GNG5140

Design Project User and Product Manual

User and Project Manual

Submitted by:

Team Leadership Training

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Table of Contents

List of Figures

List of Tables

List of Acronyms

Table 1. Acronyms

Acronym	Definition
CTTS	Camping Trip Team Simulation
TLTS	Team Leadership Training Simulation
UI	User Interface
UPM	User and Product Manual

1 Introduction

Simulation-based training involves the use of basic equipment or computer software to model a real-world scenario. During the simulation-based leadership training, the learner is taught how to perform certain tasks or activities in various real-world scenarios so they can learn about good leadership and teamwork. For this project, the final prototype was cleaned up of previous complaints as well as the design of a final presentation and report comparing it to previous designs. Not many changes have occurred other than making it more sleek for the presentation. This report compared to previous reports will be explaining the prototype and its implementation but also comparing it to previous projects in a lot more detail in measures such as Scalability, Quality, and Usability then explaining how the prototype could've been better if redesigning it or developing on it.

This User and Product Manual (UPM) provides the information necessary for simulation users to effectively use the Camping Trip Team Simulation (CTTS) and for prototype documentation.

2 Overview

Learning to be a good leader is hard. The problem we are trying to solve is how to teach leadership effectively in a convenient setting. After an intensive design research, we decided to develop an online simulation.

In the simulation, users use the system to learn how to build, participate in, and lead effective teams, as well as to examine: 1. How teams can improve the way they make decisions, 2. How opposing interests and asymmetric information affect team dynamics, 3. How leaders shape team decision-making and performance in competitive and time-sensitive situations, 4. How teams and their leaders deal with trade-offs between short-term task completion and longer-term team effectiveness, and 5. How cognitive biases impair decision making. The key learning objective in this simulation that had to be worked out was how do you deal with unequal information, and asymmetric, even conflicting goals, as you work together as a team to successfully make key decisions, to achieve the shared vision and goal?

Simulation based team leadership training is a relatively undeveloped field with a lot of problems and a lot of disadvantages mainly for supervisors and first-time users who are the main target of Team Leadership Training Simulations (TLTS). These main disadvantages are that of fixed team members, a lack of a fast learnable system for both supervisors and users, and a lack of data that can turn into advice given in the end of the simulation. Other key aspects that differentiate our product from other is listed in table 2.

Key aspect	CTTS	Other products
Team size	Flexible (3+)	Fixed
Accessibility	Mobile, tablet, desktop	Only on desktop
UI	Simple and easy to use	Complex and hard to get started
Concept	Real life scenarios	
Flexibility	Each round of the simulation is independent and easy to make future changes.	Lack of flexibility due to complex rules
Roles	Two roles. Multiple participants can play the same role but with different goals and responsibilities.	Too many roles in the simulation and the simulation only works with each role is being fulfilled. Some roles share significant less responsibilities than others.

Table 2. Key aspects of the product compared to other products

The system a s a mobile-based web application that allow a team of participants to make decisions throughout the different days. Having internet access is required to use the system. Points were collected throughout the simulation based the decisions by user, and individual points were calculated as well as the points achieved as a team. Good decision leads to high points, which is a reflection of good teamwork, effective communication and good leadership. To achieve this, all participants must communicate with each other, share information resolve conflicts as a team, and the leader is a key component of the team's success.

