  G: 214  B: 79
C: 0  M: 0  Y: 60  K: 20  R: 214  G: 204  B: 112
C: 50  M: 15  Y: 80  K: 88  R: 30  G: 68  B: 86

C: 0  M: 50  Y: 100  K: 0  R: 94  G: 0  B: 66
C: 13  M: 33  Y: 0  K: 80  R: 44  G: 54  B: 51
C: 100  M: 0  Y: 20  K: 48  R: 0  G: 153  B: 105
C: 22  M: 0  Y: 100  K: 29  R: 141  G: 181  B: 0

C: 0  M: 83  Y: 57  K: 50  R: 127  G: 22  B: 55
C: 97  M: 0  Y: 0  K: 53  R: 4  G: 120  B: 120
C: 0  M: 28  Y: 80  K: 0  R: 255  G: 183  B: 51
C: 0  M: 53  Y: 78  K: 4  R: 245  G: 115  B: 54
C: 0  M: 83  Y: 83  K: 24  R: 194  G: 33  B: 33
DESIGN METHODOLOGY

**Project:** Website with corresponding sections (modules) to encourage people with MS improve or maintain their level of health and their quality of life.

**Target Audience:** A comprehensive website will be built, with MS patients as the target audience, men and women from ages 18-7. They will have an active lifestyle, people who exercise and watch their diet. They are conscientious about their health and their lifestyle.

**Overall Project:** The Empower website will have five modules: Cognitive, Fine Motor Skills, Inspiration, Education, and Lifestyle. Each section will have various exercises and/or information for the viewer.

**Hardware/Software:** The project will be built using:
- Adobe After Effects
- Adobe Dreamweaver
- Adobe Flash
- Adobe Illustrator
- Adobe Photoshop
- Adobe Premiere Pro
- Adobe SpeedGrade
- Metaio Creator
- Leap Motion

**Assets:**

**Motion:**
- Cognitive: ISpy type scene for memory recognition that would change 3-5 times for different viewings

**Interaction:**
- Cognitive: Game using critical thinking
- Fine Motor Skills: Game using mouse movement (clicking, moving)
- Augmented Reality: Print book, using illustration to show what MS is and how it affects the patient

**Scope of Project** (focusing on four sections: Cognitive, Fine Motor Skills, Education, Lifestyle):

**Interactivity**
- Cognitive: 1 interactive game (for critical thinking and memory)
- Fine Motor Skills: 1 interactive game (using mouse for motion, clicking)

**Augmented Reality**
- Education: 10 page book with infographics/illustrations/link to webpages used to educate people who do not know about Multiple Sclerosis.

**Motion Graphics**
- Lifestyle: 1 movie, approximately 30 seconds long (video)

**Website**
- Web pages for all sections to show content and navigation.
- Place holders for Inspiration and Lifestyle section to show content possibilities.
Details of Project:

Dimensions:
- Overall webpage: 1000 pixels wide
- Motion graphics: 1920 x 1080
- Interactivity: 500-600 pixels wide

Interactive Details:
- Software: Adobe Flash
- Coding: JavaScript, ActionScript
- Topics: 4 interactive pieces (1- Cognitive, 1-Motor Skills)
- Quantity of interactivity:
  - Cognitive: Active interactivity-Games to help cognitive abilities (memory, critical thinking, problem solving)
  - Fine Motor Skills: Active interactivity-Games to help motor skills
- Narrative component: Education section (AR book and motion graphic) with audio to relay info regarding MS
## DESIGN METHODOLOGY

<table>
<thead>
<tr>
<th>DESIGN</th>
<th>TECHNOLOGY</th>
<th>SUBJECT MATTER</th>
</tr>
</thead>
</table>
| UI/UX Design (overall site) | Adobe Dreamweaver  
Adobe Flash | Website for people with Multiple Sclerosis that contains 5 sections:  
Cognitive  
Fine Motor Skills  
Inspiration  
Education  
Lifestyle |
| Interaction Design      | Adobe Dreamweaver  
Adobe Flash  
Metaio Creator | Interactive games:  
Cognitive games  
Education |
| Motion Graphics         | Adobe Illustrator  
Adobe Photoshop  
Adobe After Effects  
Adobe SpeedGrade  
Adobe Premiere Pro | Short animations:  
Infographics  
Narratives  
Cognitive games |
Implementation Strategies

This thesis project will be implemented through thorough planning, investigating the most useful and beneficial methods to provide a helpful and thorough tool that people with MS will use and enjoy.

I will be working over the course of the summer and fall of 2015 to implement all of the aspects of this project. While there are five sections to the website, I will be focusing on four:

- Cognitive
- Fine Motor Skills
- Education
- Lifestyle

Dissemination

- I have been in contact with Valerie Hoak, from the Upstate MS Society.
- Through Valerie, I have a contact at the National MS Society.
- I have contacted Brandon Yehl, a Physician’s Assistant and an MS patient to be an outside consult. Brandon has many contacts within the MS community and would help to involve patients.
- I have also spoken with my neurologist, Dr. Lesser to see if he would see a use for this with his patients.
- There are also many MS groups, both locally and nationally that I would approach.

