



# Mobile App: Educate & Manage Screen Time

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## Declaration

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# Abstract

Digital well-being tools often use harsh blocking that can feel like punishment and fail to build lasting self-regulation. This dissertation talks about Lazuri, an iOS app that combines three elements: (1) limiting access to distracting apps via Apple's Screen Time, (2) micro-learning through flashcards to build long-lasting awareness and sustain consistent habits, and (3) a promise-based motivational interface reinforced by Game Center achievements and a leaderboard. Built with SwiftUI, Lazuri maintains a consistent experience across all the components and motivates and educates users. The paper describes the system design and rationale behind key choices, while later it evaluates the app's engagement, effectiveness and usability with the help of heuristic review and user study. Finally, it focuses on platform limitations, improvements, and future developments, while showcasing Lazuri as a good alternative to restrict-only approaches.

## Contents

|                                                                               |           |
|-------------------------------------------------------------------------------|-----------|
| <b>DECLARATION .....</b>                                                      | <b>2</b>  |
| <b>ACKNOWLEDGEMENTS .....</b>                                                 | <b>3</b>  |
| <b>ABSTRACT.....</b>                                                          | <b>4</b>  |
| <b>LIST OF TABLES .....</b>                                                   | <b>8</b>  |
| <b>LIST OF FIGURES .....</b>                                                  | <b>8</b>  |
| <b>CHAPTER 1: INTRODUCTION.....</b>                                           | <b>10</b> |
| 1.1 MOTIVATION.....                                                           | 10        |
| 1.2 PROBLEM STATEMENT .....                                                   | 11        |
| 1.3 RESEARCH QUESTIONS .....                                                  | 12        |
| 1.4 OBJECTIVES .....                                                          | 12        |
| 1.5 DISSERTATION STRUCTURE.....                                               | 13        |
| 1.5.1 Chapter 2.....                                                          | 13        |
| 1.5.2 Chapter 3.....                                                          | 13        |
| 1.5.3 Chapter 4.....                                                          | 14        |
| 1.5.4 Chapter 5.....                                                          | 14        |
| 1.5.5 Chapter 6 .....                                                         | 14        |
| 1.5.6 Chapter 7 .....                                                         | 15        |
| <b>CHAPTER 2: BACKGROUND .....</b>                                            | <b>16</b> |
| 2.1 LITERATURE REVIEW.....                                                    | 16        |
| 2.1.1 Digital Well-Being: Definitions .....                                   | 16        |
| 2.1.2 Impacts of Excessive Screen Time .....                                  | 17        |
| 2.1.3 Screen-Time Monitoring Technologies & Intervention Taxonomy .....       | 18        |
| 2.1.4 Gamification & Social-Sharing Features in Digital-Well-Being Apps ..... | 20        |
| 2.1.5 Identified Gaps & Rationale for Next Step .....                         | 21        |
| 2.2 ANALYSES OF EXISTING SOLUTIONS .....                                      | 22        |
| <b>CHAPTER 3: REQUIREMENTS .....</b>                                          | <b>27</b> |
| 3.1 USER REQUIREMENTS .....                                                   | 27        |
| 3.1.1 Target Audience Analysis .....                                          | 27        |
| 3.1.2 User Needs Assessment.....                                              | 28        |
| 3.2 FUNCTIONAL REQUIREMENTS .....                                             | 29        |
| 3.3 NON-FUNCTIONAL REQUIREMENTS .....                                         | 31        |
| 3.4 SYSTEM CONSTRAINTS .....                                                  | 32        |
| 3.4.1 Technical Limitations .....                                             | 32        |
| <b>CHAPTER 4: DESIGN.....</b>                                                 | <b>33</b> |
| 4.1 SPECIFICATIONS .....                                                      | 33        |
| 4.1.1 Architecture and Extensions .....                                       | 33        |
| 4.1.2 Screen Time Management Module .....                                     | 33        |
| 4.1.3 Educational Content Module.....                                         | 34        |
| 4.1.4 Gamification and GameKit Integration.....                               | 34        |
| 4.1.5 Performance.....                                                        | 35        |
| 4.1.6 Security and Privacy .....                                              | 36        |
| 4.1.7 Usability .....                                                         | 36        |
| 4.1.8 Reliability and Recovery .....                                          | 36        |
| 4.1.9 Compatibility and Dependencies .....                                    | 37        |
| 4.2 WHAT IT SHOULD DO.....                                                    | 37        |

|                                                          |           |
|----------------------------------------------------------|-----------|
| 4.2.1 Learn Tab .....                                    | 37        |
| 4.2.2 Focus Tab .....                                    | 38        |
| 4.2.3 Compete Tab .....                                  | 40        |
| 4.2.4 Key Behavioural Principles .....                   | 41        |
| 4.3 MY RESEARCH .....                                    | 41        |
| 4.4 DESIGN PROTOTYPES .....                              | 44        |
| 4.4.1 Low-Fidelity Wireframes .....                      | 44        |
| 4.4.2 Design Evolution of the Learning Tab .....         | 45        |
| .....                                                    | 46        |
| 4.4.3 Design Evolution of the Focus Tab .....            | 46        |
| 4.4.4 Design Evolution of the Create Schedule View ..... | 47        |
| 4.4.5 Design Evolution of the Compete Tab .....          | 48        |
| .....                                                    | 49        |
| 4.4.6 Design Evolution of Unauthorised Views .....       | 50        |
| 4.4.7 Design of Notifications .....                      | 51        |
| <b>CHAPTER 5: IMPLEMENTATION .....</b>                   | <b>52</b> |
| 5.1 SYSTEM OVERVIEW .....                                | 52        |
| 5.2 CORE BLOCKING MECHANISM .....                        | 54        |
| 5.3 EDUCATIONAL FEATURE IMPLEMENTATION .....             | 56        |
| 5.3.1 Flashcard System .....                             | 56        |
| 5.3.2 Learning Interface .....                           | 58        |
| 5.3.3 Achievement Integration .....                      | 60        |
| 5.4 PROMISE-BASED SHIELD SYSTEM .....                    | 61        |
| 5.4.1 User Promise Input .....                           | 61        |
| 5.4.2 Custom Shield Appearance .....                     | 62        |
| .....                                                    | 63        |
| 5.4.3 Shield Button Actions .....                        | 63        |
| 5.5 FOCUS TIME VISUALISATION .....                       | 65        |
| 5.5.1 Hourglass Display .....                            | 65        |
| 5.5.2 Time Tracking .....                                | 66        |
| 5.5.3 DATA SYNCHRONISATION .....                         | 67        |
| 5.6 GAMIFICATION ELEMENTS .....                          | 68        |
| 5.6.1 Game Center Setup .....                            | 68        |
| 5.6.2 Competition Features .....                         | 69        |
| <b>CHAPTER 6: TESTING AND EVALUATION .....</b>           | <b>72</b> |
| 6.1 HEURISTIC EVALUATION .....                           | 72        |
| 6.1.1 METHODOLOGY .....                                  | 72        |
| 6.1.2 Heuristic Analysis .....                           | 72        |
| 6.1.3 Priority Improvements .....                        | 74        |
| 6.2 USER TESTING RESULTS .....                           | 75        |
| 6.2.1 Participant Demographics .....                     | 75        |
| 6.2.2 Testing Methodology .....                          | 75        |
| 6.2.3 Quantitative Findings .....                        | 75        |
| 6.2.4 Qualitative Feedback .....                         | 76        |
| 6.2.5 Key Insights .....                                 | 76        |
| <b>CHAPTER 7: CONCLUSION .....</b>                       | <b>77</b> |
| 7.1 Summary of Achievements .....                        | 77        |
| 7.2 Research Questions Addressed .....                   | 77        |
| 7.3 User Testing Outcomes .....                          | 78        |
| 7.4 Limitations .....                                    | 78        |

|                                                                                              |           |
|----------------------------------------------------------------------------------------------|-----------|
| 7.5 <i>Future Work</i> .....                                                                 | 78        |
| 7.6 <i>Final Remarks</i> .....                                                               | 79        |
| <b>REFERENCES</b> .....                                                                      | <b>80</b> |
| <b>APPENDIX 1: SOFTWARE TESTING WITH USERS COMPLIANCE FORM – UG &amp; PGT PROJECTS</b> ..... | <b>82</b> |
| <b>APPENDIX 2: LAZURI APP - USER TESTING CHECKLIST</b> .....                                 | <b>87</b> |

## List of Tables

|                                                                               |    |
|-------------------------------------------------------------------------------|----|
| Table 1: Overview of Digital Wellness Applications .....                      | 23 |
| Table 2: Game Mechanics Implementation in Focus Management Applications ..... | 24 |
| Table 3: Undesign Features: Restriction Capabilities and Penalty Systems..... | 25 |
| Table 4: Revenue Strategies of Digital Focus Applications .....               | 26 |

## List of Figures

|                                                         |    |
|---------------------------------------------------------|----|
| Figure 1: Lo-Fi Learn Tab .....                         | 44 |
| Figure 2:Lo-Fi Learn Tab 2 .....                        | 44 |
| Figure 3: Lo-Fi Learn Tab 3 .....                       | 44 |
| Figure 4: Lo-Fi Compete Tab .....                       | 44 |
| Figure 6: Lo-Fi Compete Tab 2 .....                     | 44 |
| Figure 5: Lo-Fi Settings Tab.....                       | 44 |
| Figure 8:Learning Tab Evolution 1.....                  | 45 |
| Figure 7: Learning Tab Evolution 2.....                 | 45 |
| Figure 9: Learning Tab Evolution 3.....                 | 45 |
| Figure 11: Learning Tab Evolution 4.....                | 46 |
| Figure 10: Learning Tab Evolution 5.....                | 46 |
| Figure 12: Focus Tab Evolution 4 .....                  | 46 |
| Figure 13: Focus Tab Evolution 3 .....                  | 46 |
| Figure 14 : Focus Tab Evolution 2 .....                 | 46 |
| Figure 15: Focus Tab Evolution 1 .....                  | 46 |
| Figure 19: Focus Tab Evolution 5 .....                  | 47 |
| Figure 16: Focus Tab Evolution 6 .....                  | 47 |
| Figure 17: Focus Tab Evolution 7 .....                  | 47 |
| Figure 18: Focus Tab Evolution 8 .....                  | 47 |
| Figure 23:Evolution of the Create Schedule View 1 ..... | 47 |
| Figure 22:Evolution of the Create Schedule View 2 ..... | 47 |
| Figure 21:Evolution of the Create Schedule View 3 ..... | 47 |
| Figure 20:Evolution of the Create Schedule View 4 ..... | 47 |
| Figure 24: Compete Tab Evolution 1.....                 | 48 |
| Figure 27: Compete Tab Evolution 2.....                 | 48 |
| Figure 26: Compete Tab Evolution 3.....                 | 48 |
| Figure 25: Compete Tab Evolution 4.....                 | 48 |
| Figure 31: Compete Tab Evolution 5.....                 | 49 |
| Figure 30: Compete Tab Evolution 6.....                 | 49 |
| Figure 29: Compete Tab Evolution 7.....                 | 49 |
| Figure 28: Compete Tab Evolution 8.....                 | 49 |
| Figure 33: Compete Tab Evolution 9.....                 | 49 |
| Figure 32: Compete Tab Evolution 10.....                | 49 |
| Figure 37: Unauthorised Views Evolution 1 .....         | 50 |



|                                                                |    |
|----------------------------------------------------------------|----|
| Figure 36: Unauthorised Views Evolution 2 .....                | 50 |
| Figure 35: Unauthorised Views Evolution 3 .....                | 50 |
| Figure 34: Unauthorised Views Evolution 4 .....                | 50 |
| Figure 40: Unauthorised Views Evolution 5 .....                | 51 |
| Figure 39: Unauthorised Views Evolution 6 .....                | 51 |
| Figure 38: Unauthorised Views Evolution 7 .....                | 51 |
| Figure 41: Notification Blocking Schedule Starts .....         | 51 |
| Figure 42: Notification Blocking Schedule Finishes .....       | 51 |
| Figure 43: Shield Notification Triggered by Button Press ..... | 51 |
| Figure 44 System Overview: Code 1 .....                        | 52 |
| Figure 45 System Overview: Xcode View .....                    | 53 |
| Figure 46 Core Blocking Mechanism: Code 1 .....                | 54 |
| Figure 47 Core Blocking Mechanism: Code 2 .....                | 54 |
| Figure 48 Core Blocking Mechanism: Code 3 .....                | 55 |
| Figure 49 Flashcard System: Code 1 .....                       | 56 |
| Figure 50 Flashcard System: Code 2 .....                       | 56 |
| Figure 51 Flashcard System: Code 3 .....                       | 57 |
| Figure 52 Learning Interface: Code 1 .....                     | 58 |
| Figure 53 Learning Interface: Code 2 .....                     | 59 |
| Figure 54 Learning Interface: Code 3 .....                     | 59 |
| Figure 55 Achievement Integration: Code 1 .....                | 60 |
| Figure 56 User Promise Input: Code 1 .....                     | 61 |
| Figure 57 User Promise Input: Code 2 .....                     | 62 |
| Figure 58 Custom Shield Appearance: Code 1 .....               | 63 |
| Figure 59 Shield Button Actions: Code 1 .....                  | 64 |
| Figure 60 Shield Button Actions: Code 2 .....                  | 64 |
| Figure 61 Hourglass Display: Code 1 .....                      | 65 |
| Figure 62 Hourglass Display: Code 2 .....                      | 65 |
| Figure 63 Hourglass Display: Code 3 .....                      | 65 |
| Figure 64 Time Tracking: Code 1 .....                          | 66 |
| Figure 65 Time Tracking: Code 2 .....                          | 66 |
| Figure 66 Time Tracking Code: 3 .....                          | 67 |
| Figure 67 Data Synchronisation Code: 1 .....                   | 67 |
| Figure 68 Data Synchronisation Code: 2 .....                   | 67 |
| Figure 69 Data Synchronisation: Code 3 .....                   | 68 |
| Figure 70 Game Center Setup: Code 2 .....                      | 68 |
| Figure 71 Game Center Setup: Code 1 .....                      | 68 |
| Figure 72 Game Center Setup: Code 3 .....                      | 69 |
| Figure 73 Competition Features: Code 1 .....                   | 70 |
| Figure 74 Competition Features: Code 2 .....                   | 70 |
| Figure 75 Competition Features: Code 3 .....                   | 71 |
| Figure 76 Competition Features: Code 4 .....                   | 71 |

# Chapter 1: Introduction

## 1.1 Motivation

In today's world the average person spends at least 3 hours of their daily time on their smartphone, interacting with dozens of sessions in a single day [1]. This number increases with Generation Z; they spend at least 4 hours of their daily time in between waking and sleeping [2]. During the pandemic, people used their phones even more, which made them worry that they were wasting too much time on their phones and not being productive enough [3]. Smartphones and mobile applications can make life easier and more fun, but they can also cause stress and keep people from focusing on what they need to do [3]. Every person has a different level of mobile phone usage, but every usage pattern can lead to a variety of results. If a person uses their mobile phone excessively, it can lead to poorer academic achievement, more anxiety and stress, and sleep problems [4]. Unfortunately, many people are having a hard time regulating their phone usage; users are feeling like they don't have control, using the internet too much, and being constantly vigilant online [5]. In response, digital detox tools and apps have been created, but the ones that are already out there are often not strict enough and don't have a psychological basis, which makes them less effective at changing long-standing digital habits (see Section 2.1.3) [3], [6]. This points out an important chance to find how gamification and inherent system affordances may contribute to better solutions [3]. Through gamification we can limit smartphones in a more engaging, fun [3] and motivating [7] way. It is important to take advantage of paradox, which is using technology to cut down on technology overload while also taking advantage of its many features; this is essential now to create useful digital tools for well-being that really give users control [3].