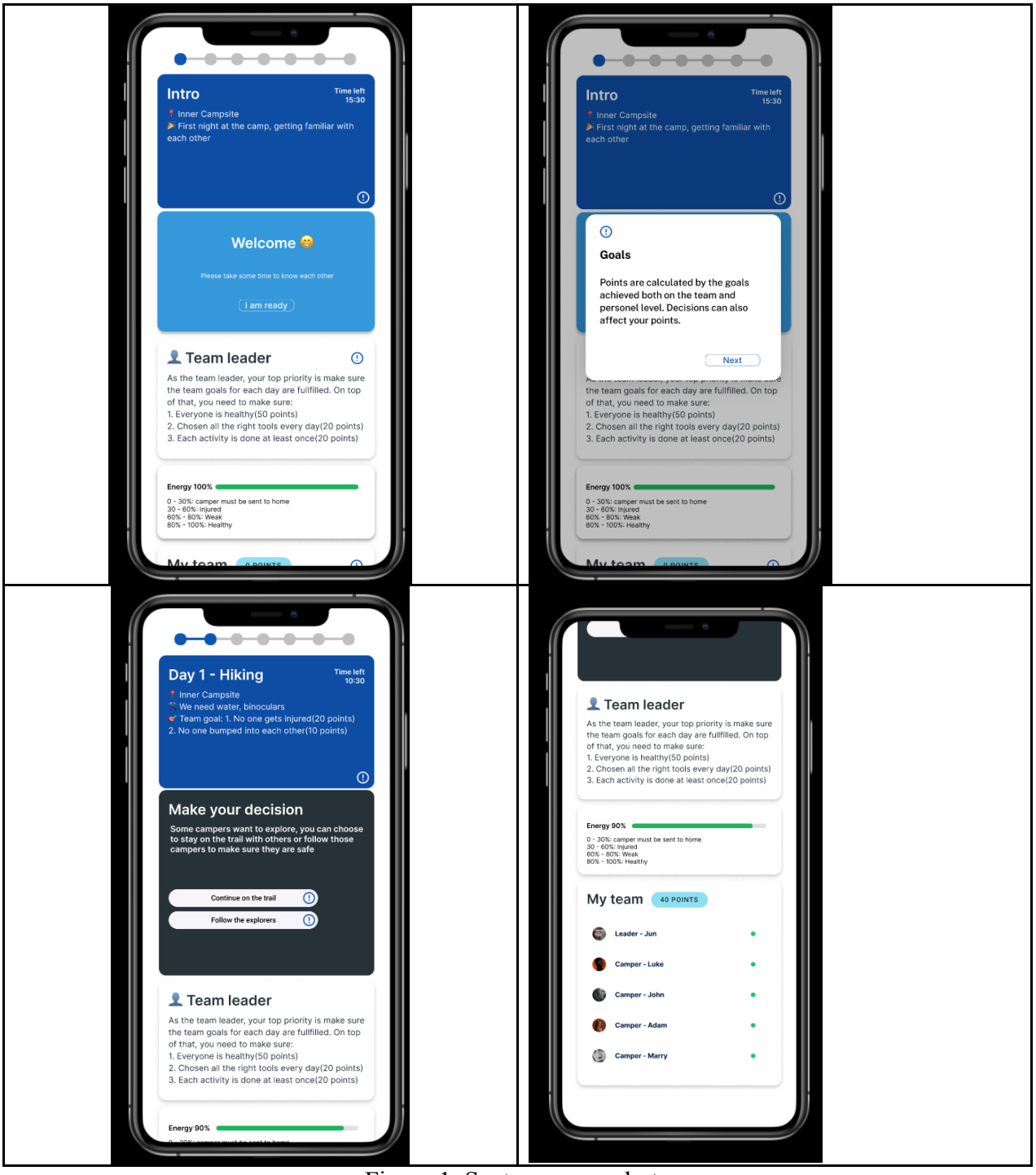

Figure 1. System screenshots

3 Getting started

They system consists of seven days, which represents seven rounds of decision making. In each day, participants need to make decisions, and some of the decisions is made by the individual, while some need to make by all participants as a team. At the end of each day, except the last day, the leader needs to decide the activity for the next day, and all the decisions are generated based on the current activities. Throughout the simulation, points are calculated by the decision made by the individual, and the team points are represented by the leaders' points. We display the details of the final points and give participant a brief of their performance.