Evaluation Plan

I have four MS groups on Facebook that have agreed to do testing and provide feedback.
I know many MS patients in the area who agreed to do testing and feedback.
I will keep a record of feedback and leave enough time to implement any necessary changes into my final project.

Pragmatic Considerations

I have a timeline (see page 18) carefully planned.
There is minimal expense involved (LEAP motion $69)
# Thesis Timeline

**An Interactive Website to Provide People with MS the Tools to Enjoy or Improve Their Quality of Life**

by Keli DiRisio

<table>
<thead>
<tr>
<th>MONTHS</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
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<tbody>
<tr>
<td>Dates</td>
<td>May</td>
<td>June</td>
<td>July</td>
<td>August</td>
<td>September</td>
<td>October</td>
<td>November</td>
<td>December</td>
</tr>
</tbody>
</table>

### Milestones
- Proposal accepted
- Flow chart finished
- Web site started
- 1st committee meeting
- Content finalized
- Storyboards done
- 2nd committee meeting
- 1st prototype done
- 3rd committee meeting
- Pass thesis defense
- Beta prototype done
- 4th committee meeting
- Complete final project
- Thesis report online
- Last committee meeting
- Thesis show
- Graduation

### Dates

**End of Spring Semester**

**Beginning of Fall Semester**

**Thesis Defense**
BIBLIOGRAPHY


A.2 WEBSITE WIREFRAMES
A.3 SKETCHES
A.4 PAPER PROTOTYPES (IOS)
A.5 PAPER PROTOTYPE (IPAD)
A.7 LOGO IDEATION

1mile 1mile

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1mile
A.8 COLOR STUDIES
B.1 SURVEYS

SURVEY (CONDUCTED ON SURVEY MONKEY) 67 TAKERS
(https://www.surveymonkey.com/r/8Q9HLZM)

INTRO:
Thank you for participating in this survey. Your feedback is important as it will help me in the direction of my thesis for my MFA degree. All of your answers will be kept anonymous.

My thesis is an app for people with chronic illnesses, to be a motivational tool to improve or maintain wellness. This application is called OneMile, and it will consist of 5 sections, that can be tailored for the user's skill/energy level for the user to explore: 1. Cognitive activities (brain games), 2. Fine motor skill activities (games involving acute motor skills such as pinching and picking up), 3. Wellness and diet (exercises and diet suggestions), 4. Social connections (journaling, the ability to post stories/videos to social media in a controlled, private way), 5. Discovery and education (videos, info graphics, news articles for the user or to share with others).

OneMile is to encourage the user to have fun while being healthy. It is for any age and would be available to a vast variety of illnesses.

Thank you for your help!

QUESTION 1:
The name of this app is OneMile. It is to represent the journey that someone with a chronic illness faces everyday, when you feel like telling someone to "Walk a mile in my shoes". Does this name make sense to you and can you relate to it?

Yes (73.13%)
No (4.48%)
Maybe (22.39%)

COMMENTS:
Although the naming seems a bit like the person with a chronic illness (not the user) has created an exercise routine so the user can feel how hard it is to "walk a mile" in their shoes... maybe this is okay?
Seems like a very old fashioned term.

Sure - why not - there are stranger names out there that don't make sense till you read about them or someone tells you about it - the content is more important

I like the reference - when I hear 'one mile' i think 'long journey' and 'difficult'. If it's about being a motivational app maybe a name that sparks being in the now, making a good choice in the moment, the idea of step by step.

While reading the write up and then reading the app title - based on the title it sounded like a running app.

Maybe onestep... Like take things especially when dealing with am illness, one step at a time

I understand where the name originates, however, I wouldn't associate it with this type of application. To me, just from the name, it sounds like a walking/running app.

**QUESTION 2:**

The OneMile app will contain elements of gamification, meaning it will have aspects of a game. For example, you will have to complete missions to obtain rewards to continue on in the app. Would you enjoy using an app that contains some aspects of gaming as opposed to a standard app that only contains exercises, news and tips for wellness?

Gamification app (67.69%)
Standard app (7.69%)
Don't care either way (21.54%)
Other (please specify) (3.08%)

**COMMENTS:**

Great idea to interact

As long as there is a way to move to the next "level". Getting stuck and not being able to move forward can be frustrating and will often cause me to not return to the app.
QUESTION 3:
The OneMile app will consist of a journey that the user will take. You will have to complete various tasks, and once these tasks are complete, you will finish your first mission and you will have made it to the first Milepost. Would you rather have your mission entail which of the following to continue on in the app:

- Having to escape from a specific location (Amazon, Egypt, etc). (6.45%)
- Exploring a specific location (Amazon, Egypt, etc) to obtain a specific reward that you will need to continue. (87.10%)
- Other (6.45%)

COMMENTS:
I'm an explorer not an escape type

Both. Sounds entertaining.