## 1.2 Problem Statement

According to the research, a critical number of users are not engaging with various types of screen time apps, and nearly 80% stop use within two weeks. This low usage indicates there is an obstacle in effectively supporting users to take care of their digital health. Numerous applications aimed at minimising mobile phone usage and maladaptive mobile phone use (MMPU) lack accurate evaluations of their efficacy [4].

There are several factors that make this issue occur:

- **Lack of motivational design:** Psychological factors are not considered enough [6]: They are trying to apply gamification to these apps without fully considering well-known theories of engagement, motivation, or behaviour change [8].
- **Poor user experience (UI/UX) implementation:** According to research, users often find these applications overgamified; adding task demands to the interface makes it less usable and less enjoyable for users [9].
- **Technical limitations:** In a research study, they found out that users were expecting to be more aware of their overall actions with their device, to figure out how productive they were and whether they were using it too much, so just giving the screen time is not interesting enough [10].
- **Lacking social or competitive aspects:** Not all of the apps use social tracking features, for example, progress sharing with your friends, which is very important for encouraging long-term changes in user behaviour and user connections [4].

Therefore, if these issues are not addressed, users may continue to struggle, to a certain extent, with maladaptive mobile phone use and its potential negative consequences.

## 1.3 Research Questions

1. Which approach should we take to reliably block applications on the iOS platform?
2. How can we effectively organise educational content and navigate it on a mobile device?
3. What kind of architecture makes it possible for app extensions to sync data in near real time?
4. How can you change system-level UI parts while still following iOS regulations?

## 1.4 Objectives

Objectives will be divided into two parts:

### ❖ **Technical objectives:**

- Create an application using SwiftUI; the application should use the following frameworks: Apple's FamilyControls, DeviceActivity, ManagedSettings, and ManagedSettingsUI with four specialised app extensions to control screen time.
- Using UserDefaults and App Group containers, build a bridge between the main app and extensions to ensure data is being synced across different processes.
- Set up a notification system using the UserNotifications framework; this will help users to stay engaged, get information about their schedules, and remember their commitments.
- Use GameKit to integrate Game Center achievements and leaderboards for progress tracking.
- Create a JSON-based flashcard system with category filtering.

### ❖ **HCI Objectives:**

- Make a structure for an interface with three tabs (Learn, Focus, Compete), users should easily navigate through the app with minimal cognitive load.

- Implement a fluid swipe mechanism to navigate/share flashcards with haptic feedback and defined gesture thresholds.
- Design a flexible scheduling system that can handle complicated situations like crossing over at midnight while still making it easy for users to understand through visual cues and smart defaults.
- Use Swift Charts to make dynamic charts that let users see their focus patterns, progress, and overall screen time.

## 1.5 Dissertation Structure

### 1.5.1 Chapter 2

Chapter 2 explains existing research in digital wellbeing applications and screen time management tools/apps, and how we can use gamification for behavioural change. It will go through existing development practices, and you will see how HCI principles can be used for developing these apps in an engaging way. Also, it will explain why today's solutions in this field are not enough and the bad sides of screen time.

### 1.5.2 Chapter 3

Chapter 3 explains the needs of the users, who the users are and what they are expecting from my app. The three main goals of Lazuri are outlined: screen time management, learning through flashcards, and gamification. Later it will explain the performance security and privacy. Lastly, it will mention what the limits of Apple's ecosystem are and what some technical limitations I encountered throughout the process.

### 1.5.3 Chapter 4

The chapter is explaining the design of the Lazuri app, starting with modules (screen time, learning, gamification, and analytics), extensions, and architecture specifications. Then it will describe the app functionality with the help of three main tabs: Learn, Focus, and Compete. After that, it will show how connected theory is with design by using Fogg's Behaviour Model and talk about the main behavioural principles that shaped the app. Lastly, it will introduce design prototypes and explain the evolution of each part, step by step.

### 1.5.4 Chapter 5

Chapter 5 describes Lazuri's system implementation. It explains the structure and tracking of the flashcard-based learning flow, the process of achieving distraction control with Apple's Screen Time features, and how the promise-based motivational interface reframes blocking as a moment of reflection. Game Center achievements, the leaderboard for progress tracking, and the method used to maintain data consistency between the app's components are also explained.

### 1.5.5 Chapter 6

This chapter gives an overview of the evaluation, which includes the findings of a heuristic review and a user study. It mentions the methods, participants, tasks, measures, and the most important usability findings. Finally, it provides a systematic summary of the improvements required for the next version of Lazuri.

### 1.5.6 Chapter 7

This chapter presents the dissertation's conclusion. It addresses the research questions, analyses the contributions within digital well-being and human-computer interaction, acknowledges limitations and lays out plans for future development.

# Chapter 2: Background

## 2.1 Literature Review

### 2.1.1 Digital Well-Being: Definitions

There are many concepts that make up digital well-being, beginning with addiction to smartphones. It is when people use their phones in a way that is not helpful but in fact is bad for them, which is also called maladaptive mobile phone use (MMPU) [4]. On the other side, nomophobia is the fear of being detached from a smartphone [4], and finally, Fear of Missing Out (FoMO) is the worry that a person will miss out on other people's good times, which is often caused by the desire to stay in touch with your network [11]. The DSM-style definitions mostly fit the addictive behaviours mentioned earlier. In a case like that, a person knows that a certain behaviour has bad effects, and they start to feel the effects of withdrawal. People with these conditions can't control how much they use their phones, which has negative effects on their daily lives, such as problems with work and socialising [4].

One of the important topics in the digital well-being literature is the difference between meaningful and meaningless smartphone use. Meaningless smartphone use is referred to as scrolling without a goal with minimal engagement with the content [12]. This usage style is mostly associated with frustration of autonomy, reduced overall well-being, and dissatisfaction, as users don't reach their certain goals or cannot establish significant relationships [12]. On the other hand, meaningful use is when the person has a sense of fulfilment and purpose in their interaction with the smartphone; they are often engaged with the content [12].



Quantified-Self (QS) framing in digital well-being encourages people to be more aware of how they use their smartphones by tracking their use. This is a form of reflective self-monitoring based on self-regulation theory that encourages behaviour change [2], [5]. People are more likely to use monitoring tools if they think they are useful and easy to use [1]. Unfortunately, even if users gain more awareness, they often fail to translate this awareness into actual usage reduction [2].

Fear of Missing Out (FoMO) is a dispositional driver of smartphone behaviour because people with a higher trait of FoMO are more likely to respond to push notifications they receive [11]. This increased awareness of notifications makes disruptive, habitual checking behaviour worse because people feel like they need to stay connected all the time [11]. Tendency to this behaviour can cause problems in daily life and with how people use digital technology [11].

### 2.1.2 Impacts of Excessive Screen Time

It is highlighted that frequent smartphone usage significantly downgrades academic and cognitive outcomes [4]. According to research, a higher screen time slightly decreases GPA [2]; moreover, academic multitasking interferes with a person's attention, performance, and efficiency. This is reflected in frequently checking the smartphone while studying [5], [11].

From a psychological and physiological perspective, MMPU is causing increased anxiety and stress as well as irregular sleep patterns [4]. Excessive and problematic mobile phone usage is also associated with numerous psychological issues like depression, anxiety, stress, and sleeping problems, as well as physical issues including forward neck posture and hand dysfunction [4], [6], [11]. According to the research, grayscaling has proven to reduce self-reported stress levels, but it does not consistently improve sleep or productivity [5].

Addiction to smartphones can cause habitual automaticity, which is driven by users' deep-rooted habits. Some people report that they are “not in control” of their smartphone use [5], [12]. Once checking on their phone, people engage mindlessly without realisation [3], these experiences are seen as less meaningful, and we can characterise them as useless or completely pointless [12].

Screen-time tracking applications were made to help users to better observe and understand their usage statistics; unfortunately, research shows that even though they make the users aware of the situation, they are less likely to cut down on smartphone use [1], [2], [4]. Research reveals that most of the users prefer to use the self-tracking function as a form of symbolic goal progress over intense restrictive methods such as blocking or digital nudges, even though they are aware that it is a less effective way [2]. These findings lead us to the fact that self-awareness is not always enough to change a behaviour that is very automatic and compulsive [5]. Some people with high phone usage tend to underestimate the amount of time they spend on their smartphones in such ways that they might not see the need for phone usage time-tracking [1].

The bad effects of social media on daily life and work productivity correlate positively with FoMO [11]. High levels of FoMO are linked with disruptions due to the smartphone notifications, which may cause less deep and self-reported productivity while studying [11].

### 2.1.3 Screen-Time Monitoring Technologies & Intervention Taxonomy

Screen-time monitoring technologies are a series of features that track users' phone usage statistics and activity. These technologies can also limit and summarise the usage of certain apps; they are usually built-in features of different operating systems, and they also come with third-party apps if it's preferred, for example, Forest, Hold, and Freedom [3]. Self-inhibiting design options like customisable daily limits, full blocking capabilities for certain apps or the whole

device, and notifications that let users know when they reach their usage limits are all part of the feature taxonomy of these technologies[3], [4].

Disruptive elements, such as grayscale mode, have been reported to be very effective at reducing smartphone appeal, and according to research, they also mention that it can decrease screen time by approximately 20 minutes, at the same time giving people a better sense of control over how they use their phones [4], [5]. Also, according to the empirical studies, some of the apps, such as MyTime, reduced time spent on “wasteful” apps by 21% [13] and the “Not Less But Better” app managed to reduce daily use by 32 minutes in screen time [6]. A study shows that people use smartphones for 3 hours on average, divided into small sessions that consist of parallel device usage rather than spending a single or the total amount of time spent on all screens [1], [10].

People usually start their journey into screen time technologies with the interest in their own digital habits and desire to self-regulate them while breaking negative habitual patterns [1], [10].

Users occasionally try to reduce “meaningless” activities such as passive social media consumption. They aim to replace these habits with more purposeful and useful involvement [12]. The Technology Acceptance Model (TAM) is a framework that explains how people adopt technology based on how useful and easy to use it is, and since screen time tools are aligning with TAM, people are driven to use those tools [1]. Mindfulness could be misleading due to the fact that they might believe they don’t need these kinds of interventions as much as others [1].

Research indicates that simply providing statistics and relying on self-awareness from tracking tools are mostly not enough to achieve desired behavioural change [2], [5]. It is due to the fact that they don’t always change deeply ingrained habits; users also believe that tracking is not restrictive enough to create such a change[2]. It is reported that more restrictive and on-purpose interventions can effectively reduce smartphone usage and enhance well-being. Reports say that

stricter and planned interventions can help people use their smartphones less and improve their health [4], [5]. Some crucial steps for this are to include greyscale mode, as I mentioned before, and app limiter or blocker features; these features also have significantly decreased the amount of time spent on mobile phones, and they also aid self-regulation [3], [4], [5]. Lastly, some goal-orientated apps such as MyTime and “Not Less But Better” have shown the need for strong, active intervention methods that go beyond basic tracking [13], [1], [6].

#### 2.1.4 Gamification & Social-Sharing Features in Digital-Well-Being Apps

Gamification is commonly defined as “the use of game design elements in non-game contexts” [3], [7], [8]. It is often used in the apps to encourage limited phone usage with the help of points, leaderboards, achievements, and rewards in the physical/virtual world and stop people from using their phones in unwanted ways with a punishment system [3], [4], [9].

If it is used effectively, it can intrinsically motivate positive health and well-being behaviours, and according to the research, it aligns with Self-Determination Theory (SDT) [9]. Humans need to promote their intrinsic motivation, and according to the SDT, satisfying basic psychological needs for autonomy, competence, and relatedness will do the job [14]. On the other side, gamification mostly relies on the extrinsic motivators instead of the intrinsic ones, and designers should put significant experiences ahead of rewards [9].

According to a systematic review, 19 empirical papers about gamified health and well-being apps were identified; this indicates that this field of study is advancing quickly [9]. It was found that 84% of studies used rewards, which are the most common gamification element [9]. It is stated that mental health apps show five gamification elements on average, but at the same time their overall effectiveness has not yet been determined; the results of 41% of studies stated mixed or neutral effects [9]. Interestingly, if gamification is done too much, it could draw more

attention to the smartphone, for example, by frequently coming back for the rewards, which could diminish detox goals [3].

Research says that, with the idea of “undesign,” we should not just design for the engagement; we should also design to prevent people from technology overuse [3]. To achieve this, we could specifically design some sort of element that will slow down the user interaction and set “micro boundaries” to stay in a minimum engagement state [3]. Some common undesign affordances include setting time limits or blocking access to chosen apps [3]. Directly blocking a smartphone is a less common undesign feature in digital detox apps, which highlights a natural tension even though gamification is frequent [3].

Grayscale, as an example of digital nudges, provides simplified intervention to improve digital well-being [5]. Grayscale destroys the urge to use the phone due to the fact that it reduces visual attractiveness [4]. As one of the studies states, it can cut daily screen usage by 20 minutes [5]. We can improve self-tracking tools by comparing a user’s behaviour and the group average [2]. Even though some social tools like leaderboards may have a goal to develop competitiveness and the sense of belonging, they can also cause some loneliness while users compare themselves to others [3], [11].

### 2.1.5 Identified Gaps & Rationale for Next Step

As it has been stated earlier, screen-time applications often fail to reduce actual time spent on the apps even though they improve self-awareness [2]. According to a study, half of the users reported having 0 effect, emphasising that they had mixed feelings about the behaviour change while positively evaluating tracking [2]. While interventions can target “waste of time” apps, long-lasting habit improvement isn’t possible with just self-control [13]. This gap between

awareness and real behaviour leads us to find solutions, which are much more than just providing the information.

Robust evaluation and psychological support systems are often lacking in current digital detox interventions [6]. Gamification and social interaction are very rare features even though self-tracking and goal setting are already quite common [4]. This perspective that focuses on smaller parts overlooks the bigger picture, which includes social support, motivating gamification, education, and tracking.

Most importantly, the technology we use to stop overuse creates some more questions because gamified designs could be used to manipulate people [3]. Even for the well-being [6], keeping track of sensitive and private user data requires careful consideration of who owns it and who can access it in what circumstances, getting consent, and not using “dark patterns” which could limit freedom.

My solution to propose is to aim to bridge these gaps and work on integrating an educational part into these applications. In the next chapters of this paper, I will go into more detail about this.

## 2.2 Analyses of Existing Solutions

The following Table 1 compares developer/release info, core and additional features, age ratings, pricing, and store/download metrics of four digital well-being apps (Forest, Hold, Cleverest, Freedom).