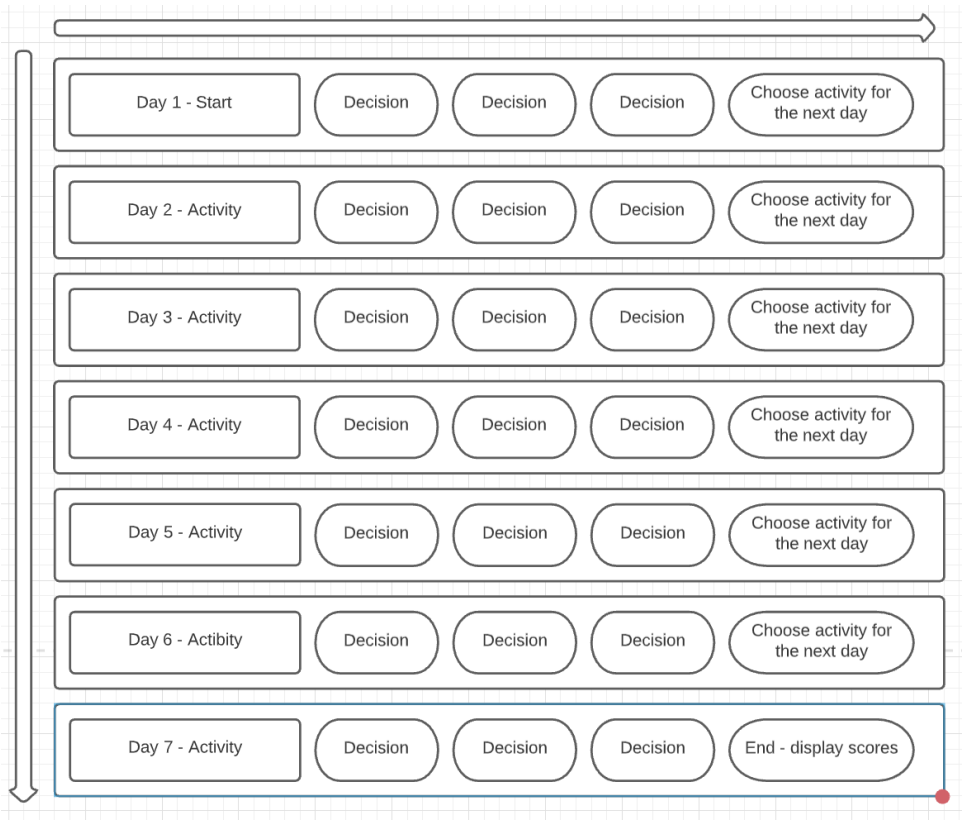

Figure 2. Simulation process walkthrough

3.1 Set-up Considerations

It's a mobile-based web application thus you would have to download it from the App or Google Play store, and log in using a google/apple account then you can start a simulation, but you would have to invite others with the app to join your simulation with the roles you assigned, the

person who started the simulation is the leader and the others are the campers. As soon as they say yes, a simulation will be started. If they don't have an account, they will be invited by inputting their email as the leader then they can make one if they get invited or make one before they're invited ensuing a simple simulation start.

3.2 User Access Considerations

In previous systems, there are supervisors and team members, for this current prototype, there are only team members. Thus, there is only one user group, and they can all choose to be leaders or campers. Users can access the system in a browser on any devices and internet connection is a must, however, the prototype's design is targeted at mobile devices only so far.

3.3 System Organization & Navigation

The simulation is a single page application which means no navigation through multiple pages is needed. Its layout and organization are shown in Figure 3, and each section of the system is explained below.

Section A: Progress bar section indicate which day of the simulation the user currently is on.

Section B: Day info section provides information on the current day, current day's activity team goals for the current day and what tools the team need for the day if applicable. A timer is also there to remind the user how much time has left to make the decision.

Section C: Decisions section is where all the interaction take place in the system. It also displays error messages and system alerts when applicable.

Section D: User info section has information on the user such as the user's role, individuals' goals and random assignments for campers.

Section E: Energy section show how much energy the user has at a certain point.

Section F: Team section displays the whole team's basic information such as everyone's name, role, and online status.

Section G: Tooltips are accessible throughout the whole simulation and they give easy access to the details regarding to the day, activity, and decisions.