Neither sounds appealing. Too historical maybe more of a "fantasy" mission

I would much rather explore a location than try to escape, since there is no "escape" from chronic illness. But I personally would like to obtain rewards that reflect my personal growth. I think that, especially for younger people, showing the potential long-term gains from taking care of yourself (i.e. life events: college, first job, getting a pet, first promotion, move to a new city, meet new people, find a partner, buy a house, start a family, open your own business, grandchildren, retire, pick up new hobbies, etc.) would help them visualize where they can go and what they can experience despite chronic illness.

QUESTION 4:
For the prize you would obtain, do you like the idea of obtaining pieces of a map that would direct to you to next mission (one 'prize' at the end of the mission), or would you rather obtain prizes along the way to help you earn the entry to the next mission, for example, you would obtain food, water, and other items in your journey (multiple 'prizes' throughout the mission).

- One prize at end, like a map (8.47%)
- Many prizes throughout the mission, like food, water, supplies (88.14%)
- Other (please specify) (3.39%)
COMMENTS:
I like the many prizes idea, but once mission is completed, could the user get the piece of the map so they are encouraged to continue? Goes with exploring vs escaping

QUESTION 5:
OneMile will contain 5 sections. Please rank in order of greatest interest (5) to least amount of interest (1):

1. Cognitive Games
   1: 24.49%  2: 22.45%  3: 18.37%  4: 14.29%  5: 20.41%

2. Fine Motor Skills Games
   1: 20.00%  2: 20.00%  3: 24.00%  4: 22.00%  5: 14.00%

3. Wellness (exercise and diet)
   1: 17.65%  2: 19.61%  3: 21.57%  4: 21.57%  5: 19.61%

4. Social Connection (sharing on social media/journaling in a controlled and private manner)
   1: 13.73%  2: 19.61%  3: 25.49%  4: 13.73%  5: 27.45%

5. Discovery (educational aspects for sharing with other or learning)
   1: 22.00%  2: 16.00%  3: 12.00%  4: 28.00%  5: 22.00%

QUESTION 6:
On a previous survey, takers stated that they didn't want another app or website that was geared toward "rehab". They were active or mobile and wanted something that could help them continue in their path of wellness or help them maintain their wellness level. Do you agree?
   Yes (94.44%)
   No (5.56%)

COMMENTS:
Two apps would be better. Some chronic illnesses come with pets and valleys. I have periods of time where I am recovering in the house for days, weeks or months. Then months of average life.

I think it depends on who your intended audience is.
QUESTION 7:
Would you encourage others to use the app with you?
   Yes (52.73%)
   No (3.64%)
   Maybe (43.64%)

QUESTION 8:
You would be able to keep track of your usage and stats, comparing your usage and results for the week/month/year every time you use the app. Would this encourage you to keep returning to the app?
   Yes (68.52%)
   No (0%)
   Maybe (31.48%)

QUESTION 9:
As a user of the app, do you find it more interesting from a first-person perspective, meaning you would be the one completing the journey, or would you rather watch/learn about someone else doing the journey (while you do the exercises and games)?

Who would be the main character?
   First person (82.69%)
   Another person (13.46%)
   Animal (3.85%)
B.2 USABILITY QUESTIONNAIRES

QUESTIONNAIRE 1: PROTOTYPE TESTING
(18 SUBJECTS)

Usability Questionnaire

1. Was the format easy to learn?

91% yes
4% no
5% somewhat

2. Was the game easy to follow?

97% yes
1% no
2% somewhat

3. Do you like/find useful the large buttons?

94% yes
6% no

4. Is the type large enough?

94% yes
6% too big

5. What would you change?
   More navigation: icons for menu maybe

Comments:

Nice, clean look
Easy to navigate
QUESTIONNAIRE 2: LOW-FIDELITY TESTING
(18 SUBJECTS)

Usability Questionnaire

1. Do you prefer a vertical or a horizontal format?
   13% vertical
   87% horizontal

2. Do you think the type is large enough?
   72% yes
   28% no

3. Do you like/find useful the large buttons?
   86% yes
   14% no

4. Would you prefer different shape buttons? (Please explain)
   23% yes (bigger, rectangle)
   77% no

5. What would you change?
   no image at top, navigation at top too small

Comments:
I like the idea, but I would want a horizontal format
I like rectangular shaped buttons - easier for my fingers
Want to see actual type samples
QUESTIONNAIRE 3: HIGH-FIDELITY TESTING
(18 SUBJECTS)

Usability Questionnaire

1. Was the format easy to learn?
   - 91% yes
   - 4% no
   - 5% somewhat

2. Was the game easy to follow?
   - 97% yes
   - 1% no
   - 2% somewhat

3. Do you like/find useful the large buttons?
   - 94% yes
   - 6% no

4. Is the type large enough?
   - 94% yes
   - 6% too big

5. What would you change?
   More navigation: icons for menu maybe

Comments:

Nice, clean look
Easy to navigate
OneMile Questionnaire
Final Prototype
4/12

https://invis.io/2C6W5CRRZ

Name (optional) _______________________________________________________

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?

