



# ThermoBank

## Usability Test Plan

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# OVERVIEW

This document serves as a plan to conduct a guerrilla usability test on the ThermoBank mobile app and device. ThermoBank is a wrist wearable device that uses body heat to charge. The device uses the difference between skin temperature and the outside air to generate a current that activates and charges everything. In addition to its charging capabilities, it comes preinstalled with ThermoBank app that gives the user various features, like tutorials for traveling, battery status, and park information depending on your location. To ensure that users can successfully complete the app's and device primary tasks and to measure performance, we plan to observe eight users complete a series of tasks. By observing users perform these tasks, we hope to gain a better understanding of user satisfaction, design concerns and app/device strengths. Serving as a foundation for the usability test, the goals of this activity include:

- To assess the learnability of the app's core functionality among first time users including the length of time and number of clicks it takes a user to complete the app's sixteen primary tasks
- To identify any accessibility concerns, challenges or problems with the design's interface and architecture
- To establish a benchmark of user performance
- To identify the level of comfort and plausibility of the hardware device

ThermoBank allows users to lighten their loads when traveling so they can carry only the essentials on any trip without having to burden themselves with extra equipment that may not be used in any way during their trip. ThermoBank app must be accommodating, accessible and user-centric. To ensure that the app meets the needs and expectations of our target audience, our usability test methodology will include task performance activities, post-task questionnaires and post-usability test interviews.

## GOALS, OBJECTIVES AND RATIONALE

Four usability test goals will be used as a foundation for the activity. Within each of these goals is a series of specific objectives that the usability team will look for and address during the testing process.

### **Goal #1: Assessing learnability of the app's core functionality**

To gauge the learning curve of first-time users with no experience using the app and measure performance success, the usability test will assess the learnability of the app's core functionality. By testing a common set of tasks and workflows across a range of user types, specific performance-based patterns and trends can begin to emerge. These patterns can reveal how well users perform a given task, the length of time it takes to complete the task and whether or not a user takes a direct path to satisfy the function. By collecting data on performance time and determining areas where a user feels impeded, we can identify which tasks have a steep learning curve and look for ways to reduce completion time, limit errors and improve performance.

Usability test objectives:

- Identify length of time it takes to complete each of the tasks
- Locate indirect or unintended task completion sequences (i.e. extra, unneeded steps)
- Discover where users get lost in the process of completing a task

## **Goal #2: Identify accessibility issues**

Since users directly interact with the app's interface, it is important to consider accessibility obstacles and user needs. Through accessibility testing, we can identify problem areas within the app's user interface and architecture and look for ways to make the interface more usable, functional and enjoyable. Specifically, by evaluating the app's visual, auditory and cognitive accessibility, we can determine if any specific improvements should be implemented. By accounting for visual elements, such as text, images and forms, as well as interactions and navigation, we can address specific areas that obstruct accessibility.

Usability test objectives:

- Evaluate visual interface
  - UI elements such as button and link size
  - Font size and type
  - Colors and color contrast between text and backgrounds
  - Icons accompanied by text indicators
- Evaluate navigation
  - Users can always return to a previous screen or home screen
  - Screen transition consistency
  - Global navigation is always available
- Evaluate cognitive constraints
  - Simple language, terms and labels
  - Signifiers and confirmations to verify task completion

## **Goal #3: Benchmarking user performance**

By establishing a user performance baseline on the initial prototype, we can quantify the app's usability among target audience types. Using these findings allows us to compare future redesigns against the initial benchmark results. In turn, these quantitative findings can help us better understand how the app's iterations and design improvements impact the overall user experience.

Usability test objectives:

- Establish a task performance baseline
- Identify overall user satisfaction on app accessibility, user interface and core functionality
- Collect findings and use them to test future design iterations

#### **Goal #4: Identifying the level of comfort and plausibility of the ThermoBank charging device**

The wearability subsystem of the device mainly consists of the fixture band that will hold the power generation components, hold the electrical components, and be worn around the wrist. Based on the needs of the customer, the comfort and aesthetic of the band are of great importance. Therefore, the device should be easy to use and should be aesthetically attractive.

Usability test objectives:

- Evaluate if the device is user-friendly and appealing
- Establish connectivity issues: ensure that setting up wearable device connectivity with mobile is easy and doable without toiling much.