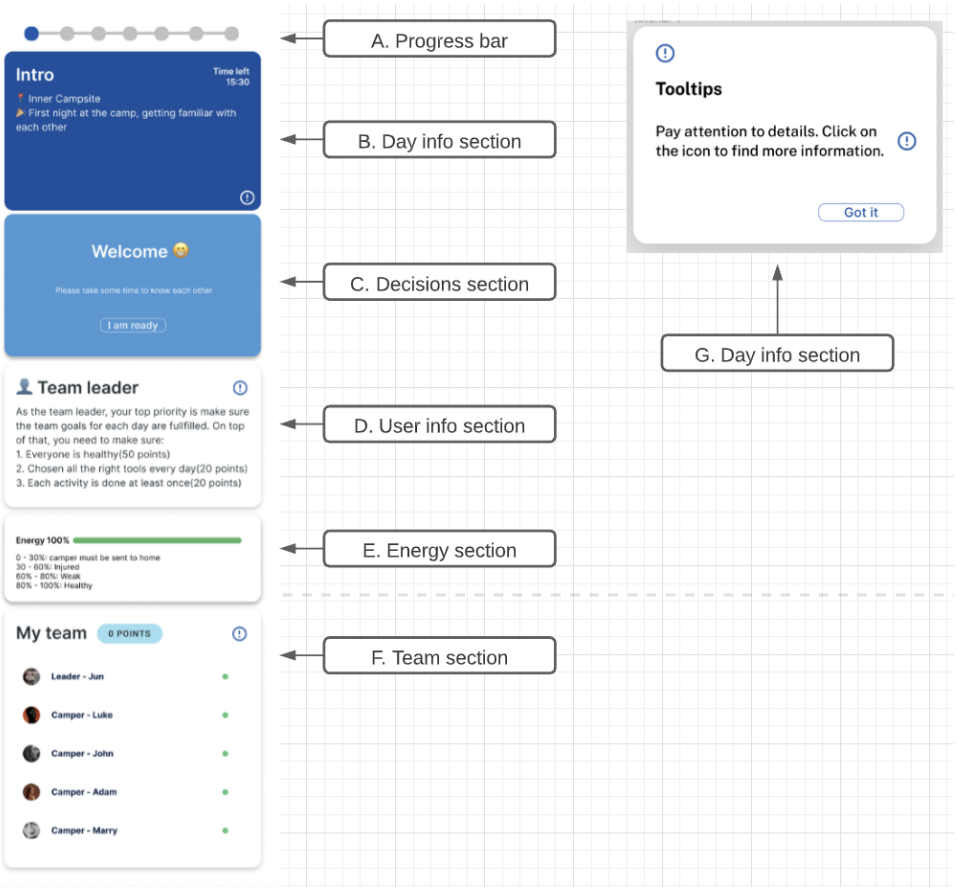

Figure 3. User interface walkthrough

3.4 Exiting the System

At the end of the simulation, the user would exit the simulation with their feedback being able to leave the app, the user cannot quit an existing running simulation but if one were to exit the app during so, they'd go offline not being taken account if a camper and being replaced temporarily as a leader till they're back online.

4 Using the System

The following sub-sections provide detailed, step-by-step instructions on how to use the various functions or features of the CTTS.

4.1 Roles

In this multi-participant real-time simulation, we have two types of roles. One role is the leader, and only one participant can be the leader. The other role available is the camper which is a role can be choose by multiple participants.

4.2 Activities

The simulation consists of seven days, and each day represents one activity after day one. Six activities are real-life activities in a camping trip, and they are made to make the system interesting and engaging to play. Through this gamification process, we intend to increase participation, engage with participants, and to inspire them to collaborate, share and interact.

Seven activities are hiking, archery, going to the shore, swimming, canoeing and moving to the camping site. What activity to do the next day is a decision made by the leader, but it needs to accommodate all campers and depends on the team's current location. In the simulation, there are two locations of the camping trip, one is the inner camping site, and the other is the shore by the river. More information regarding to activities can be found in section 6.1.

4.3 Decisions making

There are seven sets of decisions that range from 1-3 a set depending on the other team members responses to previous decisions. They are meant to pit the two roles against each other and thus have a tensioned simulation based around communication. The decisions include having to decide between following rebellious campers who decided to go off trail for extra points, having to pick certain equipment that isn't known to you but is known to another team member necessitating communication and having to form a formation without bumping to each other necessitating communication as well as team tension. More information regarding to decisions can be found in section 6.1.

4.4 Points-based leadership evaluation

There are three sets of points, two sets are for each individual and one set is for the team, the leader has to fulfill the team goals and thus has to get as high of a TP as much as possible that his Campers allow him to get, while his campers want as much CP as they could get from their own camp goals but that comes at the expense of TP, thus the communication between the team is the ratio of TP/CP, and the closer it is to 1, the better the team is. More information on how the points were calculated can be found in section 6.2.

