



HELPING SLEEP CYCLES **GROW** TOGETHER

A CONCEPT BY TEAM ZZZZZ  
DECO3500- SOCIAL AND MOBILE COMPUTING

# PROBLEM SPACE

*"You miss 100% of the naps you don't take."* — Unknown

Poor Sleep Hygiene can lead to reduced **academic performance, mental health problems, and decreased overall well-being.**

Many university students struggle with poor sleep hygiene due to varying class times, social activities, and late night study sessions (Lu et al., 2023).

Lu, S., Stone, J. E., Klerman, E. B., McHill, A. W., Barger, L. K., Robbins, R., Fischer, D., Sano, A., Czeisler, C. A., Rajaratnam, S. M. W., & Phillips, A. J. K. (2023). The organization of sleep-wake patterns around daily schedules in college students. *SLEEP*. <https://doi.org/10.1093/sleep/zsad278>



Our **Domain** is **Improving Sleep Hygiene in University Students.**

Our **Target Audience** for now is **Friends(University Students) who are looking to improve their sleep cycles together.**

→ Can be extended to People staying in a Share House/Student Accommodation.

# USER RESEARCH

To understand our domain further, we conducted User Research via 3 methods.

## INTERVIEWS

From our interviews, we were able to identify a few key information.

- Interviewees categorize 6-9 hours of sleep as "Good Sleep". Most of them were unable to meet this due to **academic and job pressures**.
- Most of them would **use their phones** prior to sleeping.
- Interviewees would get **disturbed by noises from their housemates/neighbours** that often would wake them up.

## AUTOETHNOGRAPHIES

From conducting autoethnographies, we were able to understand that one common routine that we all had prior to sleeping was to **browse our phones**, be it social media or YouTube.

## DIARY STUDY

Users would often **watch videos on YouTube/browse social media** prior to sleeping or help them.

- Users would often stay awake and not have good sleep around **assignment deadlines and exam times**.
- Users would often **check their phones as soon as they wake up**.

# DESIGN CONSIDERATIONS

While ideating for a solution, we had the following design considerations.

**HELPS IMPROVE  
SLEEP QUALITY**

**HELPS REDUCE  
SCREEN TIME  
PRIOR TO SLEEPING**

**EASY TO USE**

**COLLABORATIVE**

**CONTEXTUAL**

**FOR  
STUDENTS  
(AFFORDABILITY)**



## ABOUT SHROOMCYCLE

**shroomCycle** is designed to promote healthy sleep habits in a group of friends.

Each lamp features lights corresponding to each user, that responds to changes in ambient lighting, turning on when someone in the group begins preparing for bed.

When a user places their phone on a pad at the base of their lamp, their corresponding LED light turns off, signaling to the others that they are going to sleep/sleeping.

This creates a **shared sense of accountability** within the group. Hence the system fosters better sleep routines by subtly indicating who is asleep, encouraging more consistent sleep patterns among the users.



## ABOUT SHROOMCYCLE

**Explicit connection to social (collaborative) and mobile (contextual) computing concepts**

### **Social (Collaborative) Computing**

The lamp creates a network where each user's action (placing their phone down) affects others. This **shared experience** creates a sense of **community** and **mutual accountability**.

### **Mobile (Contextual) Computing**

Being placed in the bedroom, the lamp is positioned to help with the user's bedtime routines, making it **contextually relevant to the sleep environment**.

# DESIGN FOR LOCATION FRAMEWORK

## MOTIVATIONS

An unobtrusive way to improve sleep hygiene.