Table 1: Overview of Digital Wellness Applications

| Application Details      | Forest: Focus for Productivity                                                                                         | Hold - make it happen                                                                | Cleverest: Focus Digital Detox                           | Freedom: Focused Screen Time                         |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------|
| Developers               | Seekrtech Co., Ltd. (2014)                                                                                             | Hold AS (2016)                                                                       | Martian & Machine GmbH (2019)                            | Eighty Percent Solutions Corporation (2011)          |
| Primary features         | Timer for blocking the phone and growing a tree                                                                        | Timer for blocking the phone and collecting points                                   | Timer for blocking the phone and making the avatar happy | Timer for blocking apps and websites                 |
| Additional features      | Rewards (coins, species, white noises; real trees), achievements, leaderboard, tags, statistics, app-allow lists, etc. | Rewards (coins; coupons, lucky draw), leaderboard, statistics, music playlists, etc. | Rewards (happy avatar), statistics, tags                 | Blocklists, schedules, audio tracks, lock mode, etc. |
| Release year (App Store) | 2014                                                                                                                   | 2015                                                                                 | 2015                                                     | 2018                                                 |
| Age rating (App Store)   | 4+                                                                                                                     | 17+, Gambling, Frequent/Intense Contests                                             | 4+                                                       | 4+                                                   |
| Pricing (App Store)      | 49 NOK (3.99 USD), with in-app purchases                                                                               | Free                                                                                 | Free                                                     | Free, with in-app purchases                          |
| Ratings (App Store)      | 4.8/5.0, 919 ratings                                                                                                   | 4.5/5.0, 3.1K ratings                                                                | N/A                                                      | 3.5/5, 30 ratings                                    |
| Google Play statistics   | 10M+ downloads, 4.6/5.0, 593K reviews                                                                                  | 100K+ downloads, 4.0/5.0, 3.2K reviews                                               | 5K+ downloads, N/A ratings                               | 500K+ downloads, 4.4/5.0, 4.58K reviews              |

Adapted from You and Karlsen (2024)

The following table shows which game mechanics each app implements (e.g., rewards, points, rankings, social features).

Table 2: Game Mechanics Implementation in Focus Management Applications

| Game Mechanics               | Forest | Hold | Cleverest | Freedom |
|------------------------------|--------|------|-----------|---------|
| Digital items                | ✓      | —    | —         | —       |
| Real-world rewards           | ✓      | ✓    | —         | —       |
| Points/Credits               | ✓      | ✓    | —         | —       |
| Rankings                     | ✓      | ✓    | —         | —       |
| Accomplishments/Trophies     | ✓      | ✓    | —         | —       |
| Progress tracking            | ✓      | ✓    | —         | —       |
| Competitions                 | ✓      | ✓    | —         | —       |
| Social features              | ✓      | ✓    | —         | —       |
| Characters                   | ✓      | —    | ✓         | —       |
| Audio elements               | ✓      | ✓    | —         | ✓       |
| Categories (classifications) | ✓      | ✓    | ✓         | —       |
| Usage analytics              | ✓      | ✓    | ✓         | —       |
| Motivational messages        | ✓      | ✓    | ✓         | ✓       |
| Focus timers                 | ✓      | ✓    | ✓         | ✓       |

Adapted from You and Karlsen (2024)



The following table compares restriction options and penalty mechanisms in the apps’ Undesign framework.

Table 3: Undesign Features: Restriction Capabilities and Penalty Systems

| System Features            | Forest | Hold | Cleverest | Freedom |
|----------------------------|--------|------|-----------|---------|
| Restriction Options        |        |      |           |         |
| Duration configuration     | ✓      | ✓    | ✓         | ✓       |
| Device/display restriction | ✓      | ✓    | ✓         | ✓       |
| Application restriction    | ✓      | —    | —         | ✓       |
| Web restriction            | —      | —    | —         | ✓       |
| Network restriction        | —      | —    | —         | ✓       |
| Penalty Mechanisms         |        |      |           |         |
| Session failure tracking   | ✓      | ✓    | ✓         | —       |
| Character deterioration    | ✓      | —    | ✓         | —       |
| Reward forfeiture          | ✓      | ✓    | —         | —       |
| Position demotion          | ✓      | ✓    | —         | —       |
| Mocking quotes and memes   | —      | ✓    | —         | —       |

Adapted from You and Karlsen (2024)

The following table shows various pricing strategies of the apps, including free access, trials, one-time purchases, recurring payments, add-on purchases, and strategic partnerships.

Table 4: Revenue Strategies of Digital Focus Applications

| Pricing Strategy     | Forest                          | Hold                   | Cleverest | Freedom         |
|----------------------|---------------------------------|------------------------|-----------|-----------------|
| Complimentary access | —                               | Available              | Available | —               |
| Trial version        | —                               | —                      | —         | Trial available |
| One-time purchase    | Required                        | —                      | —         | —               |
| Recurring payment    | —                               | —                      | —         | Required        |
| Additional purchases | Available for enhancements      | —                      | —         | —               |
| Strategic alliances  | Environmental NGO collaboration | Corporate partnerships | —         | —               |

Adapted from You and Karlsen (2024)

# Chapter 3: Requirements

## 3.1 User Requirements

Developing Lazuri required a good amount of research about intended users and their specific needs. This section addresses the important user needs, analyses of the target audience and evaluation of their needs.

### 3.1.1 Target Audience Analysis

The solution should be accessible and adaptable to different types of people.

Important considerations for my target audience include:

- **Demographics:** My solution should work for a wide range of people who are 18+ regardless of their background or job.
- **Screen Time Awareness Levels:** Every user is different from each other, so they should have different levels of understanding about how much screen time they have. Some people might have been aware of their use and actively trying to cut it; others could be just unaware of their usage and behaviour.
- **Motivation:** Users' motivation to change their digital habits depends on a variety of reasons, and it could be different with each person. Some people may be intrinsically motivated by a desire for health or more productivity. On the other side, others might need external prompts or gamified elements to motivate them to participate and keep them going. If a solution manages to promote a sense of control over their smartphone usage, it could serve as a direct measure of digital wellbeing [3], [5].

### 3.1.2 User Needs Assessment

Based on target audience analysis, there are a few important user needs that a digital wellbeing solution (Lazuri app) must meet:

- **Educational Content about Digital Wellbeing:** Users need clear, easy information about what digital wellbeing is, why it's important, and how to get it. This means knowing how using a smartphone affects us cognitively and emotionally [5].
- **Flexible Scheduling for Different Routines:** Everyone has different sets of schedules throughout their life; my solution should offer customisable schedules which will allow users to be flexible. It should be easily adjustable to fit with their individual daily routines, work-life balance, and personal choices [5].
- **Visual Progress Tracking:** Users should be able to have clear visual representations of their digital habits and overall progress to keep them interested in the process, and we need to give them a sense of accomplishment.
- **Personal Motivation Reminders:** I will be using nudges and personalised reminders to reinforce positive behaviour. These will be personalised messages which can remind users of their goals, or it could be a celebration of their accomplishments. My main goal will be to give users encouragement or to make them think about their digital wellbeing goals. This would make them feel like they are more in control and less like they are using it excessively [5].

In conclusion, Lazuri should have a good digital wellbeing solution needs to be user-centred, and it should meet the needs of all categories of smartphone users by giving them access to

educational materials, flexible controls, clear progress tracking and personalised motivational support.

## 3.2 Functional Requirements

The Lazuri app has four main parts: education, restriction, gamification, and usage analytics visualisation. These work together to reduce screen time and addiction.

### ❖ **Focus Tab:**

#### ➤ App & Category Selection

- Select individual apps, entire categories, and (optionally) web domains to block.
- Show a live count of selected apps/categories.
- Lock the selection UI while any schedule is active.

#### ➤ Schedule Management

- Create multiple blocking schedules with start/end times.
- Support crossing midnight (e.g., 23:00-04:00).
- Choose days: specific weekdays or templates (weekdays, weekends, or custom).
- Name each schedule; enable/disable via toggle; edit only when inactive; delete anytime.
- Minimum duration is 15 minutes (platform constraint); show warning if below.
- Restore previously active schedules on app launch.
- Keep schedules and selections in sync with extensions; auto-refresh summaries periodically.

#### ➤ Permissions & Settings

- Request Screen Time permission on first launch; re-prompt if missing.

- Provide Open Settings fallback and short, step-by-step instructions if denied.
- Hide/disable Focus features until permission is granted.
- Blocking Experience
  - Show a custom shield when a blocked app opens.
  - Display the user's personal promise on the shield.
  - Primary action confirms, "I won't break my promise!" and returns the user without opening the blocked app.
- Analytics & Tracking
  - Track total focus time (minutes served).
  - Display focus charts (daily/weekly) and iOS Screen Time summaries (daily/weekly).
  - Calculate and show averages; auto-refresh about every 60 seconds.

## ❖ LEARN TAB

- Flashcard Browsing
  - Swipe left/right to navigate; haptic feedback and smooth animations.
  - Swipe up to share.
  - Show a card index (e.g., 3/25).
- Content Organisation
  - Filter by category.
  - Vertical, scrollable category list with category badges on cards.
- Card Features
  - Each card shows title + content; tap to open external links in the default browser.
  - Share via the system share sheet; include formatted card details.
- Progress Tracking

- Track unique views per card; re-views don't add progress.
- Persist viewed status locally; progress counts toward achievements.

## ❖ COMPETE TAB

- Personal Motivation
  - Let users set/edit personal promises/goals and view them in a modal.
  - Promises sync to extensions and appear on the blocking shield.
- Game Center Integration
  - Auto-authenticate on launch; show guidance if manual sign-in is required.
- Leaderboards
  - Global and Friends leaderboards via Game Center.
  - Submit scores automatically; show the user's rank.
- Achievements
  - Unlock milestones at 5, 10, 25, 50, 75, and 100 cards viewed.
  - Auto-unlock + banner on completion; report to Game Center.
- Game Center Views
  - Provide a simple dashboard, Leaderboards view, and achievements view.
- About Section
  - Show app logo attribution, developer info, and licence links.

## 3.3 Non-Functional Requirements

In addition to its functional requirements, Lazuri meets quality standards in terms of performance, security, usability, reliability, and compatibility.

- **Performance:** The app should update usage tracking data at reasonable intervals to stay efficient and save battery life.

- **Security and Privacy:** All data should be kept private and stored safely on the device, and communication should only happen over trusted networks.
- **Usability:** The interface should be easy to use, learn, and change to fit the user's preferences, such as dark or light mode.
- **Reliability and Recovery:** The system should be able to recover from crashes without losing any data.
- **Compatibility:** It should work with the most recent versions of iOS and be made for iPhone, but it might also work on iPad.

## 3.4 System Constraints

Apple has a very strict and closed system, which makes things hard for developers. The app I wanted to make had very different features than what I have right now, so I will talk about some of the problems I ran into.

### 3.4.1 Technical Limitations

A custom shield is the screen displayed when attempting to open a blocked app. In my initial plan, my goal was to make the user to see themselves through the selfie camera as soon as they opened the blocked app. A motivational message would appear on top of this. However, when I tried to implement it, I realised that it is not even possible to display a picture or a video on the custom shield. My second plan was to redesign the custom shield without opening the camera or inserting a picture/video, but this time I discovered that I could not even change the shape of the button; the only thing I was able to do was add some text and the app's logo. Creating a fully interactive custom shield is not really feasible given Apple's limitations and within the limits of my abilities and knowledge.



# Chapter 4: Design

## 4.1 Specifications

### 4.1.1 Architecture and Extensions

The main app and its extensions (Monitor, Report, Shield Action, and Shield Configuration) can only share data through Apple's secure app group containers. There is no exposure of data to the outside world or transmission over the network.

### 4.1.2 Screen Time Management Module

- The Screen Time API is what the Lazuri is built on. When users go to the Focus tab, Lazuri/System automatically asks them for Screen Time permission. Every time the app is opened, the system checks to see if the permission is still valid; if it is not valid, it must ask for it again.
- Device Activity Monitor extension is a must for a blocking mechanism to exist/function; this extension applies a shield (restriction) in place immediately when the scheduled period starts. In the background schedules will be tracked silently, without requiring any further action from the user.

#### 4.1.2.1 Blocking Features

- Users can choose between individual apps, whole categories of apps, or both at the same time (for example, social apps, games, and individual apps).
- Smart Scheduling: Users can make schedules that allow for crossings at midnight, like from 10 PM to 4 AM the next day.

- **Predefined Schedule Templates:** Users can quickly choose common time patterns like "Weekdays" (Monday to Friday) or "Weekends" (Saturday to Sunday) with just one tap, without having to pick each day by hand.
- **Custom Shield Screen:** The generic iOS shield (the screen that pops up when you try to open a blocked app) was changed to one that has a meaningful design and a message that motivates users (users will write the motivating message).

#### 4.1.3 Educational Content Module

In the learning tab there are 100 flashcards (there is no limit); these cards will be about digital wellbeing, organised into categories:

- Anti-Addiction
- Time Management
- Test (for test purposes it will be removed)

To navigate in the educational tab, users need to use swipe gestures; for example, they must swipe left to see the next flashcard, and they must swipe right to see the previous one. They can swipe up to share the content, and they can click on the card to access more information about that specific topic in the card. Each swipe gesture provides haptic feedback for tactile confirmation. The current version only has a few categories for proof of concept with two cards containing actual content, but the system is built to handle more in future versions.

#### 4.1.4 Gamification and GameKit Integration

GameKit integration uses hardcoded identifiers that match the configuration in App Store Connect [15]:

- Milestone Achievements: I set six thresholds for viewing 5, 10, 25, 50, 75, and 100 cards and when users reach each threshold, the achievement will be unlocked.
- Leaderboard: Users collect points from each achievement they unlock, and all achievements have different point values assigned (10, 15, 25, 40, 60, and 80 points); these points will determine their position in the leaderboard. Users can see the leaderboard for Friends and Global through iOS Game Center.
- Cross-device Synchronisation: Game Center syncs achievements and leaderboard data across devices, but local app data that is stored on each device (like chart data, schedule settings, etc.) stays on that specific device.

Lastly, we have personalised motivation, but this is not part of GameKit integration; it is one of the gamification features, and it is called “View Your Promises”. It is in the Compete Tab and lets users make a promise to themselves. They can change it over time, and it will show up on the shield activation screen.

#### 4.1.5 Performance

- The app updates the focus tracking data every 60 seconds and keeps the statistics up to date to keep the battery from running out quickly.
  - Apple's Device Activity framework forces developers to make all blocking schedules have a minimum period of 15 minutes.
  - Lazuri launches in less than 2.0 seconds.
  - Card swipe animations take 0.6 seconds and have smooth spring effects (0.8 damping).
- The vibration motor is pre-loaded when the app opens, so there are no delays.

#### 4.1.6 Security and Privacy

- Lazuri only communicates with Apple's official infrastructure, Game Center. This uses Apple's enterprise-level security protocols and doesn't need any special server setups. Flashcards may also have links to other websites (usually academic) where you can read more, and these links open directly in the user's browser.
- Apple's UserDefaults with app group containers (group.com.emrekulaber.Lazuri) store all user data, such as learning progress, focus sessions, and application settings, on the device itself.

#### 4.1.7 Usability

- The interface uses system colours for familiar looks; it can change automatically when users switch between dark mode and light mode.
- The basic swiping mechanism in the learning tab is so simple that users can quickly get used to it and become good at using it right away.

#### 4.1.8 Reliability and Recovery

- When a user opens the app, it automatically restores active monitoring schedules, even if the app crashes or the system restarts.
- The system stops duplicate focus sessions by looking at timestamps in one-second windows.
- Data operations have fallback mechanisms that let corrupted JSON loads return empty states instead of crashing.

### 4.1.9 Compatibility and Dependencies

- The app needs iOS 17.6 or later because of the extension requirements. It would be preferable to release it in a lower version, but that would be risky because not all extensions work the same way on different versions of iOS.
- For blocking features to work, users must give Screen Time permissions through a pop-up message or from settings.
- Users need an active Apple ID with gaming services turned on to use Game Center features, but the main features are still available without it.
- The app works only in portrait mode on iPhones and iPads. Support for iPads in Xcode has been enabled, but it hasn't been tested on iPad yet.