Type	Description	Calculation	Conclusions
LeadP: Leadership points (more to show how dominant the leader is) based on the team goals achieved.	- Promoting teamwork - Leading the decision making but not demanding it (promoting correct decisions by the team members by having them pick the decisions that result in the most points) thus having a close communication to 1 (meant to represent employment retention, job satisfaction and so on) - Leadership is based on the amount of points the leader has but too many points in comparison to a high communication point (rather than a 1) is indicative of a bad but demanding leader	LeadP = Teams points	- High LeadP with low CommP shows a dictatorial leader - Low LeadP with low CommP shows an incompetent leader - High LeadP with 1 CommP shows a co-operative leader who leads by example but one that has intuition and creativity to achieve a difficult co-operation while achieving the overall goals of the simulation - Low LeadP with 1 CommP shows a co-operative leader who leads by example but one that lacks intuition and creativity - Low LeadP with high CommP shows a rebellious team
CamP: Campers points	Fulfill individual goals.	CamP = Camper points	
CommP: Communication points	Communication is the ratio of points between the average camper points and the leadership points, the closer it is to 1, the better communication the team has, the closer it is to 0, the less leadership the team has, the higher it is from 1, the more	CommP = LeadP/CampP	

	dictatorial and demanding the team is.		

Table 3. Points system

4.5 Health System

Energy level in this simulation is critical to get high points. It decreases by 10% per every activity and increases by 10% during transport days if taking a bus. Some decisions could also affect the energy level. Once a camper's energy level went below 30%, the camper can no longer participate in the simulation. More information can be found in the table below.

Energy level	0 - 30%	30% - 60%	60% - 80%	80% - 100%
	camper must be sent to home.	injured	weak	health

Table 4. Health system

5 Troubleshooting & Support

If one were to disconnect, then you must get an online connection and you'd be put in the same situation as the rest of your team members simulation wise as soon as you open or reload the app.

5.1 Error Messages or Behaviors

If a team member were to go offline, then you are to get this error message.

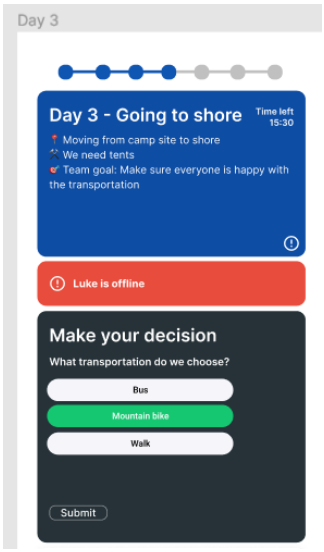

Figure 4. Offline Error Message

This would not affect the simulation if a camper other than having one less camper affecting the leader decisions. If the lost team member was the leader, then the top camper in the team members section who's the first camper to log in would become the leader.

5.2 Maintenance

The system needs regular updates to make sure its software is up to date. And as it's a software only system, it's maintenance is relatively easy compared to hardware products.

5.3 Support

A customer service team should be available to users for collecting user feedback and develop a robust support channel for troubleshooting, to accommodate various user cases. It will be mainly used for fixing bugs that have been reported as well as taking critical feedback on how to develop the CTTS further.

6 Product Documentation

The CTTS Prototype was designed on a software called Figma which designs mobile based applications. It was designed by having a series of pages that would be gone through via deciding each decision and was specifically designed to look like the previous page due to the inherent design qualities of Figma. As described in section 3.4, each Figma page filled that template to fill each page with its specific decisions and attributes.

The full list of decisions for each activity, and how the points can be calculated can be found in section 6.1 and 6.2.

6.1 Roles and decisions

Leader As the team leader, your top priority is to make sure the team goals for each day are fulfilled. Different activities come with different team goals. General team goals are to make sure campers are happy and healthy. When there is a conflict between campers, the leader can step in to make the final decisions. You also need to choose which activity to do each day.			
Activity	Decision 1	Decision 2	Decision 3
Introduction	N/A	N/A	Q: What activity to do next day? A: 1. Swimming 2. Canoeing 3. Archey 4. Moving to the shore 5. Hiking
Hiking	Q: Are we ready? (need water, binoculars) A: Yes (if no water, 10% chance of getting weak)	Q: Some campers want to explore; you can choose to stay on the trail with others or follow those campers to make sure they are safe A: 1. Continue on the trail 2. Follow the explorers	Q: What activity to do next day? A: 1. Swimming 2. Canoeing 3. Archey 4. Moving to the shore
Archery	Q: Are we ready? A: Yes	Q: a few campers bumped into each other, should you remake the set up or	Q: What activity to do next day? A: 1. Swimming