## PEOPLE

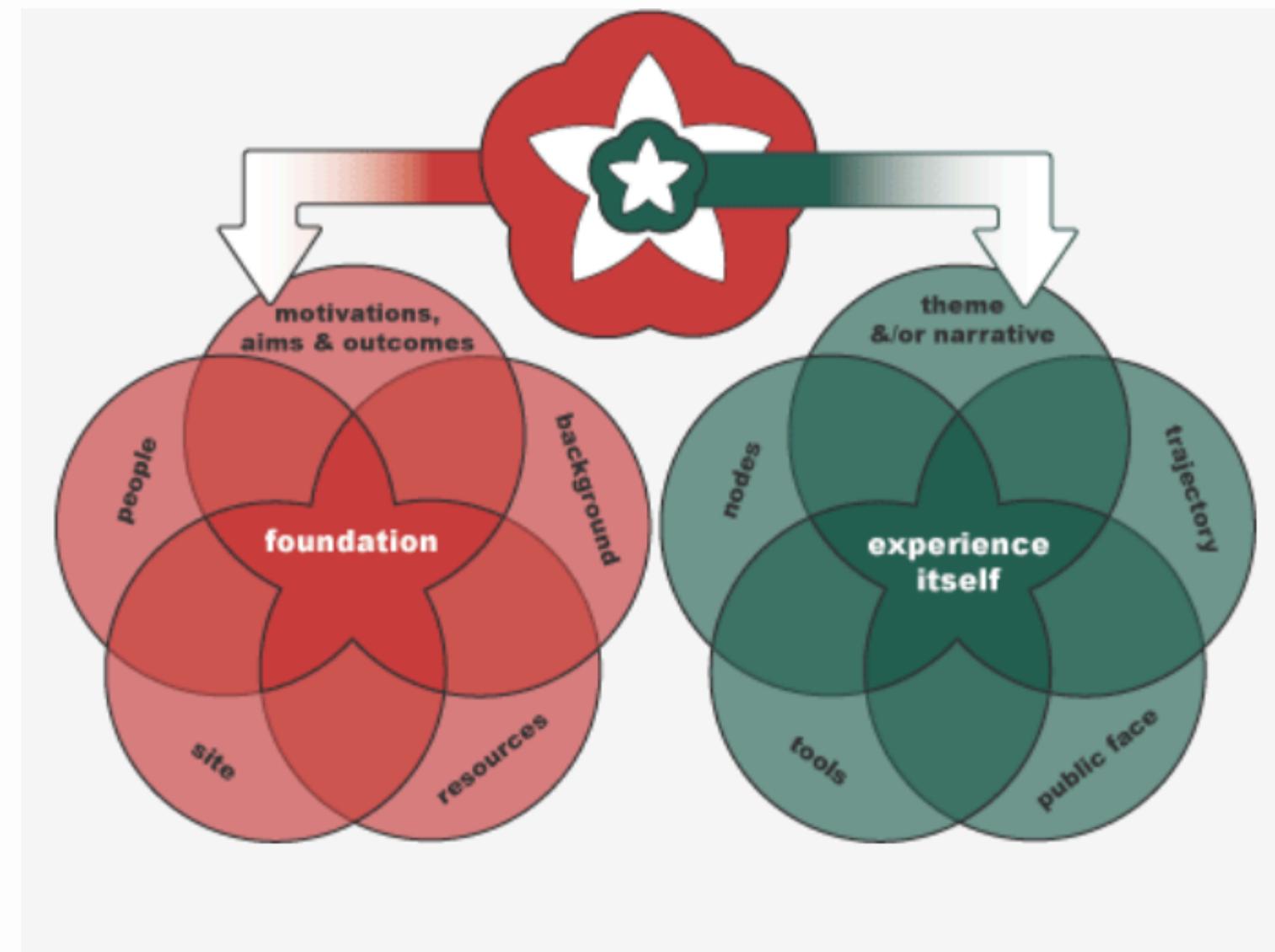
Friends who are University students.

## SITE

A Bedroom or Sleeping environment.

## RESOURCES

A Mobile Phone.



## THEME/NARRATIVE

**shroomCycle** helps improve sleep hygiene among friends through accountability and nudging.

## TRAJECTORY

- When any user turns off their Bedroom light, it activates the lamp which indicates to other users that someone has slept/might sleep soon.
- User places their phone on the lamp stand to turn off their corresponding light and signal other users that they are going to sleep.
- All the users can view who is asleep or awake based off the status of their light.