## 4.2 What It Should Do

This section will talk about how Lazuri's three tabs are supposed to be used. Lazuri should help people learn (in a light, self-paced way), stay focused, and stay motivated (through achievements and friendly competition).

### 4.2.1 Learn Tab

In this tab of Lazuri, users should be able to do the following:

- Users should surf through the cards by swiping right to return to the previous card, swiping left to move to the next.
- Filtering should enable them to quickly switch between categories, for example, anti-addiction and time management, or they can just view all content by choosing 'All' in the filter.

- Users will swipe up to share through the system share sheet. The title, content, and category of the card are all parts of the shared content.
- They will view their current position in each deck, for example, 5/100; only unique cards that the user views should count towards achievements; re-views won't make progress go up.
- When a user taps on the card, the associated link about the topic should come up through the default browser.

Aimed to make learners feel like they were on a calm, self-controlled journey. No pressure, just steady exploration that contributes to long-term digital well-being.

#### 4.2.2 Focus Tab

##### **Pre-authorisation View**

- When the user first installs the application (or revokes permission from the system settings), Lazuri displays a screen with an explicit permission request, and the user must automatically receive and approve the request through the system.
- If the request is missed or denied, the steps on the screen should take the user to Settings to authorise the Lazuri for screen time permission.
- Focus tab won't be available until permission is granted by the user.

##### **All Parts of Focus Tab**

After granting Screen Time permission to the Lazuri app, users will see four sections.

The first is a block that concisely displays the amount of time they spent focused, expressed in minutes and hours. Next, a horizontal stacked bar chart displays overall screen time data and how much time they spent on each app, which they can view as daily or weekly, raising user awareness.

Below that, there's a section where users can view the apps and categories they want to block. After making their selections, clicking the "+" sign opens the Blocking Schedule creation view. In this section, the name of the schedule is given, and the time period is selected. The start and end times of the blocking schedule are determined. The user can choose which days it will work, ready-made templates such as Weekdays, Weekends, and Every Day, or the user can customise it by marking the days they want one by one (Monday, Tuesday, Wednesday, etc.). At the bottom, there is a summary of the schedule the user created. Once this process is complete, the user can activate the schedule, and the blocking schedule will continue for the time period specified in the schedule. Once the time period is over, the blocking will end, and the schedule will remain functional unless the toggle is deactivated by the user. The user can change everything within the created schedule by clicking on it if they wish. At the bottom, a focus time graph appears; it is essentially the same as the hourglass section at the top, which displays total time. It simply divides the data by week or day and presents it in a bar chart. The focus tab should automatically refresh at reasonable intervals and whenever the application state changes. The app group storage should keep the selected applications, schedules, focus sessions, and totals synchronised between the application and its extensions.

### **Restrictions**

- Users won't be able to edit an active schedule and the app selection.
- The chosen time range cannot be under 15 minutes, and Lazuri should warn the user if they try.

My goal was to offer measures to increase the quality of life of users by increasing their awareness of the seriousness of their situation and making them feel that they are in control while using Focus Tab.

### 4.2.3 Compete Tab

#### **First Time Setup**

Users should be able to use their Apple ID to sign in to Game Center, either at launch or they would see a written guide about how to do it manually through Settings.

#### **Your Promises Section**

Users should make a short, personal promise to their future selves (up to about 900 characters). When they try to open a blocked app, this message should show up again on the shield screen, making their goal clear at the right time. Users should be able to change promises at any time.

#### **Achievements**

Users should be able to unlock milestones at 5, 10, 25, 50, 75, and 100 by looking at unique flashcards, and points must be given for each achievement, and the totals should change automatically based on how many cards they read in the Learn tab.

#### **Leaderboards**

Leaderboards should show the total points of users, and they should be able to compare with their friends or with people globally; scores will update automatically as they earn more points.

#### **About Section**

At the end of the 'Compete' tab, users should see an 'About' button; when they press it, they should get informed about the logo and licensing details.

Lazuri should motivate users in a friendly and positive way, on the Compete tab, track their achievements, help them to leave positive notes, and assist them to achieve their goals.



#### 4.2.4 Key Behavioural Principles

- **User Autonomy:** Users must decide for themselves to use all the system's core features, such as permissions, Game Center, and schedules. Users are never forced to block; instead, they can choose when to start or stop it.
- **Progressive Disclosure:** Features show up as conditions are met, and empty states show the next step.
- **Positive Reinforcement:** Achievements celebrate user milestones and reward healthy digital wellbeing habits.
- **Flexibility:** There are multiple schedule options available for users, and they can personalise them as they wish, just as they can personalise the promises they make to themselves.
- **Privacy Respect:** Everything happens with the user's consent, and even developers cannot view or access user data.

#### 4.3 My research

BJ Fogg's “A Behaviour Model for Persuasive Design” is at the heart of Lazuri's design. His studies show that behaviour change happens when three things come together: enough motivation, enough ability, and a good trigger [16]. I focused on using these ideas to help people who are addicted to social media.

##### **Motivation Design Strategies**

I used several motivational elements based on Fogg's three main ones [16]:

- 1) Pleasure/Pain (Immediate Response)

- a) When users swipe flashcards, the haptic feedback gives them instant pleasure through touch.
- b) Visual spring animation in the Learning tab creates satisfying motion that mimics physical card manipulation.
- c) The "Minutes that served you" counter transforms abstinence from a loss (pain) into a gain (pleasure).

## 2) Hope/Fear (Anticipation)

- a) Achievement thresholds of 5, 10, 25, 50, 75, and 100 create anticipation of reaching milestones.
- b) Your "Promises" feature lets people write down their future goals and aspirations (hope).
- c) Warnings at the start of the schedule: "No turning back, focus time begins now!" use anticipation to get users ready.

## 3) Social Acceptance/Rejection

- a) Game Center integration allows social comparison through leaderboards between users.
- b) The ability to share achievements meets the need for social validation.
- c) The triangle navigation on the compete tab makes social features prominent and accessible.

## **Simplicity (Ability) Factors**

I systematically addressed all six simplicity factors identified by Fogg [16]:

- 1) **Time:** Flashcard sessions don't take long; swipes only take less than one second.
- 2) **Money:** App is free with no in-app purchases.
- 3) **Physical Effort:** Comfortable swipe distance for flashcard navigation with one hand.

- 4) **Brain Cycles:** There are no hard choices; there are only swipe actions that are either left, right, or up.
- 5) **Social Deviance:** Framed as self-improvement rather than restriction.
- 6) **Routine:** Integrates with existing iOS patterns (tab bars, standard gestures).

### **Trigger Implementation**

I implemented all three trigger types strategically [16]:

#### **1) Spark Triggers (Low Motivation, High Ability)**

- a) Push notifications with motivational messages: Well done! Your discipline has won the day.
- b) Achievement completion banners show up automatically.
- c) Overall progress visualisation in the achievement system.

#### **2) Facilitator Triggers (High Motivation, Low Ability)**

- a) One-tap schedule activation makes things easier for the user.
- b) Pre-filled schedule templates for weekdays and weekends.
- c) Setup instructions that are easy to follow.

#### **3) Signal Triggers (High Motivation, High Ability)**

- a) The moon icon shows up automatically for schedules that cross midnight.
- b) The real-time focus counter updates every 60 seconds.

## 4.4 Design Prototypes

This section will show my design prototypes and what I changed step by step.

### 4.4.1 Low-Fidelity Wireframes

I started to draw the low-fidelity (Lo-Fi) wireframes on my tablet. In my initial plan I wanted to have a 4th tab, but then, as you will see in my following images, I gave up on this idea.

Figure 1: Lo-Fi Learn Tab

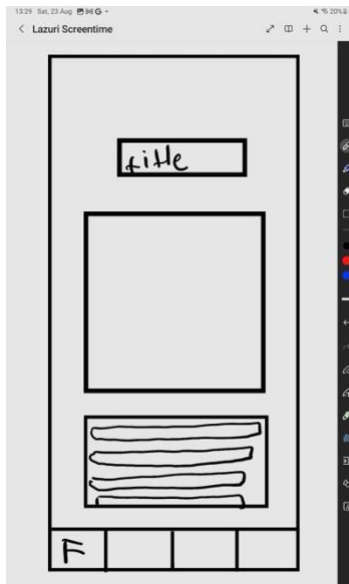


Figure 2: Lo-Fi Learn Tab 2

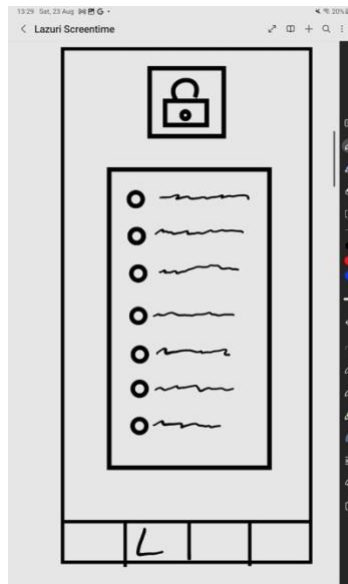


Figure 3: Lo-Fi Learn Tab 3

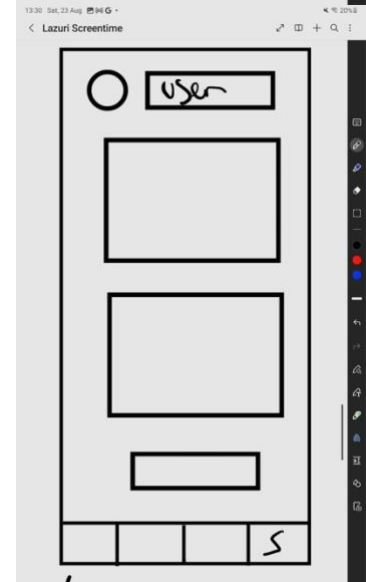
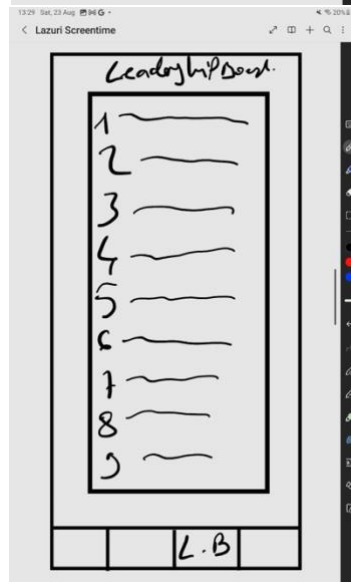
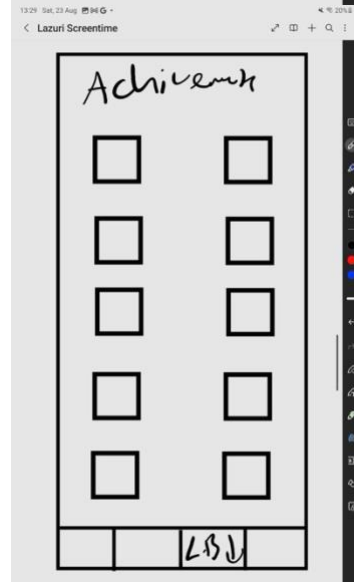
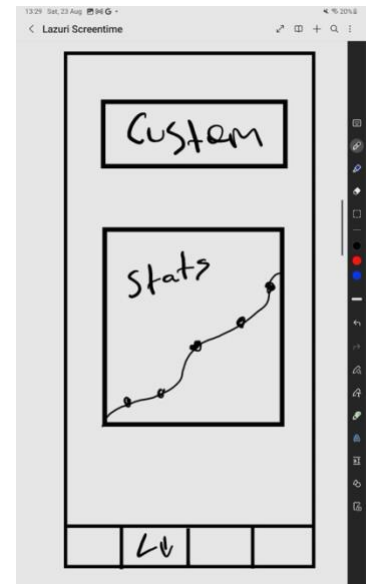


Figure 4: Lo-Fi Compete Tab

Figure 5: Lo-Fi Compete Tab 2

Figure 1: Lo-Fi Settings Tab

### 4.4.2 Design Evolution of the Learning Tab

In Lazuri each part is equally important, but the Learning Tab is something different, because, as my previous research has shown, this was something new. I wanted to have a simple but functional design. I didn't want to make it too complex for senior users, so swiping the cards was the easiest way to navigate. Filters are easy to use as well; \_Test category is something for the development which will be removed prior to the launch of the app.