		send the campers back home? A: 1. Remake the set up 2. Send the campers home (-50 points)	2. Canoeing 3. Hiking 4. Moving to the shore
Going to the shore	Q: Are we ready? A: Yes	Q: What transportation do we choose A: 1. Mountain bike 2. Walk 3. Bus	Q: What activity to do next day? A: 1. Swimming 2. Canoeing 3. Archey 4. Hiking
Swimming	Q: Are we ready? A: Yes	Q: Other campers have gone to the other side, you will not be able to see them unless you get your binoculars, but you will lose sight of those in your shore, but they won't drown, that's not true for those coming from the other side A: Get the Binoculars. They will most likely drown on my side when they come back. If Campers are seen drowning Q: Which Camper will you save? A: 1. Scavenger 2. Camper 1 3. Camper 2 4. Camper 3	Q: What activity to do next day? A: 1. Hiking 2. Canoeing 3. Archey 4. Moving to the Campsite
Canoeing	Q: Are we ready? A:	Q: Certain campers decided to go	Q: What activity to do next day?

	Yes	exploring, follow to make sure they're safe or follow the trail? 1. Follow them 2. Follow the trail Q: Certain campers bumped into each other with their canoes, will you risk them getting injured or will you take them in your canoe? (optional) 1. Take another risk 2. Take them in my canoe	A: 1. Swimming 2. Hiking 3. Archey 4. Moving to the Campsite
Moving to the campsite	Q: Are we ready? A: Yes	Q: What transportation do we choose A: 1. Mountain bike 2. Walk 3. Bus	N/A

Table 5: Decisions for leader

Camper

As a camper, your top priority is to have fun and explore in this trip as much as possible even sometimes it might be dangerous, Random assignments are assigned to each camper. One camper would be assigned the job to collect all the tools and supplies we need that day. Each day, one camper would be assigned to carry the first aid kit and energy supplies and can use those on campers in need.

Random Accidents
1. Cramps: prevent swimming and canoeing
2. Lost paddles for canoeing and need to wait one day to get new ones

Random skills

1. Can't walk: prevents hiking and walking between shore and camp site 2. Can't ride cars 3. Can't bike			
Activity	Decision 1	Decision 2	Decision 3
Hiking	Q: What supplies do we bring? A: 1. Water 2. Binoculars 3. Swimming gears 4. Life jacket 5. Canoes 6. Paddles 7. Bows 8. Arrows 9. Tent	Q: Would you go to explore A 1. Yes 2. No	N/A
Archery	Q: What supplies do we bring? A: 1. Water 2. Binoculars 3. Swimming gears 4. Life jacket 5. Canoes 6. Paddles 7. Bows 8. Arrows 9. Tent	Q: Which spot would you go to A 1. 1st 2. 2ed 3. 3rd 4. 4th 5. 5th	N/A
Going to the shore	Q: What supplies do we bring? A: 1. Water 2. Binoculars 3. Swimming gears 4. Life jacket 5. Canoes 6. Paddles 7. Bows 8. Arrows 9. Tent	N/A	N/A
Swimming	Q: What supplies do we bring? A: 1. Water	Q: Go to the other side?	N/A

	2. Binoculars 3. Swimming gears 4. Life jacket 5. Canoes 6. Paddles 7. Bows 8. Arrows 9. Tent	A: Yes No	
Canoeing	Q: What supplies do we bring? A: 1. Water 2. Binoculars 3. Swimming gears 4. Life jacket 5. Canoes 6. Paddles 7. Bows 8. Arrows 9. Tent	Q: Which sections would you go to A 1. Top right 2. Top left 3. Bottom right 4. Bottom left 5. Center Q: A cave is open, and you want to see what's in the cave out of curiosity, do you go into the cave and leave the rest of the group or stay in the trail? (10% if leader follows, 30% if not) A 1. Yes (20 points) 2. No	N/A
Moving to the campsite	Q: What supplies do we bring? A: 1. Water 2. Binoculars 3. Swimming gears 4. Life jacket 5. Canoes 6. Paddles 7. Bows 8. Arrows 9. Tent	N/A	N/A