## TOOLS

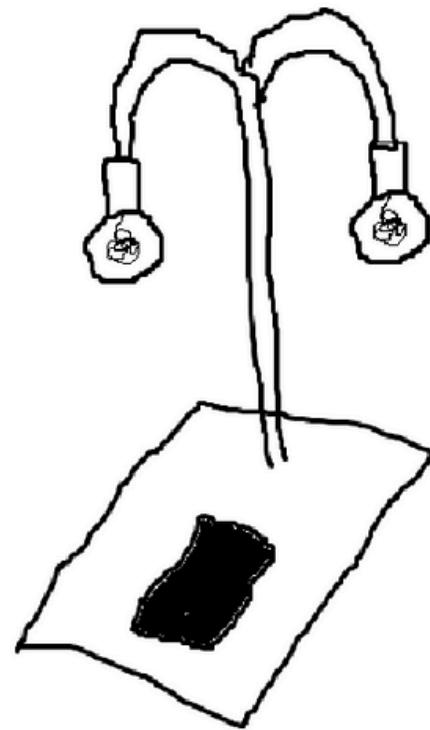
- LED lights
- Pressure Sensor and Bluetooth Sensor
- Arduino

## PUBLIC FACE

- Lamp with the sleep status of each user shown using LEDs.

# DESIGN ITERATIONS

While creating **shroomCycle**, we underwent 2 design iterations.

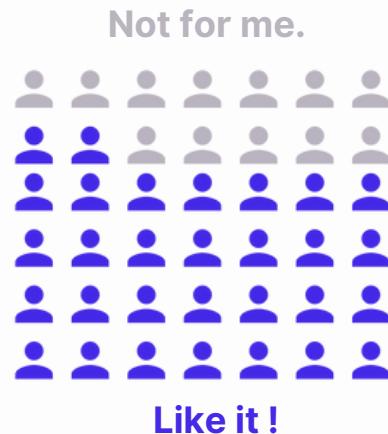


Initial Design

With the Initial Design, we felt that there would be a lot of exposed wiring which could be a potential hazard. We then pivoted to the Mushroom Design which would provide us ample space for cable management.

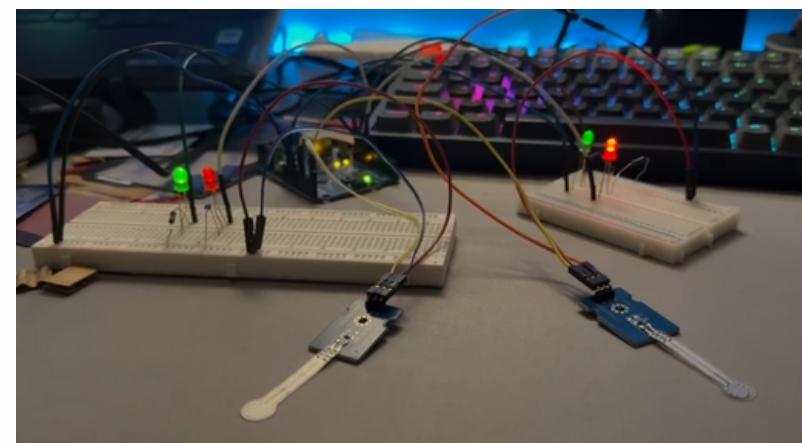


We tested the Mushroom Design with users and received mostly positive feedback.