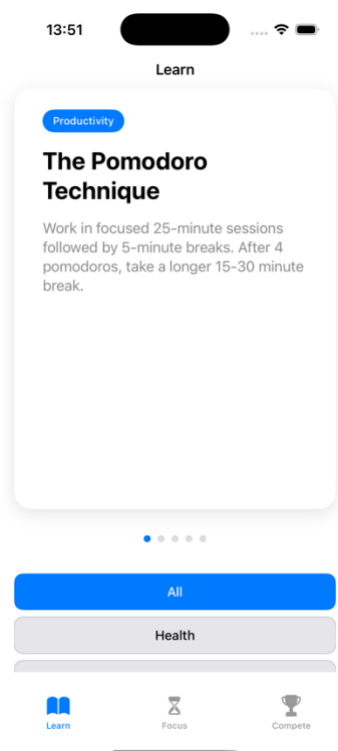


Figure 7: Learning Tab Evolution 1

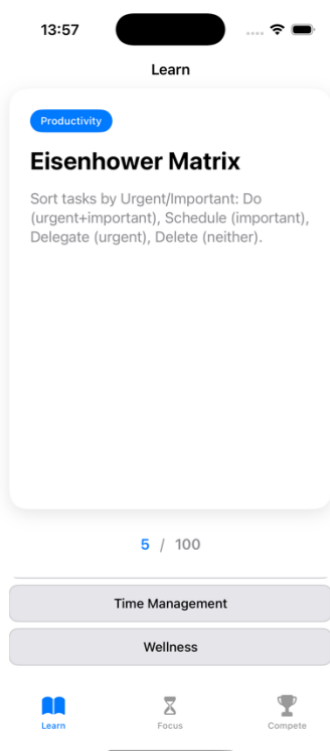


Figure 8: Learning Tab Evolution 2

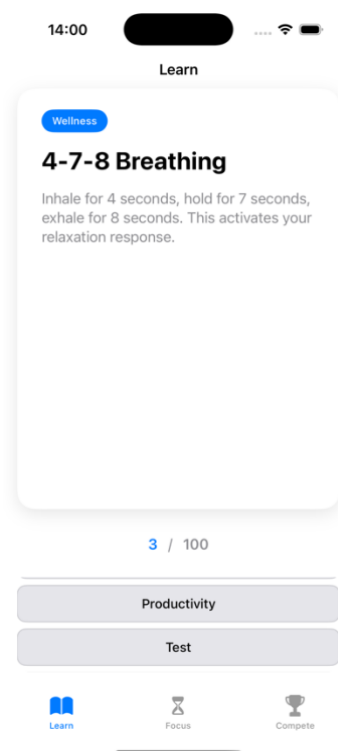


Figure 2: Learning Tab Evolution 3

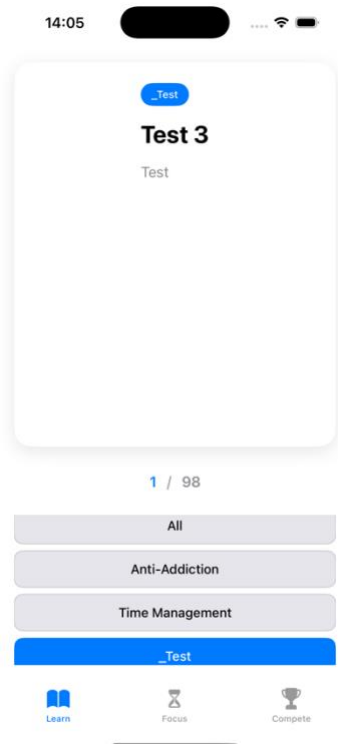


Figure 10: Learning Tab Evolution 4

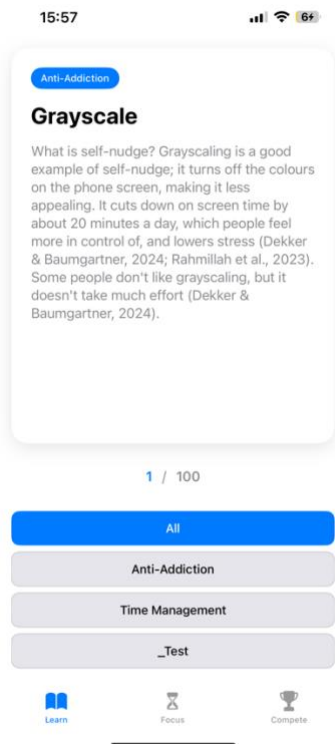


Figure 3: Learning Tab Evolution 5

### 4.4.3 Design Evolution of the Focus Tab

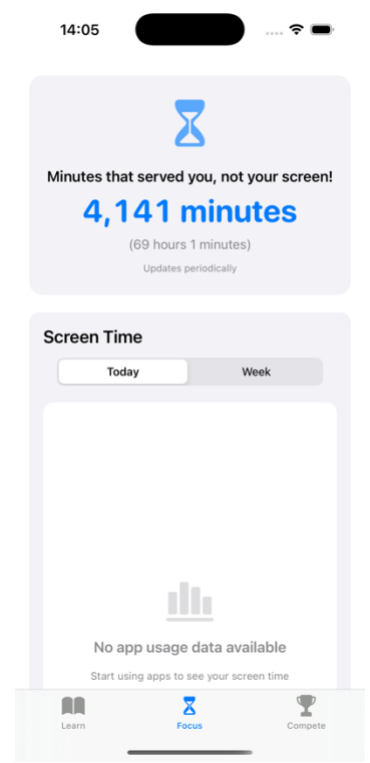
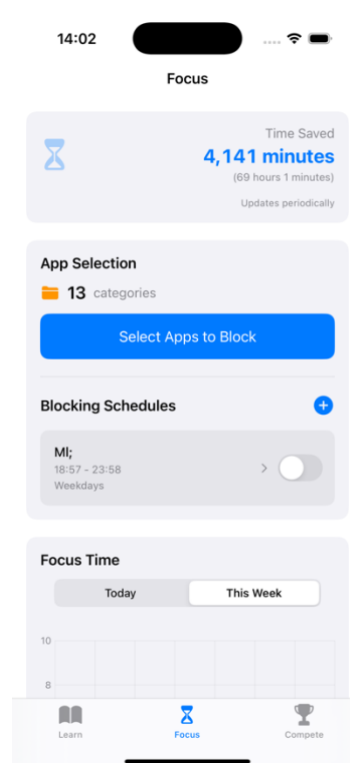
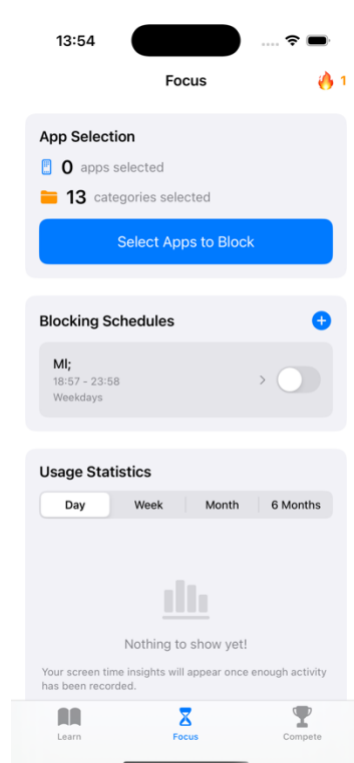
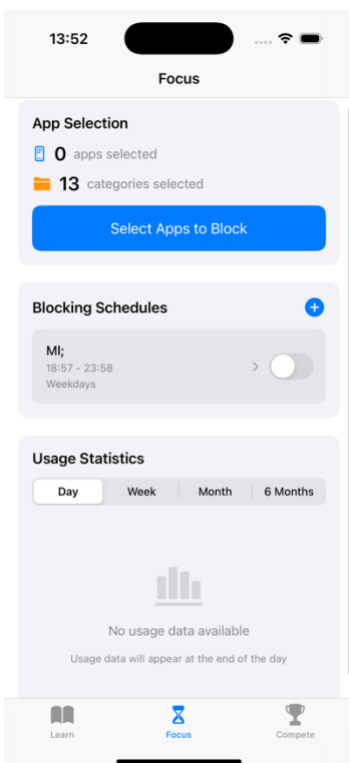
For the Focus Tab I added extra features such as the Focus Time Chart and Focus Time Hourglass (Time Saved). I did this to create awareness in the user; I wanted to visualise how much time they spend. I especially did it in minutes because it is not very common to use minutes, and I believe this would act like a hook for their attention to this matter.

Figure 12: Focus Tab Evolution 1

Figure 13: Focus Tab Evolution 2

Figure 14: Focus Tab Evolution 3

Figure 4: Focus Tab Evolution 4



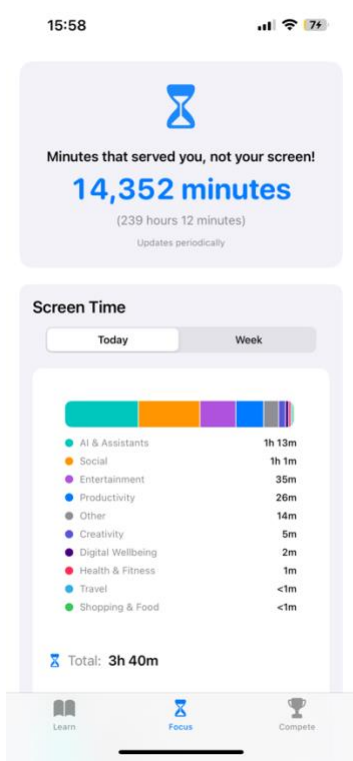


Figure 16: Focus Tab Evolution 5

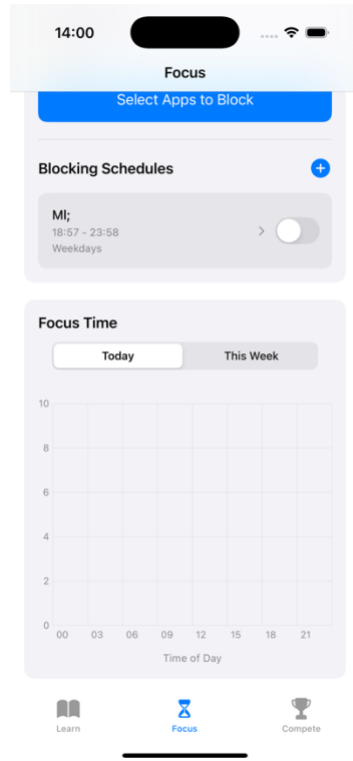


Figure 17: Focus Tab Evolution 6

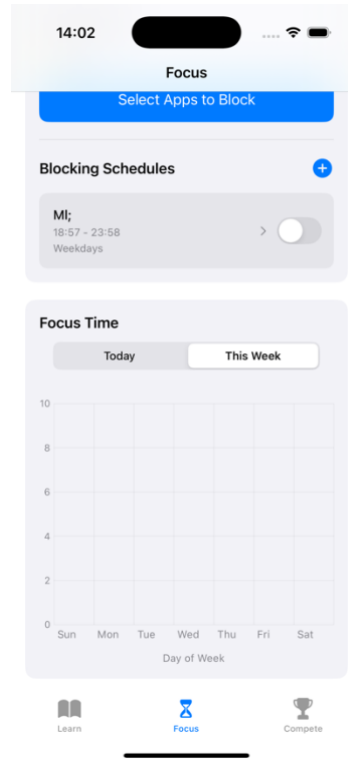


Figure 18: Focus Tab Evolution 7

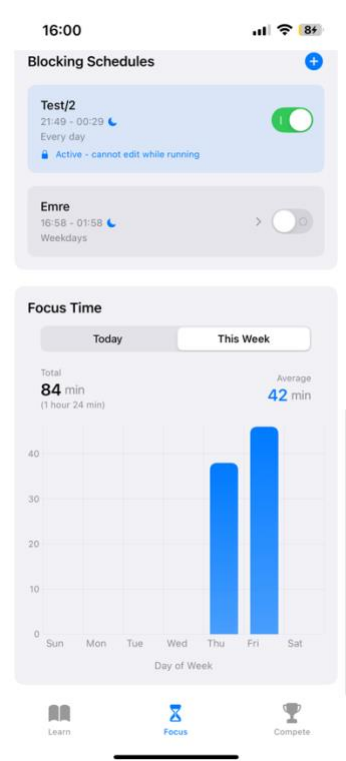


Figure 5: Focus Tab Evolution 8

#### 4.4.4 Design Evolution of the Create Schedule View

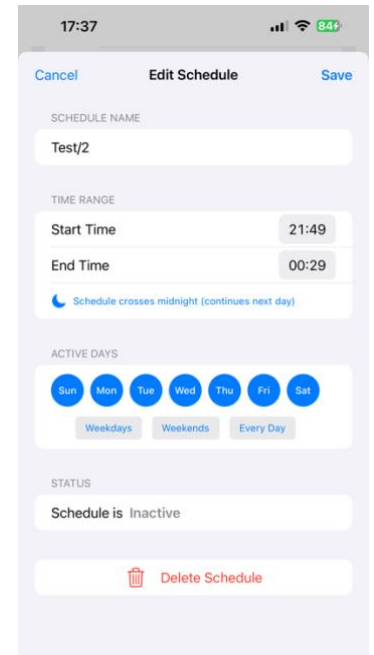
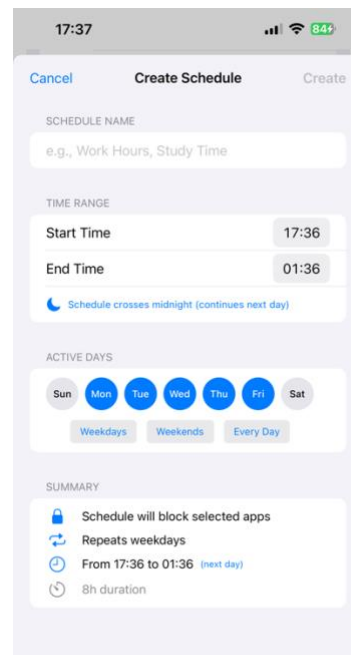
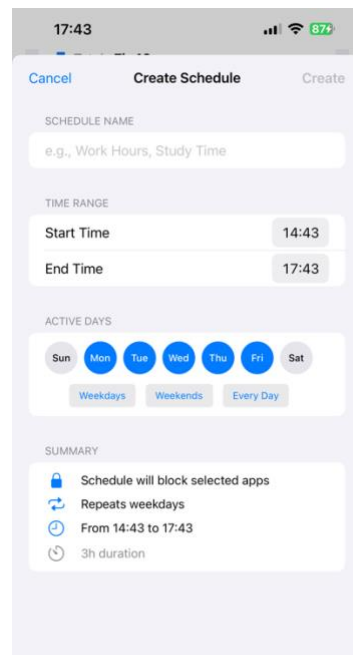
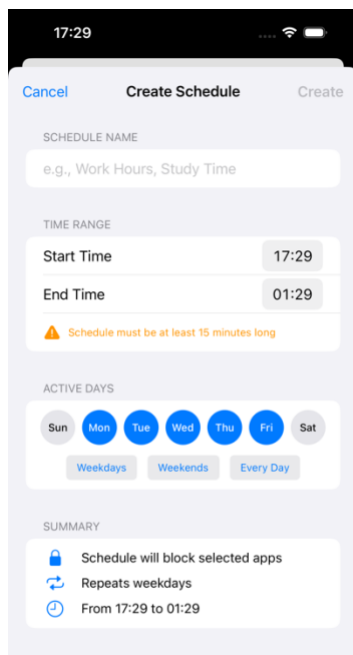
In this view, there was no midnight crossing functionality, so when I introduced it, I had to put a warning, as you see in the third picture below. Since Apple does not allow any schedule to be shorter than 15 minutes, I also put an explanation for that, as you see in the first picture below. Lastly, on the fourth picture we can see the edit schedule view; it's not so different, just minor changes such as the delete button.

Figure 20: Evolution of the Create Schedule View 1

Figure 21: Evolution of the Create Schedule View 2

Figure 22: Evolution of the Create Schedule View 3

Figure 6: Evolution of the Create Schedule View 4



### 4.4.5 Design Evolution of the Compete Tab

When I first created the Compete tab, I didn't take advantage of Game Center enough and introduced all these the hard way, the achievements leaderboard mechanism. But then I learnt that I can just use the Game Center's native UI, so I made 3 buttons which were connected directly to the Game Center, and when users would press on them, a Game Center interface would pop up. Besides these, I have the "View Your Promises" section as well as the About section in the Compete tab; they were one of the last features.