Table 6: Decisions for campers

6.2 Activities and points

Activity	Team goal General: 1. Everyone is healthy (50 points) 2. Chosen all the right tools every day (20 points)	Camper's goal	Energy
Hiking -inner campsite	1. No one gets injured (20 points) 2. No one bumped into each other (10 points)	1. Don't get injured (10 points) 2. Go to explore (40 points)	When the camper chooses to explore (- 10 % energy): 1. Followed by leader (10% chance of getting injured: - 30% energy) 2. Not followed (40% chance of getting injured: - 40% energy)
Swimming -shore	No one gets injured (20 points)	1. Don't get injured (10 points) 2. Choose to go the other side of the shore, 10 points per lap	When the camper chooses to go to the other side: 1. Watched by leader (0 chance of getting injured) 2. 10% chance of getting injured and it increases 10% each lap: - 40% energy When the camper chooses to stay on the leader's side (- 10 % energy): 0 chance of getting injured.
Canoeing -shore	Noone bumps into each other	1. Go to explore (40 points)	1. The campers will have to make a

	(10 points)	2. Don't get injured (10 points) 3. Don't bump into anyone (10 points)	formation alongside the team leader, if they bump into one another, they have a 30% chance of getting injured 2. If they go exploring, they have a 10% chance of getting injured unless followed dropping it to 5%
Archery -inner campsite	Noone bumps into each other (10 points)	1. Don't get injured (10 points) 2. Get the most points at the archery minigame (the highest number of points - the lowest amount + their points)	Bumping into each other causes a 5% chance of getting injured.
Moving areas (Go to Shore/Go to inner camping site)	Make sure everyone is happy with the transportation. (5 points per camper)	Having the right transportation for yourself (10 points)	+10% energy

Table 7. Activities and points

6.3 The Camping Trip Team Simulation Prototype

6.3.1 BOM (Bill of Materials) and Equipment list

The Prototype is implemented using multiple software as listed below, and all software used are free of charge. No additional costs are involved in this project.

No.	Software	Cost	Usage
1	Figma: www.figma.com	Free education plan	Prototyping
2	Maze: www.maze.co/	Free	User testing

Table 8. List of software used.

6.3.2 Instructions

The prototype is an interactive UI design built with Figma. Figma's prototyping features allow us to create interactive flows that simulate how a user may interact with the system. According to the design requirements, a Figma prototype from the perspective of the leader role is generated and used for the user testing and the prototype can be accessed via the link below:

Prototype link	https://www.figma.com/proto/0wZLSnI6OTqfppfo11Pm8g/Camping-Leader?node-id=119%3A211&viewport=719%2C-2683%2C0.5111939311027527&scaling=scale-down
Instruction	Accessible on any browsers on either mobile or desktop devices.

Table 9. Prototype instructions

6.4 Testing & Validation

We conducted two rounds of user testing to evaluate the prototype of which five finished. Changes are being made after the first round. During the testing, we asked participants to perform a list of tasks and a number of questions were asked after each task was completed, and participants were encouraged to think out loud and express their opinions. We distributed the testing plan using Maze software. It allows us to create a testing plan with tasks and questions, and each session is recorded. The complete list of tasks, question and the testing result can be found via link below:

Round 1. https://app.maze.design/report/7pntlc0kmh1y2bc.

Round 2. https://app.maze.design/report/6xsr38nkn5hjuy5.

Specification	Sample questions	Sample Result	Evaluation
Information delivery	A. Where is the team? B. Where can you hike? C. Did you know what tools you need for the day?	A. 57% accuracy rate B. 71% accuracy rate C. 50% voted yes.	Some participants had trouble finding the desired information, but there was an improvement in the second round of user testing. Most participants had no difficulty navigating the system and can find the desired information quickly. Therefore, we believe the system is effective at delivering information to users.
Learnability	Do you feel that picking the	100%: All said Yes.	The system is easy to use and learn according to the