Collect findings and use them to test future design iterations

## **PARTICIPANTS**

We will be using the persona from our previous research to develop the test plan and the user profile. Based on this persona, we will be recruiting participants with the following characteristics:

- Age – 18-29 years old (typical college student age)
- Hiker, travel lover

Participants will be approached at Georgia State University and nearby locations.

#### **Number of participants**

To ensure a successful usability test, by gathering enough qualitative and quantitative data, we anticipate testing eight participants.

## **METHODOLOGY**

#### **Procedure**

The team will conduct the usability test at Georgia State University. Because participants may be comfortable with a specific mobile device, they will be allowed to use their own smartphone to the usability test. A facilitator will be seated next to the participant in order to provide instruction. A note taker will also observe the session. The entire session might be video, or audio recorded.

After the facilitator provides instructions on the usability test, they will ask the participant to sign a consent form (in case of recording). Once signed and all questions have been answered, the test can begin. The facilitator will start by providing a brief overview of the app and explain how the test will be measured, as well as what the participant should be doing during each task. Once the instructions have been shared and the participant agrees to begin, the facilitator will read off the first task. At the conclusion of each task, the facilitator will ask the participant to complete a short questionnaire. Following the completion of all required tasks, the user will participate in a one-on-one interview with the facilitator.

## Usability tasks

To test the accessibility and learnability of the app, as well as determine performance benchmarks, the nine participants will complete a series of task-based workflows and scenarios. Specifically, the users will be asked to:

Task #1	Locate the navigation bar
Successful Completion Criteria	Participant opens the app and finds the navigation bar

Task #2	Create a new account
Successful Completion Criteria	Participant opens the app, clicks on Community link and completes both steps required to create a new account

Task #3	Locate park info by states
Successful Completion Criteria	Participant successfully finds the park information menu on the app

Task #4	Share review about the park
Successful Completion Criteria	Participant finds the required park and able to share within the community

Task #5	Locate the battery info bar and describe the info presented
Successful Completion Criteria	Participant successfully finds battery info and clearly understand what is described there

Task #6	Wear ThermoBank wrist device and try to connect it to the phone
Successful Completion Criteria	Participant wears the device and is able easily connect it to the mobile phone

Task #7	Describe the overall feeling of the wearable device (size, comfort, appealing)
Successful Completion Criteria	Participant describe the device as user-friendly and aesthetically attractive.

# USABILITY METRICS

The effectiveness of the usability test, as well as the results and recommendations, will be measured using performance metrics.

## **Subjective measurements**

At the conclusion of the usability test, users will be provided with an open-ended questionnaire allowing them to share their overall experience with the app and rate their level of satisfaction. This questionnaire provides the participant with an opportunity to share their thoughts on any missing tasks or ways to improve the app's visual interface, navigation, labeling, user flow and accessibility and also the overall thoughts about ThermoBank device.

## **Task completion time**

To establish a performance benchmark, we plan to measure how long it takes for a participant to complete each of the tasks. This data can be used to measure task completion speed against future design improvements.

## **Error-free rate**

It is important that participants complete each task in an efficient and effective manner. However, we recognize that users may experience non-critical errors that temporarily influence their path to completing the task. Our goal is for a 75% error-free rate for each task during the usability test.

# REPORTING RESULTS

At the conclusion of the usability test, a report will be produced and shared with the leadership team. The report will include all findings and results, an evaluation of usability goals and objectives and recommendations for improving usability challenges and enhancing the application.

## Participant Data

[illegible]

# Metrics + Results

Task 1	Completion	Time to Task	Error Rate	Notes
Task 2	Completion	Time to Task	Error Rate	Notes
Task 3	Completion	Time to Task	Error Rate	Notes



POST-TEST QUESTIONNAIRE	
Statement	Scale: 1 Strongly Disagree- 5 Strongly Agree
I think that I would like to use this system.	
I thought the system was easy to use	
I found the system to be overly complex	
I found the various functions in the system were well-integrated.	
I thought there was too much inconsistency in this system.	
I would imagine most people would learn to use this system quickly.	
I found the system cumbersome to use.	
I felt very confident using the system.	
I needed to learn a lot of things before I could get going with this app.	
I found the look of the device plausible	
I found it comfortable using the wrist device	