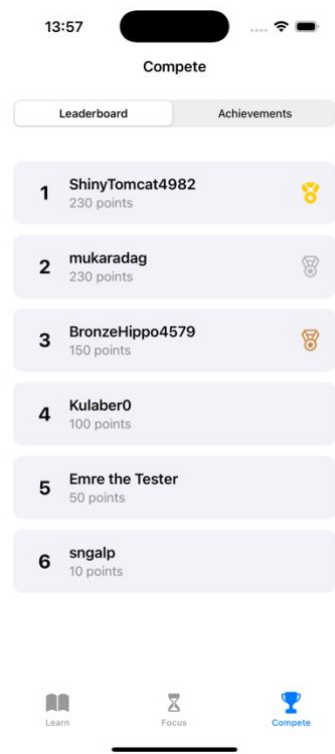


Figure 24: Compete Tab Evolution 1

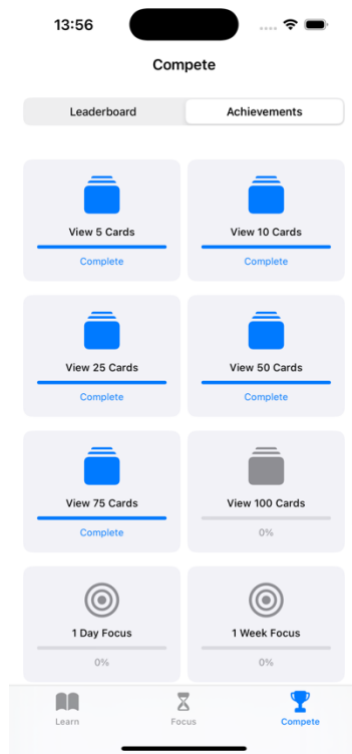


Figure 25: Compete Tab Evolution 2

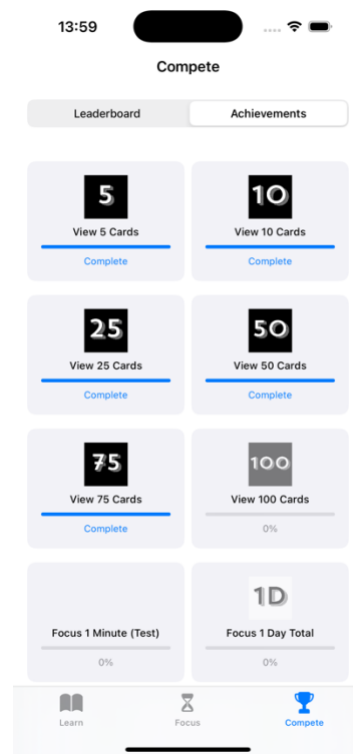


Figure 26: Compete Tab Evolution 3

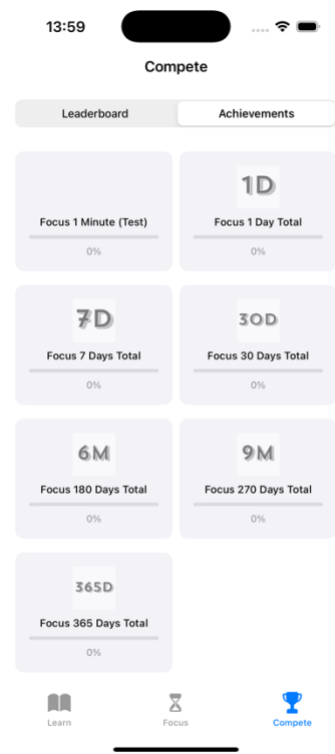


Figure 7: Compete Tab Evolution 4



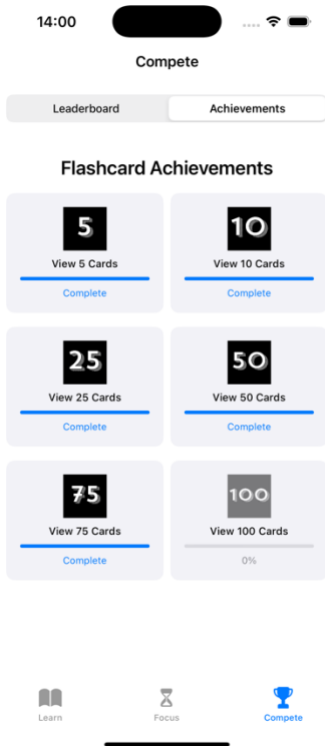


Figure 28: Compete Tab Evolution 5

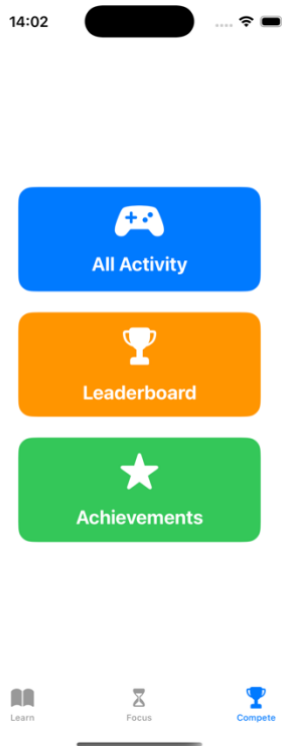


Figure 29: Compete Tab Evolution 6

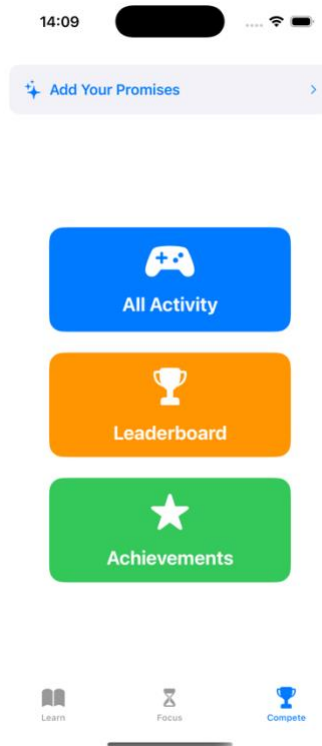


Figure 30: Compete Tab Evolution 7

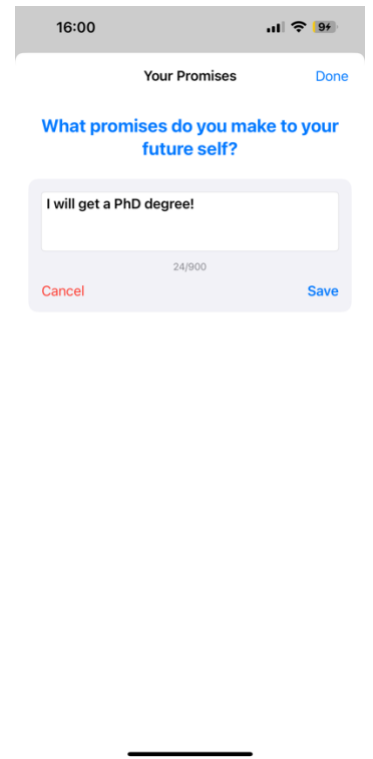


Figure 8: Compete Tab Evolution 8

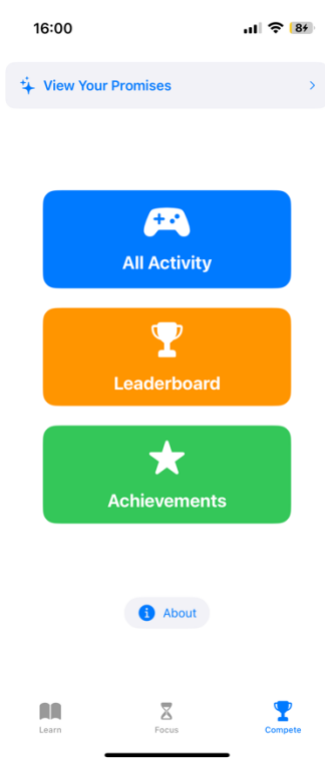


Figure 32: Compete Tab Evolution 9

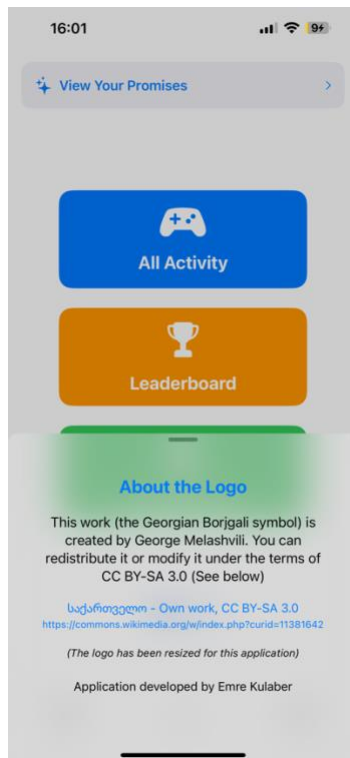


Figure 9: Compete Tab Evolution 10

#### 4.4.6 Design Evolution of Unauthorised Views

This view was very important to guide the users so they can immediately start using Lazuri. At the beginning everything was kept very simple, but then I realised it was very technical language. I changed it into a guide which would be understood by anyone. When I introduced the hourglass on top, I forgot to move it into the authorised side, so it stayed for a little bit until I fixed it.

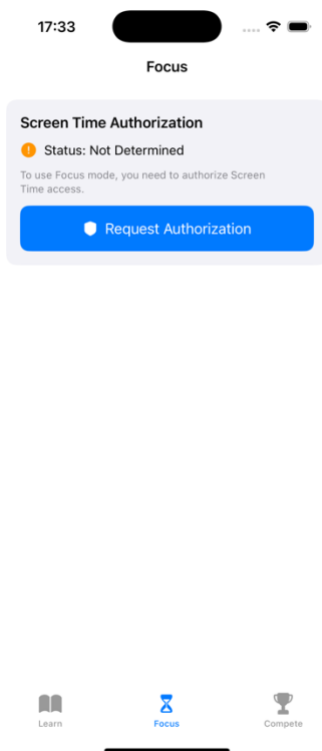


Figure 34: Unauthorised Views Evolution 1

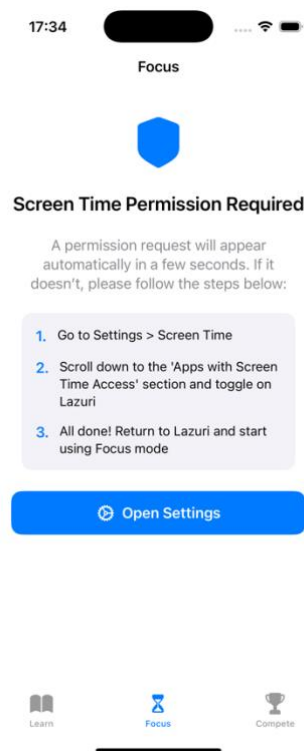


Figure 35: Unauthorised Views Evolution 2

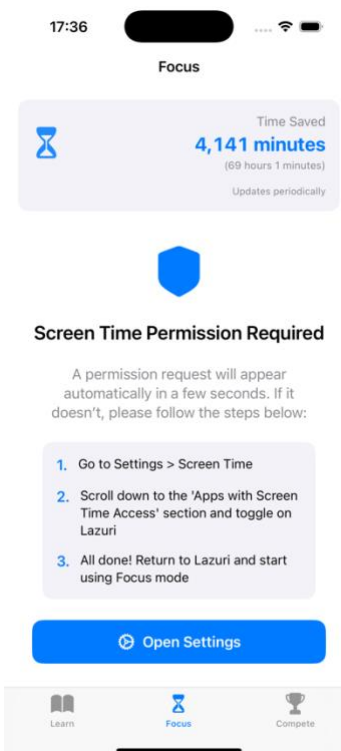


Figure 36: Unauthorised Views Evolution 3

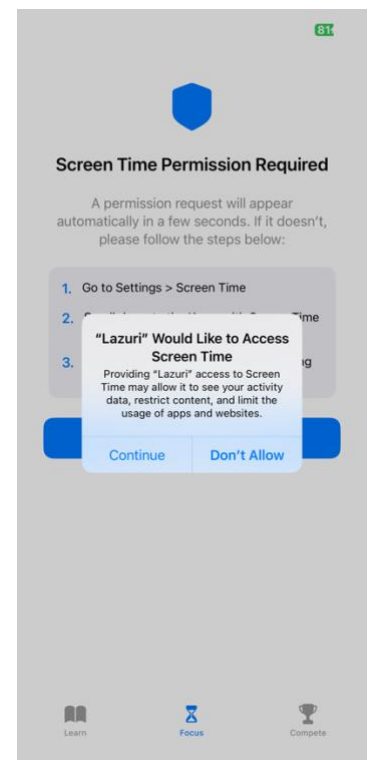


Figure 10: Unauthorised Views Evolution 4

Figure 38: Unauthorised Views Evolution 5

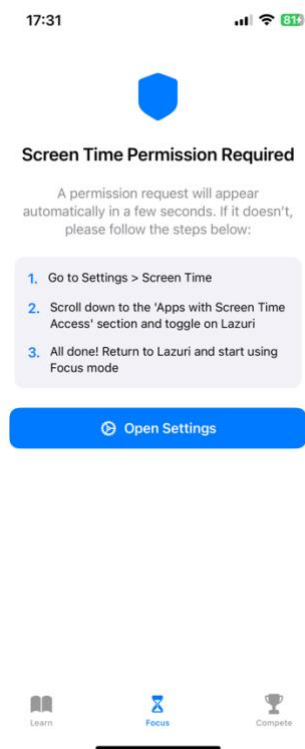


Figure 39: Unauthorised Views Evolution 6

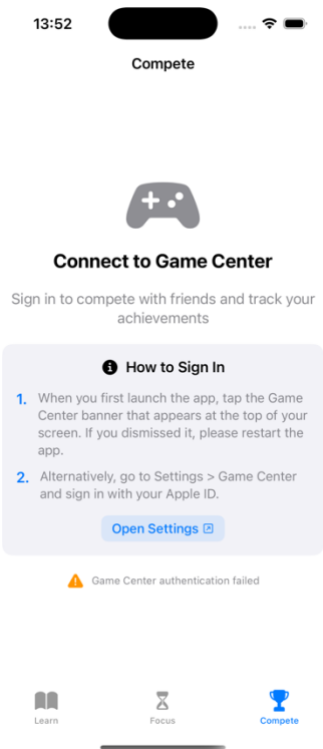
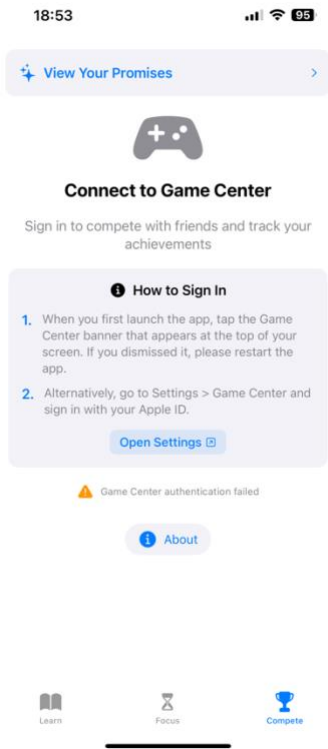


Figure 11: Unauthorised Views Evolution 7



4.4.7 Design of Notifications

Notifications haven't changed; they've remained the same since the beginning.