	transportation again was easier?		testing results. Having good guidance is the second most voted answer when we asked the participants to vote for their favorite aspect of the system. And participants didn't seem to have a major problem understanding how the system works. When the same task was performed the second time during the tasking, almost all of them reported that they felt like they did it better than the first time.
Usability	What do you like the most about the simulation?	60% of the participants selected user interface among five options.	Most participants had very positive feedback on the usability of the system. And the usability is the second most voted answer when we asked the participants to vote for their favorite aspect of the system. No major usability identified from the user testing. The good usability is achieved by following a minimalist design guideline.
Effectiveness	A. Do you think this simulation is effective in teaching you about leadership? B. Do you think you need to communicate with others before making the decisions?	A. 80% voted yes. B. This question is asked after each task is completed. And The majority of the cases the participant voted yes.	Most participants thought they learned a lot from the team leadership simulation about leadership although the points system couldn't be implemented due to the lack of a dynamic figma thus less critique against it could be made as well as the feedback towards them wasn't done coupled with the lack of campers to communicate with. Most participants agreed that the system is effective at teaching leadership. One participant mentioned he needed to see the final product to make this judgement.

Documentation	A. On what level you understand how the simulation works now? B. What do you like the most about the simulation?	A. On a scale of 1-5, two responded with 2, one responded with 3, three responded with 4. B. 40% selected guidance among five options	Most participants understood most of the simulation, and through the improvements we made on the instruction based on the testing result from the first round, we saw improvements in this aspect in the second round of user testing. However, some participants still expressed concerns about not knowing how the points were calculated. We provide a detailed documentation about the simulation including a full list of decisions, activities and points system.

Table 10. User testing results

7 Conclusions and Recommendations for Future Work

For the current prototype, future improvements mainly rely on having a viable points system but also reviewing the prototype so that previous criticisms of other projects don't apply to this project. Criticisms include having a supervisor, our current prototype completely removes the supervisor and puts all control in the hands of the team leader, this would need to be in webpage form rather than app form due to lack of logistical support. Logistical support would be the amount of data that would be viewed would have to be a multiple page one so unless the app is designed as a web page, it would need to be a webpage. This was the main criticism that affects us and was neglected before, other future improvements would be not to use figma but to move it onto another app development software that allows dynamic systems which would allow us to make a camper's prototype that would collide with the leader prototype and include the points system. This was a mistake that ought to be rectified if the prototype was to reach its full completion.

Beyond the current prototype. We are aware of that the current prototype is a user interface prototype from the perspective of one of the two roles in the simulation. The leader side of the camping trip project was prototyped, and this led to the user testing and further analysis. The camper's side of the prototype has not yet been prototyped and this is due to both time limitations but also later discovered technological limitations as the prototyping software Figma does not allow dynamic systems for a full-blown prototype with an infinite number of scenarios due to the infinite number of possibilities that can come from different people. Thus, future improvements include changing the prototyping software to one that allows dynamic prototyping, creating a supervisor role and giving them the ability to moderate the simulation, as well as testing the prototype. Due to the limitation on the time and the small size of the design team, we did not

manage to have a full functioning software product. To make the final product come to life, there is still a lot of future work to be done. A list of remaining work can be found in the table below:

Remaining work	Description
Prototyping for Camper	Figma prototyping from the perspective of Camper.
Prototyping for instructor	Figma prototyping for the web interface for instructors.
Software development	Software production phase where to make the final full functioning product.
User testing	More user testing needed to identify issues, and to improve the system overall.

Table 11. Remaining work

APPENDICES

8 APPENDIX I: Design Files

The first Figma file is where all the design was made and the pages that are went through and decided on are created. The prototype link is the link where one can make decisions to go through different chains in the Figma design. The user testing links are links towards the results and the tests where the camper's responses are hardcoded.

Document Name	Document Location and/or URL	Issuance Date
Figma Design File	https://www.figma.com/file/0wZLSnI6OTqfppfo11Pm8g/Camping-Leader?node-id=0%3A1	04/14/2021
Prototype Link	https://www.figma.com/proto/0wZLSnI6OTqfppfo11Pm8g/Camping-Leader?node-id=119%3A211&viewport=719%2C-2683%2C0.5111939311027527&scaling=scale-down	04/14/2021
User testing round 1 result	https://app.maze.design/report/7pntlc0kmh1y2bc	04/14/2021
User testing round 2 result	https://app.maze.design/report/6xsr38nkn5hjuy5	04/14/2021
MakerRepo	https://makerepo.com/abdallaosman01/886.a-camping-trip	04/14/2021

Table 12. Referenced documents.