   It has a personal feel and the sense of community comes through as well.

2. What would you want to change?

   The menu bar on the bottom is off the screen on my ipad when i looked at it through safari.

3. Is the type legible?

   Type is legible.

4. Are the colors pleasing?

   Lime green isn't my fav but it works with the color scheme on the site.
5. Did you find it easy to navigate around?

I definitely could navigate around. I was using the pull down menu until my screen accidentally moved and I realized the menu bar was also on the bottom. That is very handy.

6. Was there anything you found to be confusing?

When I opened the page in safari there was a white arrow pointing up at my tabs of sites and address bar. I think you wanted me to use the tool to add to my home screen but the instructions weren't lined up with it so it took me a few minutes to figure out what you wanted me to do with that arrow - I did - but maybe longer than I would have spent in a new app that wasn't my friends. :-]

7. Do you like the graphics?

Yes. The graphics were all appropriate and helped me navigate.

8. Would you be apt to come back and use this again?

Yes. I think some prompts that allow for videos about the good things will be important. If the videos always revolve around the bad of an illness it might feel overwhelming. And if there were a number of shared videos on a common theme - that didn't always result in an "I feel bad again" answer that would build that sense of sharing.

9. Would this motivate you to want to keep using it?

I think video journaling is a lot easier than writing in a journal so I'd be more apt to come back. I think seeing other people's stories and the sense of community would be a big benefit.

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?

6 - I think it's a great for recording and identifying patterns in the journey of the illness that might help doctors in directing a course of treatment. Otherwise from what I see know it would be a mental health tool addressing aspects of the illness that might be less physical in nature.
OneMile Questionnaire
Final Prototype
4/12

https://invis.io/2C6W5CRRZ

Name (optional) Michelle Cardella

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   There is so much to do and explore. Not only will it take a long time to complete but I think users will stay entertained and engaged.

2. What would you want to change?
   I got myself off task by checking out other things and then forgot how to get back to where I was. So maybe not so much a change but an addition of a walk thru or something for those of us easily distracted.

3. Is the type legible?
   Yes

4. Are the colors pleasing?
   Yes
5. Did you find it easy to navigate around?
   When I stayed on task and promised not to click on something else that looked interesting.

6. Was there anything you found to be confusing?
   No

7. Do you like the graphics?
   Yes

8. Would you be apt to come back and use this again?
   Definitely!

9. Would this motivate you to want to keep using it?
   Yes

10. On a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?
    10
OneMile Questionnaire
IMAGINE RIT

Name (optional)  

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   I liked the wide range of activities. I feel like I could never get tired of them and a lot of them have different benefits.

2. What would you want to change?
   I'm a little lost about the purpose of the map. I might need a brief description.

3. Is the type legible?
   Yes

4. Are the colors pleasing?
   Yes

5. Did you find it easy to navigate?
   The navigation on the side has a lot of options, so it is a bit overwhelming. Even cutting down on 1 or 2 might help.

6. Was there anything you found to be confusing?
   The map

7. Do you like the graphics?
   I think you have great ones that don't draw away from the purpose.

8. Would you be apt to come back and use this again?
   Yes

9. Would this motivate you to want to keep using it?
   Yes

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?

   1 2 3 4 5 6 7 8 9 10

   COMMENTS:
Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   - Visually pleasing and fun games

2. What would you want to change?
   - Try to differentiate tabs more so they immediately look like a different section (without needing the header)

3. Is the type legible?
   - Yes

4. Are the colors pleasing?
   - Yes

5. Did you find it easy to navigate?
   - Pretty much, I didn't notice the 'Navigation tab' at the top though.

6. Was there anything you found to be confusing?
   - See #5

7. Do you like the graphics?
   - Yes, very clean looking

8. Would you be apt to come back and use this again?
   - Yes

9. Would this motivate you to want to keep using it?
   - Yes

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?
    - 8

COMMENTS:
I don't know the science behind this but I'd guess pretty good.
OneMile Questionnaire
IMAGINE RIT

Name (optional) 

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   WELL DESIGNED, BUTTONS ARE PROPERLY SIZED FOR AUDIENCE

2. What would you want to change?
   TOO LIMITED SIGNIFICANT ICONS THAT ARE ACTIVE

3. Is the type legible?
   YES

4. Are the colors pleasing?
   YES

5. Did you find it easy to navigate?
   YES

6. Was there anything you found to be confusing?
   HOME BUTTON IS A TIP!

7. Do you like the graphics?
   LOVE IT, ESPECIALLY THE TIP!

8. Would you be apt to come back and use this again?
   YES

9. Would this motivate you to want to keep using it?
   YES

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?