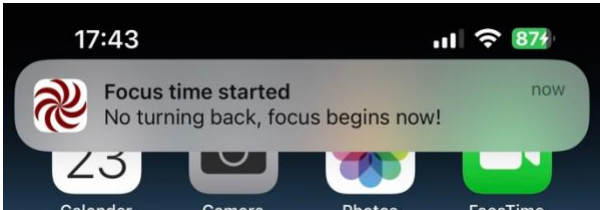


Figure 41: Notification Blocking Schedule Starts

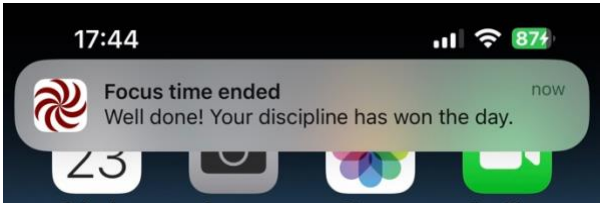


Figure 42: Notification Blocking Schedule Finishes

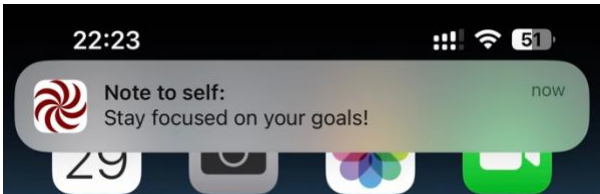


Figure 12: Shield Notification Triggered by Button Press

# Chapter 5: Implementation

## 5.1 System Overview

Lazuri is a native iOS application I made using SwiftUI and the MVVM architectural pattern, making a clear separation between the user interface and business logic. My app has three main modules and uses a tab-based navigation system. The modules are Learn, Focus and Compete, accessed through a TabView in the ContentView. Users can easily switch between educational content, focus session management and competitive features while maintaining state across different sections of the app.

```
struct ContentView: View {
    // main tab view

    var body: some View {
        TabView {
            LearnView()
                .tabItem {
                    Label("Learn", systemImage: "book.fill")
                }

            FocusView()
                .tabItem {
                    Label("Focus", systemImage: "hourglass")
                }

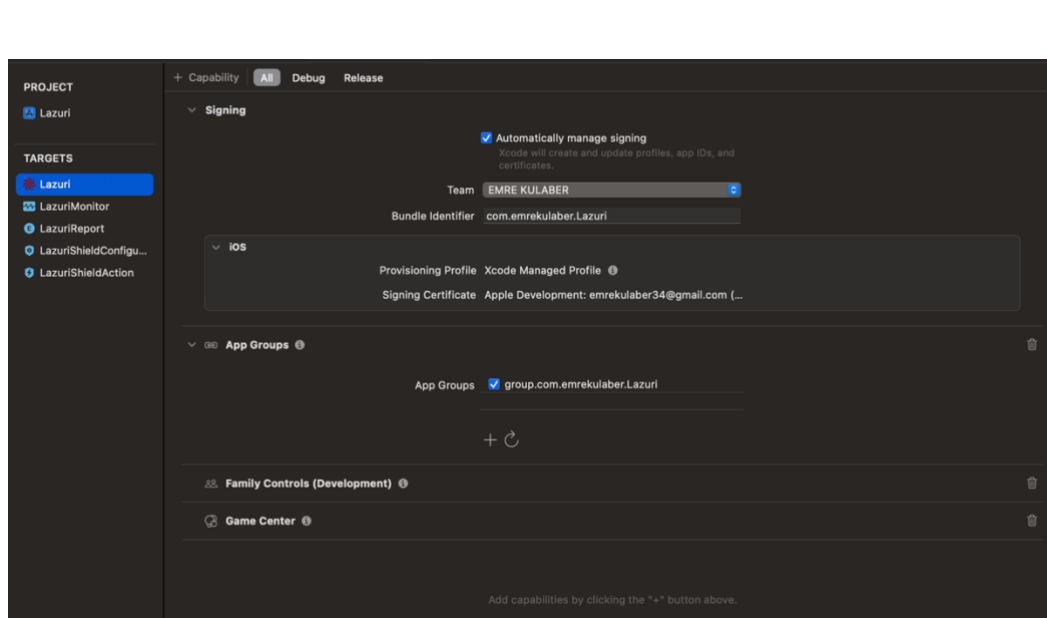
            CompeteView()
                .tabItem {
                    Label("Compete", systemImage: "trophy.fill")
                }
        }
    }
}
```

Figure 13 System Overview: Code 1

Lazuri's technical architecture uses App Groups with a shared UserDefaults container ("group.com.emrekulaber.Lazuri") to control how data moves between the main app and its four

system extensions. Because of iOS sandboxing rules that restrict direct inter-process communication, this method was the most suitable option for me. The extensions include DeviceActivityMonitor for tracking screen time events, ShieldConfiguration and ShieldAction for customizing the app blocking interface, and DeviceActivityReport for displaying usage statistics. I made a unified data layer that keeps user promises, focus session data, and achievement progress in sync across all components by using the shared container.

*Figure 14 System Overview: Xcode View*



In this chapter, I will discuss the new features that distinguish Lazuri from other screen time applications (digital wellbeing apps). We already know about the common features of screen time apps, such as blocking mechanisms. But Lazuri has brought something new, and I would like to highlight it. The education system and the promise-based motivation system represent the core innovation; this transforms the application blocking from a restrictive experience into a personal accountability and self-development tool. I will briefly go over the standard Screen Time integration to provide context, but the main focus will be on these new features that make Lazuri's approach to digital wellbeing unique.

## 5.2 Core Blocking Mechanism

Lazuri uses Apple’s Screen Time frameworks to implement its app restriction functionality. I used the FamilyControls framework in individual mode, which lets users set their own limits without needing family sharing or parental controls. The app checks the authorisation status when users open the Focus tab. If it is not determined, the app will automatically request for a permission through “AuthorizationManager.shared.requestAuthorization()”, which internally calls the system’s authorisation request. As a result, a system permission dialog will pop out, and upon approval, Lazuri will be able to monitor device activity and apply restrictions. If it is not approved or if users change the permission later, users will see instructions to manually approve permissions through system settings.

Figure 15 Core Blocking Mechanism: Code 1

```
func requestAuthorization() async {  
    do {  
        // this will show iOS permission dialog  
        try await AuthorizationCenter.shared.requestAuthorization(for: .individual)  
        updateAuthorizationStatus()  
    } catch {  
        // print("Authorization failed: \(error)")  
        // user probably cancelled, not a big deal  
        updateAuthorizationStatus()  
    }  
}
```

For app selection, I used the “FamilyActivityPicker”, a SwiftUI view from Apple that gives users a system-managed interface for choosing apps and categories to block. Those selected apps are stored in a “FamilyActivitySelection” object, which is kept in the shared UserDefaults container using JSON encoding. This enables the selection to be accessible by the extension processes that do the actual blocking.

Figure 16 Core Blocking Mechanism: Code 2

```
func saveFamilyActivitySelection(_ selection: FamilyActivitySelection) {  
    guard let defaults = sharedDefaults else { return }  
  
    do {  
        let encoded = try encoder.encode(selection)  
        defaults.set(encoded, forKey: Keys.familyActivitySelection.rawValue)  
        defaults.synchronize() // Force sync for extension access  
        self.activitySelection = selection  
        print("Saved FamilyActivitySelection with \(selection.applicationTokens.count) apps")  
    } catch {  
        print("Error saving FamilyActivitySelection: \(error)")  
    }  
}
```

The scheduling system lets users set specific times for their focus session. I implemented schedule creation using the “DeviceActivitySchedule” structure with start and end time components. Every interval must be a minimum of 15 minutes, which I validate before starting monitoring through the DeviceActivityCenter’s “startMonitoring()” method. The DeviceActivityMonitor extension automatically applies the restrictions through “ManagedSettingsStore” when a schedule becomes active; this stops access to the chosen apps. Blocked apps will display a customised shield screen instead of the default one, and I will dive deeper into this in the other parts.

```
// This allows iOS to handle the schedule on the correct days
let startComponents = DateComponents(hour: schedule.startHour, minute: schedule.startMinute)
let endComponents = DateComponents(hour: schedule.endHour, minute: schedule.endMinute)

// Validate minimum interval with proper midnight handling
let startMinutes = schedule.startHour * 60 + schedule.startMinute
let endMinutes = schedule.endHour * 60 + schedule.endMinute

// Calculate actual duration considering midnight crossing
let duration: Int
if endMinutes <= startMinutes {
    // Schedule crosses midnight
    duration = (24 * 60 - startMinutes) + endMinutes
    print("Schedule crosses midnight. Duration: \(duration) minutes")
} else {
    // Normal schedule within same day
    duration = endMinutes - startMinutes
}

// Check minimum duration requirement
if duration < 15 {
    print("Schedule interval too short. Duration: \(duration) minutes. Minimum is 15 minutes")
    throw DeviceActivityError.intervalTooShort
}

// Create the schedule - iOS will handle the selected days automatically
let deviceSchedule = DeviceActivitySchedule(
    intervalStart: startComponents,
    intervalEnd: endComponents,
    repeats: true
)

// Start monitoring
try center.startMonitoring(activityName, during: deviceSchedule)
```

Figure 17 Core Blocking Mechanism: Code 3



## 5.3 Educational Feature Implementation

### 5.3.1 Flashcard System

The educational part is based on a flashcard system that lets users learn in small chunks during breaks. I structured the flashcard data in a JSON file named “flashcards.json”, using a wrapper object with a “cards” property that contains an array of card objects. Each card includes fields for id, title, content, category, and an optional link for further reading. The “DataLoader” class handles the synchronous loading of this JSON file from the app bundle using “Bundle.main.url(forResource:withExtension:)” and decodes it into a “FlashcardData” structure, then returns the cards array through “flashcardData.cards”.

Figure 49 Flashcard System: Code 1

```
{
  "cards": [
    {
      "id": 1,
      "title": "Grayscale",
      "content": "What is self-nudge? Grayscale is a good example of self-nudge; it turns off the colours on the phone screen, making it less appealing. It cuts down on screen time by about 20 minutes a day, which people feel more in control of, and lowers stress (Dekker & Baumgartner, 2024; Rahmillah et al., 2023). Some people don't like grayscale, but it doesn't take much effort (Dekker & Baumgartner, 2024).",
      "category": "Anti-Addiction",
      "link": "https://pure.uva.nl/ws/files/227312734/Is_life_brighter_when_your_phone_is_not.pdf"
    },
    {
      "id": 2,
      "title": "Screen Time",
      "content": "Screen time tracking features (e.g., Apple Screen Time, Google Digital Wellbeing) provide usage reports and allow setting time limits (Oeldorf-Hirsch & Chen, 2022; Rahmillah et al., 2023). Tools like MyTime support targeted non-use by helping users set personal goals and reflect on desired use (Hiniker et al., 2016). They can track time on \"waste of time\" apps to reduce it without affecting valuable app use (Hiniker et al., 2016).",
      "category": "Time Management",
      "link": "https://dl.acm.org/doi/pdf/10.1145/2858036.2858403"
    }
  ],
}

class DataLoader {
    // TODO: Add support for loading flashcards from remote server
    // FIXME: No error reporting to user when load fails

    static func loadFlashcards() -> [Flashcard] {
        // simple file loader for now
        guard let url = Bundle.main.url(forResource: "flashcards", withExtension: "json") else {
            // Failed to find flashcards.json - returning empty array
            // print("Warning: flashcards.json not found") // debug
            return [] // TODO: Show error to user?
        }

        do {
            let data = try Data(contentsOf: url) // sync read - might block
            let flashcardData = try JSONDecoder().decode(FlashcardData.self, from: data)
            // print("Loaded \(flashcardData.cards.count) cards") // debug
            return flashcardData.cards
        } catch {
            // Failed to load flashcards - returning empty array
            // print("Decode error: \(error)") // uncomment for debugging
            return [] // fail silently for now
        }
    }
}
```

Figure 18 Flashcard System: Code 2



The data model uses the Codable protocol to automatically parse JSON. The Flashcard struct implements both the Codable and Identifiable protocols to work with SwiftUI's ForEach rendering. The first cards have categories like "Anti-Addiction" and "Time Management" that teach people about digital well-being. The current dataset, on the other hand, mostly has test data for development. If the JSON file can't be loaded or decoded, the DataLoader quietly returns an empty array without telling the user.

```
import Foundation

// Basic flashcard model
// TODO: Add difficulty levels
struct Flashcard: Codable, Identifiable {
    let id: Int
    let title: String
    let content: String
    let category: String
    let link: String? // optional for now

    // Future fields:
    // var difficulty: Int?
    // var lastViewed: Date?
    // var isFavorite: Bool?
}

// Wrapper for JSON decoding
struct FlashcardData: Codable {
    let cards: [Flashcard]
}
```

Figure 19 Flashcard System: Code 3

### 5.3.2 Learning Interface

The LearnView shows flashcards in a stack-based interface, and users can move through the cards by swiping gestures. The gesture recogniser uses a threshold of 100 points to tell the difference between intentional swipes and accidental touches. When it recognises a swipe, it sends haptic feedback through “UIImpactFeedbackGenerator”. A swipe up gesture with a 150 point threshold turns on the share function, which lets users send card content to other apps.

Figure 20 Learning Interface: Code 1

```
private var dragGesture: some Gesture {  
    DragGesture()  
        .onChange { value in  
            dragOffset = value.translation  
        }  
        .onEnded { value in  
            let threshold: CGFloat = 100  
            let verticalThreshold: CGFloat = 150  
  
            withAnimation(.spring(response: 0.6, dampingFraction: 0.8)) {  
                if value.translation.width > threshold {  
                    // Swipe right - previous card  
                    isMovingForward = false  
                    previousCard()  
                    impactFeedback.impactOccurred()  
                    trackCardView()  
                } else if value.translation.width < -threshold {  
                    // Swipe left - next card  
                    isMovingForward = true  
                    nextCard()  
                    impactFeedback.impactOccurred()  
                    trackCardView()  
                } else if value.translation.height < -verticalThreshold {  
                    // Swipe up - share  
                    shareCard()  
                    impactFeedback.impactOccurred()  
                }  
                dragOffset = .zero  
            }  
        }  
    }  
}
```

The UI has a progress indicator that shows the current card position (for example, "3 / 100"), which helps users keep track of how far they have come in the deck. When you navigate, the cards move with spring transitions, and the direction of the animation matches the direction of the swipe for a smooth look. At the bottom, there is a category filter bar that lets users see all the cards or only those in certain categories. The filtered results are updated right away using the “filterCards()” method.

```
// Progress indicator
HStack(spacing: 12) {
    Text("\(currentIndex + 1)")
      .font(.headline)
      .foregroundColor(.blue)

    Text("/")
      .foregroundColor(.gray)

    Text("\(filteredFlashcards.count)")
      .font(.headline)
      .foregroundColor(.gray)
}
.padding(.top, 30)
.padding(.bottom, 20)
}
.padding(.horizontal)

Spacer()
```

Figure 53 Learning Interface: Code 2

```
private func filterCards() {
    if let category = selectedCategory {
        filteredFlashcards = flashcards.filter { $0.category == category }
    } else {
        filteredFlashcards = flashcards
    }
}
```

Figure 21 Learning Interface: Code 3

### 5.3.3 Achievement Integration

When cards appear on screen through the "onAppear" modifier and when users finish swipe gestures, they are marked as viewed. The "trackCardView()" method calls "markCardAsViewed()", which does the actual checking by keeping a set of viewed card IDs in UserDefaults. When "markCardAsViewed()" finds that a card has been viewed for the first time, it calls "UserDataManager.shared.incrementFlashcardCount()" to change the total number. As mentioned before, the system has six milestone achievements that happen when you view 5, 10, 25, 50, 75, or 100 cards. When the count goes up, it triggers the achievement checking mechanism through "checkFlashcardAchievements()", whose detailed implementation is covered in Section 5.6.2 (Competition Features) as part of the Game Center integration.

```
private func markCardAsViewed(_ cardId: Int) {
    // Check if this card was already viewed before
    let wasNewCard = !viewedCards.contains(cardId)

    print("DEBUG - markCardAsViewed:")
    print(" - Card ID: \(cardId)")
    print(" - Was new card: \(wasNewCard)")
    print(" - Viewed cards count BEFORE: \(viewedCards.count)")
    print(" - Total flashcards viewed BEFORE: \(userManager.totalFlashcardsViewed)")

    viewedCards.insert(cardId)
    saveViewedCards()

    // Only increment counter for newly viewed cards
    if wasNewCard {
        userManager.incrementFlashcardCount()
        print("Incremented total count")
    } else {
        print("Card already viewed, not incrementing")
    }

    print("Viewed cards count AFTER: \(viewedCards.count)")
    print("Total flashcards viewed AFTER: \(userManager.totalFlashcardsViewed)")
}
```