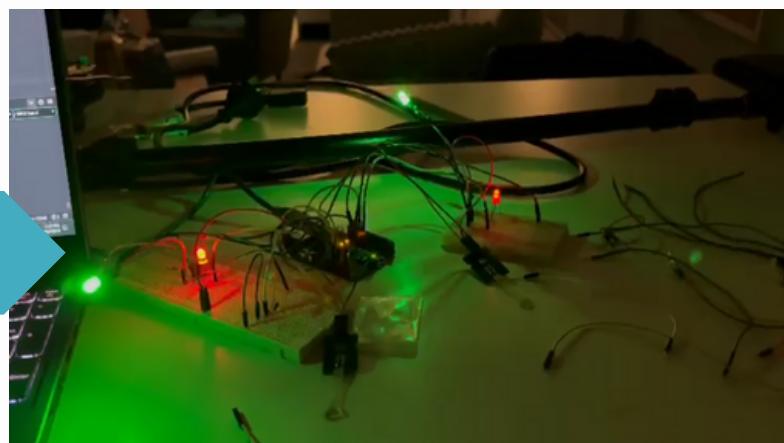
Finalized Design

# BUILD ITERATIONS



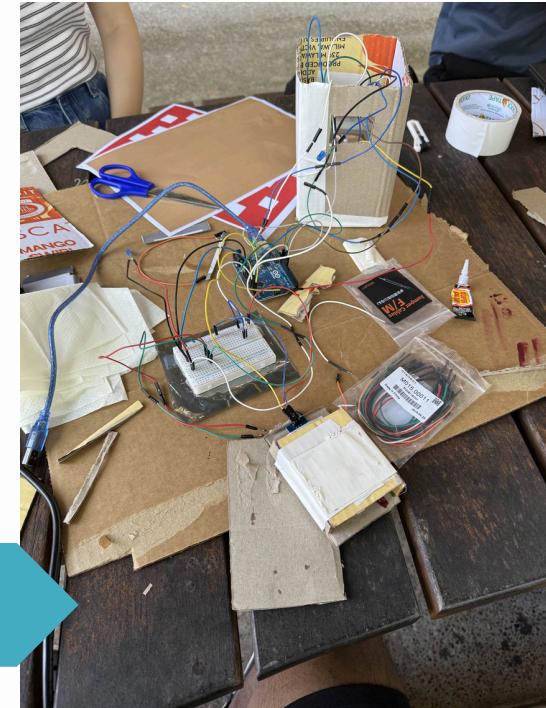
**Initial Prototype**

To test the basic functionality of  
**Pressure Sensors** and **LEDs**

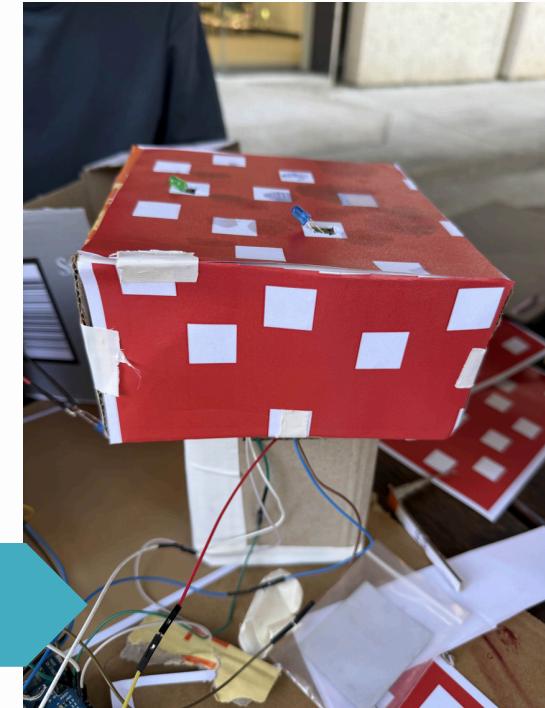


**Iteration #1**

Added in the **Ambient Light Sensor** to detect when the room turns dark.



**Building the Mushroom**



**Final Prototype alongside a User**

# USER EVALUATION

## Evaluation Goals:

- Assess how well the shroomCycle system supports improved sleep hygiene.
- Understand the ease of use, user experience, and effectiveness of the connected lamp system.
- Evaluate the impact of the synchronized light-off feature on the sleep environment of students sharing living spaces or dorms.
- Test the effectiveness and user engagement with a potential read-aloud feature, which could play calming audio content or bedtime stories to help users wind down.

## Evaluation Methods:

- **User Testing:** Conduct hands-on user tests where participants use the shroomCycle lamps over a period of time to **experience the phone-activated light control system** and the **think-aloud** method.
- **Surveys/Interviews:** Collect qualitative feedback through surveys and interviews, asking users about their experiences, how the lamp (and read-aloud feature) influenced their sleep routines, and areas for improvement.

# ANSWERS TO FAQS

## **What happens if someone leaves something besides a phone on the pressure sensor ?**

For our future implementation, we plan on adding an NFC tag in the pressure plate to detect devices that are placed. An alternative to NFC tags are Qi wireless charging, offering the same detection while also charging the phone that is placed on it.

## **What happens if someone never leaves their phone on the sensor and leaves their light on always ?**

**shroomCycle** is designed to be **ambient and a system that nudges** users to maintain their sleep cycles by being accountable to the other users.

Though we have ideas of an App to accompany the lamp, a future addition is to be able to edit the friend group so that the users can collectively choose to remove a person from their group if they feel that they have not been contributing positively.

This feature should help promote a healthy, cooperative environment where users actively engage in better sleep practices.





# DEMO & TESTING

Leave a Feedback