1  2  3  4  5  6  7  8  9  10

COMMENTS: GREAT JOB, KELEVERA
OneMile Questionnaire
IMAGINE RIT

Name (optional) ____________________________________________________________

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   "The idea of game (finding right code)"

2. What would you want to change?

3. Is the type legible?
   YES

4. Are the colors pleasing?
   "I love color palette, but five colors on one screen is a little bit busy. I feel"

5. Did you find it easy to navigate?
   YES

6. Was there anything you found to be confusing?
   "Color set for each menu are same for every tab, so first time when I tried to change menu from objectives to progress, I thought it was exactly same screen."

7. Do you like the graphics?
   YES

8. Would you be apt to come back and use this again?
   YES

9. Would this motivate you to want to keep using it?

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?
    
    1  2  3  4  5  6  7  8  9  10

    COMMENTS:
OneMile Questionnaire
IMAGINE RIT

Name (optional)  Matt DiRisio

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   Colors, categories, dashboard.

2. What would you want to change?
   Needs more superheroes.

3. Is the type legible?
   Yes.

4. Are the colors pleasing?
   Yes.

5. Did you find it easy to navigate?
   Yes.

6. Was there anything you found to be confusing?
   No.

7. Do you like the graphics?
   Yes.

8. Would you be apt to come back and use this again?
   Yes.

9. Would this motivate you to want to keep using it?
   Yes.

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?
    1  2  3  4  5  6  7  8  9  10

COMMENTS:
   Very pleasing.
OneMile Questionnaire  
IMAGINE RIT

Name (optional) ____________________________________________

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?  
   The many possibilities that come with it

2. What would you want to change?  
   Nothing

3. Is the type legible?  
   Yes

4. Are the colors pleasing?  
   Yes

5. Did you find it easy to navigate?  
   Yes

6. Was there anything you found to be confusing?  
   No

7. Do you like the graphics?  
   Yes

8. Would you be apt to come back and use this again?  
   Yes

9. Would this motivate you to want to keep using it?  
   Yes

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?  
   9

COMMENTS:  

________________________
Name (optional)  

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   CONTENT + INTERFACE.

2. What would you want to change?
   NO!

3. Is the type legible?
   YES.

4. Are the colors pleasing?
   YES.

5. Did you find it easy to navigate?
   VERY MUCH SO.

6. Was there anything you found to be confusing?
   NO.

7. Do you like the graphics?
   AWESOME.

8. Would you be apt to come back and use this again?
   CERTAINLY, YES

9. Would this motivate you to want to keep using it?
   YES.

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?

   1  2  3  4  5  6  7  8  9  10

   COMMENTS:
OneMile Questionnaire
IMAGINE RIT

Name (optional) ____________

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app? easy + visual

2. What would you want to change? nothing

3. Is the type legible? yes

4. Are the colors pleasing? yes

5. Did you find it easy to navigate? yes - slide show.

6. Was there anything you found to be confusing? no

7. Do you like the graphics? yes

8. Would you be apt to come back and use this again? yes - diabetes

9. Would this motivate you to want to keep using it? yes

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health? 9

COMMENTS: On Facebook, would be great
OneMile Questionnaire
IMAGINE RIT

Name (optional) ____________________________________________

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app?
   - Very pleasing to the eye, use friendly

2. What would you want to change?

3. Is the type legible?
   - Yes

4. Are the colors pleasing?
   - Yes, colorful but not too bright

5. Did you find it easy to navigate?
   - Yes

6. Was there anything you found to be confusing?
   - No

7. Do you like the graphics?
   - Yes

8. Would you be apt to come back and use this again?
   - Yes

9. Would this motivate you to want to keep using it?
   - Yes

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?

   1  2  3  4  5  6  7  8  9  10

   COMMENTS:
   - Pretty cool app 😊
OneMile Questionnaire
IMAGINE RIT

Name (optional) Mayen

Please answer the following questions regarding the OneMile app

1. What do you enjoy about this app? *It's more interactive than thought*

2. What would you want to change? *Nothing*

3. Is the type legible? *Yes*

4. Are the colors pleasing? *Yes*

5. Did you find it easy to navigate? *Yes*

6. Was there anything you found to be confusing? *No, everything was explained*

7. Do you like the graphics? *Yes*

8. Would you be apt to come back and use this again? *Maybe*

9. Would this motivate you to want to keep using it? *If I had the illness yes*

10. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health? *10*

COMMENTS:
*Very informative and interesting app.*
NAME: Alana Skelly

1. What do you enjoy about this app?
   Seems easy to navigate through.
   Obviously want to play it when done

3. What would you want to change?
   Don't think anything at the moment

4. Is the type legible?
   Yes very easy!

5. Are the colors pleasing?
   Yes I like them a lot.

6. Did you find it easy to navigate around?
   Yes.

7. Was there anything you found to be confusing?
   Not right now.

8. Do you like the graphics?
   Yes, pleasing to the eye

9. Would you be apt to come back and use this again?
   Yes want to see the final version.

10. Would this motivate you to want to keep using it?
    I believe so.

11. One a scale of 1 to 10, with 1 being the lowest, how would you rate this app as a tool to help people with chronic illness maintain or improve their health?
    I think an 8 or 9 hard to say a 10 without the final version for me.
C.1 INITIAL PROTOTYPE SCREENS
C.2 FINAL PROTOTYPE SCREENS

SIGN IN/SIGN UP
SIGN IN TO YOUR ACCOUNT
SIGN UP TO START YOUR JOURNEY

SIGN UP
USER NAME MDGAMER24
PASSWORD ********
RE-ENTER ********
EMAIL mdgamer24@gmail.com

MAKE SELECTION
Choose the illness on which you would like to focus your journey. Customized content is based on the illness chosen.

- Addicts/Drug
- ADHD
- Autism
- Bipolar
- Cancer
- Chronic Fatigue
- Chronic Pain
- Diabetes
- Depression
- Epilepsy
- Fibromyalgia
- Kidney Disease
- Liver Disease
- Lung Disease
- Multiple Sclerosis
- Neurological Disease
- Osteoporosis
- Other
- Parkinson's
- Psoriasis
- Schizophrenia
- Skin Conditions
- Stroke
- Thyroid
- Vasculitis
- Viral
- Wasting Syndrome
ONE MILE

THINK GAMES

CODEBREAK Use your skills to break the code and find a clue!
COLORNAME Name the color it’s harder than it sounds!
MATRIX Select the tiles in the order they appear.
PRESSED Solve this tricky puzzle!
RHyme TIME Use the rhymes in order to find a clue!

THINK LEVELS

1 BEGINNER
2 INTERMEDIATE
3 ADVANCED

CODEBREAK

You stumbled across a scroll on the path. Why was it here? As you unravel it, you see strange symbols covering the page—it’s some kind of code. Break the code by dragging a letter to the corresponding symbol to find hints to help you on your journey. You have 60 seconds to break the code.

PLAY GAME

THINK CODEBREAK

You ran out of time, but it was a good try! Keep trying until you can beat the clock!
OneMile | 180
**ACT LEVELS**

1. BEGINNER
2. INTERMEDIATE
3. ADVANCED

**ACT EXERCISES**

- **CORE STRENGTHENING**
  Work on strengthening your core to help your back and improve your posture.

- **BALANCE**
  A good balance workout can benefit those with MS, helping with strength and with awareness.

- **STRENGTH TRAINING**
  Strength training is crucial for mobility for those with MS. Keeping it is important.

- **AEROBIC EXERCISE**
  Aerobic exercise is important to help the blood flow to your muscles. It’s a great way to start the day.

- **MINDFUL LIVING**
  Learn tools to be healthy and be healthy.

**ACT RECIPE OF THE DAY**

- **BLACK BEAN AND QUINOA**
  1 t vegetable oil
  3/4 onion, chopped
  2 cloves garlic, chopped
  1/2 C and 3/4 t vegetable broth
  1/2 t ground cumin
  1/2 t cayenne pepper
  Salt and ground black pepper
  1 C and 1/4 frozen corn kernels
  3/4 C cooked black beans, rinsed and drained
  37 and 1/2 oz chopped fresh chilies

  1. Heat oil in a saucepan over medium heat. Cook and stir onion and garlic until lightly browned, about 10 minutes.
  2. Mix quinoa into sorghum mixture and cover with vegetable broth, season with quinca, cayenne pepper, salt, and pepper. Bring the mixture to a boil. Cover, reduce heat, and simmer until quinoa is tender and broth is absorbed, about 20 minutes.
  3. Stir frozen corn into the saucepan, and continue to simmer until heated through, about 5 minutes; mix in the black beans and chilies.

**ACT HEALTHY LIVING**

- **STRESS REDUCER**
  Learn some stress-reducing techniques to help you maintain and improve.

- **AT HOME**
  Some things you can do to make home life easier to handle.

- **WORK SMART**
  Some simple solutions to making your work life a bit easier.

- **MINDFUL LIVING**
  How to incorporate healthy living into your day-to-day life.

- **IN THE KITCHEN**
  Eating healthy is key to any wellness plan. Here are some tips on how to get started.

**ACT RECIPE OF THE DAY**

- **SWEETLY SOUR CHICKEN**
  A great alternative to rice. Full of protein and nutritional.

- **MEXICAN TORTILLA WRAP**
  This delicious wrap is perfect for lunch or dinner.

- **MINESTRONE SOUP**
  A nutritious soup filled with fresh vegetables.

- **VEGGY PASTA - ASPARAGUS, PEAS AND BASIL**
  Covered pasta with both vegetables and basil. Can be served with a side of fresh salad.

**ACT HEALTH**

- **EXERCISES**
  Choose what you’d like to work on in your exercise routine. Pick something different each day to improve your health and your mood.

- **RECIPE OF THE DAY**
  Try out some of these delicious recipes Healthy and nutritious, these recipes can help you eat and maintain a healthy diet.

- **HEALTHY LIVING**
  Some tips and tricks on how to stay healthy. Take a look at these Healthy Living tips to make life a little bit easier.
WHO ARE WE?
We are OneMile. Happy, Service. We are all on this crazy journey together.
We push each other and we motivate each other in our journey to help ourselves.
Actually it’s a group of us who want to help others who are like we are. We want to feel good, be healthy and continue on this difficult journey.

We need someone to push us and motivate us but when we can’t push ourselves anymore.
You are a part of a team who’s been there, and we’ve walked this mile in your shoes.

WHO ARE WE?
Good you are here, and on our team. You can reach us at info@onemilehajourney.com

You can reach us at
info@onemilehajourney.com
888-232-3665

Be sure to connect with us and other OneMile on social media!

INVENTORY
YOU HAVE ACQUIRED 9 OUT OF 16 INVENTORY ITEMS

EXTRAS
NARRATION VOLUME

YOUR ONEMILE HISTORY

JOIN THE ONEMILE TEAM

MERCHANDISE

THE ONEMILE NEWSLETTER

PROGRESS LEADERBOARD

<table>
<thead>
<tr>
<th>RANK</th>
<th>USERNAME</th>
<th>OBJECTIVES</th>
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<tbody>
<tr>
<td>1</td>
<td>MOGAMER24</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>KIRATTACK</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>CHICKMAGNET</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>LILAC</td>
<td>5</td>
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</table>

PROGRESS BADGES

- Completed your first objective
- Logged into each objective
- Logged in every day for a week
- Unlock DISCOVER objective
- Complete Milestone 1
D.1 SUPPORT FILES

Menu Icons
<table>
<thead>
<tr>
<th>1. HOME</th>
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<tbody>
<tr>
<td>success story</td>
<td>opening narration (A1.1)</td>
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<td>rotating (T 1.1)</td>
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<table>
<thead>
<tr>
<th>1.1 SIGN IN/LOG IN</th>
<th></th>
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<tbody>
<tr>
<td>Button sign in (1.1)</td>
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</tr>
<tr>
<td>Button sign up (1.2)</td>
<td></td>
</tr>
<tr>
<td>Button guest (1.3)</td>
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<td>Home</td>
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<td>Tasks</td>
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<td>Map</td>
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<tr>
<td>Stats</td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
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<tr>
<td>Log In</td>
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<td>Log Out</td>
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<thead>
<tr>
<th>3. INSTRUCTIONS</th>
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<tr>
<td>Screen 1</td>
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<tr>
<td>Screen 2</td>
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<td>Screen 3</td>
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<table>
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<th>4. MAP</th>
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<tbody>
<tr>
<td>Topo map of Egypt</td>
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<td>Signposts/mile markers (G4.1)</td>
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<td>Milestone flag (G4.2)</td>
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<td>Map close-ups (I4.3)</td>
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<thead>
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<th>5. COGNITIVE</th>
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<td>Buttons for games</td>
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<tr>
<td>brief instruction</td>
<td></td>
</tr>
<tr>
<td>matching game</td>
<td>matching game</td>
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<tr>
<td>code breaker</td>
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<table>
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<tr>
<td>Background</td>
<td>narrative of instruction (A.4.1)</td>
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<tr>
<td>Instruction (I5.1)</td>
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<td>success sound (A4.2)</td>
<td>Arch (I5.1)</td>
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<td>Eye (G5.3)</td>
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<td>Anubis (I5.5)</td>
<td>Ra (I5.6)</td>
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<th>5.2 fine motor skills</th>
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<tbody>
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<td>Buttons for games</td>
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<td>tracing</td>
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<th>5.3 fine motor skills</th>
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<tbody>
<tr>
<td>Background</td>
<td>narrative of instruction (A5.2)</td>
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<tr>
<td>Instruction (I5.2)</td>
<td>Hieroglyphics (I5.7)</td>
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<tr>
<td>Hieroglyphics (G5.7)</td>
<td>Egyptian Hieroglyphics</td>
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<tr>
<td>sounds of clicking (A6.4)</td>
<td>see above</td>
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<tr>
<td>correct letters (I5.3)</td>
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</tr>
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<table>
<thead>
<tr>
<th>6. SOCIAL</th>
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<tbody>
<tr>
<td>Journal (I.7.2)</td>
<td></td>
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<tr>
<td>Patient stories (V.7.1)</td>
<td></td>
</tr>
<tr>
<td>Journal (G.7.1)</td>
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<tr>
<td>Social media Icons (I.7.3)</td>
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<table>
<thead>
<tr>
<th>7. WELNESS</th>
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<tbody>
<tr>
<td>index (T8.1)</td>
<td>All book (G8.1)</td>
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<tr>
<td>exercises</td>
<td>updated daily/weekly?</td>
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<td>video thumbnail</td>
<td>narrative (I8.1)</td>
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<td>video thumbnail</td>
<td>video thumbnail</td>
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<td>video thumbnail</td>
<td>video thumbnail</td>
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<tr>
<td>video thumbnail</td>
<td>video thumbnail</td>
</tr>
<tr>
<td>audio</td>
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<td>text (I8.2)</td>
<td>Illustrations (I8.4)</td>
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<td>audio</td>
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</tr>
<tr>
<td>video thumbnail</td>
<td>video thumbnail</td>
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<tr>
<td>video thumbnail</td>
<td>video thumbnail</td>
</tr>
<tr>
<td>recipes</td>
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<td>recipe 6.2.1</td>
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<tr>
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## Education (to be unlocked)

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<tr>
<th>Asset</th>
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<tbody>
<tr>
<td>Book</td>
<td>Narrative 4.2</td>
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<tr>
<td>Patient story</td>
<td>quote</td>
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<tr>
<td>Progress</td>
<td></td>
</tr>
<tr>
<td>Video</td>
<td>Info graphics (V9.2)</td>
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<tr>
<td>Text</td>
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<tr>
<td>Infographics</td>
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<tr>
<td>Assets</td>
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## Inventory

<table>
<thead>
<tr>
<th>Item</th>
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</thead>
<tbody>
<tr>
<td>Potion</td>
<td>Power</td>
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<tr>
<td>Apple</td>
<td>Food</td>
</tr>
<tr>
<td>Coin</td>
<td>Money</td>
</tr>
<tr>
<td>Stick</td>
<td>Signpost</td>
</tr>
<tr>
<td>Wood</td>
<td>Building</td>
</tr>
<tr>
<td>Sack</td>
<td>Carrying</td>
</tr>
<tr>
<td>Canteen</td>
<td>Water</td>
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<tr>
<td>Slingshot</td>
<td>Weapon</td>
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<tr>
<td>Bag</td>
<td>Anvagon</td>
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## Buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Menu</td>
<td>Log in (G.11.1)</td>
</tr>
<tr>
<td></td>
<td>Log out (G11.2)</td>
</tr>
<tr>
<td></td>
<td>Stats (G11.3)</td>
</tr>
<tr>
<td></td>
<td>Map (G11.4)</td>
</tr>
<tr>
<td></td>
<td>Stats (G11.5)</td>
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<td>Contact us (G11.6)</td>
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## Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Icon</th>
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<tbody>
<tr>
<td>1</td>
<td>Cognitive</td>
</tr>
<tr>
<td>2</td>
<td>Fine Motor</td>
</tr>
<tr>
<td>3</td>
<td>Social</td>
</tr>
<tr>
<td></td>
<td>Wellness</td>
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<tr>
<td></td>
<td>Education</td>
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<table>
<thead>
<tr>
<th>Locked/Unlocked</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
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<tbody>
<tr>
<td>Locked</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Unlocked</td>
<td></td>
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</tbody>
</table>

## Asset List
Today it was fairly cold. I wandered around this strange island for hours and hours. It’s as if it’s the only way I could stay warm. So hungry. I don’t want to eat my supply because I’m afraid I will run out of food. Have to find more food. I keep on thinking about what the people at OneMile told me, to keep going, don’t get distracted. I can’t help it. I’m not sure if I’ll make it.

Earlier, I heard a loud buzzing, coming from these creatures. They are about the size of a small bird. At first I thought it was a bird, but it’s more like a huge wasp. It has a huge stinger, and I realized it was looking for food. It landed on a small animal in the weeds and stung it. Hundreds came and feasted on the poor creature. I can still hear his cries of pain.

After they ate, one flew away and circled the woods where I was hidden. It called to its kinmates. They were hunting me. Luckily I was hidden under a stand of trees and they couldn’t see me, but it was if they could smell me. They flew around my area for over an hour. I know I have to avoid them. They were a myriad of colors: red, blue, yellow, green and purple. I shall call them spectras. I wonder what other creatures are on this island? And are they as deadly as the spectras?
Flowchart evolutions
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