Figure 22 Achievement Integration: Code 1

## 5.4 Promise-Based Shield System

### 5.4.1 User Promise Input

Users can make their own promises through a special interface that they can get to from the Compete tab. I used a modal sheet called "MotivationSheetView" to add the promise input. It is triggered by a "View Your Promises" button that displays in the Compete tab. The sheet asks the question "What promises do you make to your future self?" to get users to think deeply and have a meaningful reflection. The text field limits input to 900 characters by cutting off anything longer than that using "String(newValue.prefix(900))". A character counter shows the current length in real time. The TextField uses SwiftUI's ".axis(.vertical)" modifier to allow multi-line input with a line limit between 3 and 5 lines for optimal readability (scrolling is needed if it exceeds 5 lines).

```
    } else if isEditingMotivation {
        // Editing state
        VStack(spacing: 12) {
            TextField("Write your promises here...", text: $tempMotivationText, axis: .vertical)
                .font(.headline)
                .textFieldStyle(RoundedBorderTextFieldStyle())
                .lineLimit(3...5)
                .focused($isTextFieldFocused)
                .onChange(of: tempMotivationText) { _, newValue in
                    // Limit to 900 characters for Shield display
                    if newValue.count > 900 {
                        tempMotivationText = String(newValue.prefix(900))
                    }
                }
        }
    }
```

Figure 23 User Promise Input: Code 1

When users save their promise, the text is trimmed of whitespace and stored in the shared UserDefaults container with the key "userMotivation." This makes it available to the shield extensions. The interface has three states: an empty state with a button to "Add your promises", an editing state with a text field and options to save or cancel, and a display state that shows the saved promise with an edit button. If no promise is set, the system will show the default message

"Write your promises to your future self" to make sure the shield always shows something meaningful.

```
Button("Save") {
    let trimmedText = tempMotivationText.trimmingCharacters(in: .whitespacesAndNewlines)
    userMotivation = trimmedText
    // Also save to shared defaults for Shield
    sharedDefaults?.set(trimmedText, forKey: "userMotivation")
    sharedDefaults?.synchronize()
    isEditingMotivation = false
    isTextFieldFocused = false
}
.fontWeight(.semibold)
.foregroundColor(.blue)
.disabled(tempMotivationText.trimmingCharacters(in: .whitespacesAndNewlines).isEmpty)
}
```

Figure 24 User Promise Input: Code 2

### 5.4.2 Custom Shield Appearance

I used the Georgian Borjgala symbol the Center of the design, loaded through “UIImage(named: “Borjgala-2-removebg-preview”)”. The colour scheme uses a soft cream background (RGB: 0.98, 0.96, 0.94, alpha: 0.95) over a “.systemUltraThinMaterial” blur effect. There are three parts to the typography hierarchy: a title in deep red (RGB: 0.5, 0.0, 0.0) that says "Remember the promises you made to your future self", the user's promise as a subtitle in black for maximum readability, and the main button label "I won't break my promise!" in white on a bright red background (RGB: 0.7, 0.0, 0.0). The “ShieldConfigurationExtension” class defines this configuration, which works the same way in all blocking situations, such as individual apps, app categories, and web domains. This way, users will always see the same motivational message no matter what they try to access.

Figure 25 Custom Shield Appearance: Code 1

```
override func configuration(shielding application: Application) -> ShieldConfiguration {
    // Custom shield with Georgian Borjgala theme

    // Soft cream background to contrast with red Borjgala logo
    let backgroundColor = UIColor(red: 0.98, green: 0.96, blue: 0.94, alpha: 0.95)

    // Deep red color for text to match logo
    let darkRedColor = UIColor(red: 0.5, green: 0.0, blue: 0.0, alpha: 1.0)

    // Vibrant red for button to match logo
    let vibrantRedColor = UIColor(red: 0.7, green: 0.0, blue: 0.0, alpha: 1.0)

    return ShieldConfiguration(
        backgroundBlurStyle: .systemUltraThinMaterial,
        backgroundColor: backgroundColor,
        icon: UIImage(named: "Borjgala-2-removebg-preview"),
        title: ShieldConfiguration.Label(
            text: "Remember the promises you made to your future self:",
            color: darkRedColor
        ),
        subtitle: ShieldConfiguration.Label(
            text: userMotivation,
            color: .black
        ),
        primaryButtonLabel: ShieldConfiguration.Label(
            text: "I won't break my promise!",
            color: .white
        ),
        primaryButtonBackgroundColor: vibrantRedColor
    )
}
```

### 5.4.3 Shield Button Actions

The primary button, which provides instant feedback and reinforces personal accountability, is the primary focus of the shield's interactivity. To handle the interaction when users press "I won't break my promise!", the “ShieldActionExtension” first retrieves the promise from the shared UserDefaults. After that, it creates a “UNMutableNotificationContent” object with the title "Note to self:" and the promise text as its body (When there is no user promise stored in UserDefaults, the notification system sends out the default message "Stay focused on your goals!"). This is then sent as a local notification with an alert sound by default.



Figure 26 Shield Button Actions: Code 1

```
case .primaryButtonPressed:
    // Get user's motivation text
    let userMotivation = sharedDefaults?.string(forKey: "userMotivation") ?? "Stay focused on your goals!"

    // Send motivational notification
    let content = UNMutableNotificationContent()
    content.title = "Note to self:"
    content.body = userMotivation
    content.sound = .default

    let request = UNNotificationRequest(
        identifier: UUID().uuidString,
        content: content,
        trigger: nil
    )

    UNUserNotificationCenter.current().add(request) { error in
        if let error = error {
            print("Error sending notification: \(error)")
        }
    }
}
```

After sending the notification, the handler returns “.close” back to the completion handler, which closes the shield and takes users back to their previous context without letting them access the blocked app. This makes a loop of reflection: users see their promise on the shield, get it again as a notification, and then go back to the activity they were doing. The ShieldAction extension has a handler for secondary button presses that returns “.defer” to temporarily lift restrictions. However, the current implementation of ShieldConfiguration only defines a primary button. The notification system works for both individual applications and category blocks. Web domain blocking, on the other hand, works differently: the shield shows the same visual layout, but the action handler only returns “.close” without sending notifications.

```
override func handle(action: ShieldAction, for webDomain: WebDomainToken, completionHandler: @escaping (ShieldActionResponse) -> Void)
{
    // Handle the action as needed.
    completionHandler(.close)
}
```

Figure 27 Shield Button Actions: Code 2



## 5.5 Focus Time Visualisation

### 5.5.1 Hourglass Display

The main visual metaphor for time management in the focus time visualisation is a large hourglass icon. I used `Image(systemName: "hourglass")` to position the hourglass. I made it blue to match the app's colour scheme and used a 60-point system font size. The icon has a `“symbolEffect(.pulse)”` modifier that makes a subtle breathing animation that draws attention without being too distracting.

```
// Hourglass icon - bigger and centered
Image(systemName: "hourglass")
    .font(.system(size: 60))
    .foregroundColor(.blue)
    .symbolEffect(.pulse)
```

Figure 28 Hourglass Display: Code 1

The minute counter shows the total amount of time spent on focus in a 36-point bold font with the `“rounded”` design and the `“monospacedDigit()”` modifier to keep the layout from changing as the numbers change. If the total is more than 60 minutes, a second label appears with the formatted hours and minutes in brackets, which is done by the `“formatHoursAndMinutes()”` function. The entire display is contained within a `VStack` with 20-point spacing, padded with 24 points vertically and standard horizontal padding, wrapped in a system grey background with a 16 point corner radius for visual separation.

Figure 62 Hourglass Display: Code 2

```
Text("${focusTracker.totalFocusMinutes} minutes")
    .font(.system(size: 36, weight: .bold, design: .rounded))
    .monospacedDigit()
    .foregroundColor(.blue)

if focusTracker.totalFocusMinutes >= 60 {
    Text(formatHoursAndMinutes(focusTracker.totalFocusMinutes))
        .font(.subheadline)
        .foregroundColor(.secondary)
}
```

Figure 29 Hourglass Display: Code 3

```
private func formatHoursAndMinutes(_ totalMinutes: Int) -> String {
    let hours = totalMinutes / 60
    let minutes = totalMinutes % 60

    if hours > 0 && minutes > 0 {
        return "\(hours) hour(s) \(minutes) minute(s)"
    } else if hours > 0 {
        return "\(hours) hour(s)"
    }
    return ""
}
```

### 5.5.2 Time Tracking

The “FocusTracker” singleton class, which keeps the “totalFocusMinutes” property as a published integer, is what the time tracking system depends on. This value is stored in the shared App Group UserDefaults with the key “totalFocusMinutes”, ensuring consistency across app launches. The formatting logic handles three scenarios: when both hours and minutes exist, the “formatHoursAndMinutes()” function returns ‘2 hour(s) 30 minute(s)’ and the UI displays this within parentheses; when only hours exist without remaining minutes, it returns “1 hour(s)” using the hour(s) notation to handle both singular and plural cases; and for durations under 60 minutes, the function returns an empty string so no additional formatting appears.

Figure 30 Time Tracking: Code 1

```
class FocusTracker: ObservableObject {
    static let shared = FocusTracker()

    private let userDefaults: UserDefaults?

    // MARK: - Keys
    private let focusSessionsKey = "focusSessions"
    private let totalFocusMinutesKey = "totalFocusMinutes"

    // MARK: - Published Properties
    @Published var focusSessions: [FocusSession] = []
    @Published var totalFocusMinutes: Int = 0
}
```

Figure 31 Time Tracking: Code 2

```
// Load total minutes
totalFocusMinutes = userDefaults.integer(forKey: totalFocusMinutesKey)
```

The view gets updates from a Timer publisher that is set up with “Timer.publish(every: 60, on: .main, in: .common). autoconnect()”, which triggers a refresh every 60 seconds. Each timer event

calls “focusTracker.refreshFromSharedDefaults()”, which reloads the total minutes from the shared container. The view also watches for “focusDataUpdated” notifications so that it can refresh right away when new data comes in. This two-pronged approach makes sure that the display shows any focus sessions that the DeviceActivityMonitor extension has finished, even when the main app is still in the foreground.

```
.onReceive(NotificationCenter.default.publisher(for: .focusDataUpdated)) { _ in
    // Refresh when notified of new data
    focusTracker.refreshFromSharedDefaults()
}
.onReceive(timer) { _ in
    // Refresh data every minute
    focusTracker.refreshFromSharedDefaults()
}
```

Figure 32 Time Tracking Code: 3

### 5.5.3 Data Synchronisation

The synchronisation mechanism solves the problem of getting data to work together between the main app and the monitoring extensions. The FocusTracker class initialises its UserDefaults instance with the App Group identifier “group.com.emrekulaber.Lazuri”, establishing the shared data container. When the extension records a new focus session, it adds it to a pending sessions array and sets a “hasPendingFocusData” flag. The main app then checks this flag during its refresh cycle using the “mergePendingSessions()” private method.

```
private init() {
    userDefaults = UserDefaults(suiteName: "group.com.emrekulaber.Lazuri")
}
```

Figure 33 Data Synchronisation Code: 1

```
private func mergePendingSessions() {
    guard let userDefaults = userDefaults else { return }

    // Check if there are pending sessions
    guard userDefaults.bool(forKey: "hasPendingFocusData"),
        let pendingArray = userDefaults.array(forKey: "pendingFocusSessions") as? [[String: Any]] else {
        return
    }
}
```

Figure 34 Data Synchronisation Code: 2

The main app also reacts to app lifecycle events by using a “UIApplication.willEnterForegroundNotification” observer set up in LazuriApp.swift. This updates the FocusTracker data when the app enters the foreground. This multi-layered synchronisation method makes sure that users can see how much time they've spent focusing within a minute of finishing a session. This gives them timely positive feedback on their digital wellness efforts.

```
.onReceive(NotificationCenter.default.publisher(for: UIApplication.willEnterForegroundNotification)) { _ in
    // Check for pending data when app comes to foreground
    Task { @MainActor in
        FocusTracker.shared.refreshFromSharedDefaults()
    }
}
```

Figure 35 Data Synchronisation: Code 3

## 5.6 Gamification Elements

### 5.6.1 Game Center Setup

When the app starts up, the gamification system starts up by calling “GameCenterManager.shared.authenticateUser()” in the LazuriApp's init method. The authentication handler receives either a view controller for signing in or an error. It then sets the "isAuthenticated" published property to the right value. If authentication is successful, the manager checks the authentication status from "GKLocalPlayer.local.isAuthenticated" and saves it in its own "isAuthenticated" property. Then it calls "loadCurrentPlayerScore()" to get any leaderboard data that is already there.

Figure 70 Game Center Setup: Code 1

```
// Initialize Game Center authentication on app launch
GameCenterManager.shared.authenticateUser()
```

Figure 36 Game Center Setup: Code 2

```
func authenticateUser() {
    GKLocalPlayer.local.authenticationHandler = { [weak self] viewController, error in
        guard let self = self else { return }

        if let error = error {
            self.authenticationError = error
            self.isAuthenticated = false
            return
        }

        if let viewController = viewController {
            // Present the authentication view controller
            if let windowScene = UIApplication.shared.connectedScenes.first as? UIWindowScene,
               let rootViewController = windowScene.windows.first?.rootViewController {
                rootViewController.present(viewController, animated: true)
            }
            return
        }

        // Authentication successful
        self.isAuthenticated = GKLocalPlayer.local.isAuthenticated

        if self.isAuthenticated {
            // Load any pending data
            self.loadCurrentPlayerScore()
        }
    }
}
```

The leaderboard configuration uses the private constant "com.emrekulaber.lazuri.totalpoints" that is set in GameCenterManager. Score submission occurs through the "submitScore()" method, which verifies authentication status before calling "GKLeaderboard.submitScore()" with the score value, context set to 0, player object, and leaderboard ID array.

```
func submitScore(_ score: Int) {
    print("DEBUG - submitScore called with score: \(score)")

    guard isAuthenticated else {
        print("User not authenticated, skipping score submission")
        return
    }

    print("User authenticated, submitting to leaderboard ID: \(leaderboardID)")

    Task {
        do {
            try await GKLeaderboard.submitScore(
                score,
                context: 0,
                player: GKLocalPlayer.local,
                leaderboardIDs: [leaderboardID]
            )
        }
    }
}
```

Figure 37 Game Center Setup: Code 3

## 5.6.2 Competition Features

The achievement system keeps track of when users reach certain milestones while viewing flashcards, such as 5, 10, 25, 50, 75, and 100 cards. These milestones are stored in the "flashcardThresholds" array. When "incrementFlashcardCount()" updates the total, it calls "checkFlashcardAchievements()" which iterates through each threshold, constructing achievement identifiers like "com.emrekulaber.lazuri.cards25". UserDefaults keys in the format "achievement\_[id]\_unlocked" are used by the system to check if an achievement is unlocked. When an achievement is 100% complete, it sends a report to Game Center using "reportAchievement()".

```

private func checkFlashcardAchievements() {
    print("DEBUG - checkFlashcardAchievements:")
    print("Current total: \(totalFlashcardsViewed)")
    print("Thresholds to check: \(flashcardThresholds)")

    for threshold in flashcardThresholds {
        if totalFlashcardsViewed >= threshold {
            let achievementId = "com.emrekulaber.lazuri.cards\(threshold)"
            let isUnlocked = isAchievementUnlocked(achievementId)

            print("Threshold \(threshold): REACHED")
            print("Achievement ID: \(achievementId)")
            print("Already unlocked: \(isUnlocked)")

            if !isUnlocked {
                print("Unlocking achievement!")
                unlockAchievement(achievementId)
            }
        } else {
            print("Threshold \(threshold): Not reached yet")
        }
    }
}

```

Figure 38 Competition Features: Code 1

```

private func isAchievementUnlocked(_ achievementId: String) -> Bool {
    let key = "achievement_\(achievementId)_unlocked"
    return userDefaults?.bool(forKey: key) ?? false
}

```

Figure 39 Competition Features: Code 2

When a user is logged in (authenticated), the Compete interface shows a ButtonsGameCenterView with three navigation options. It passes closures that set state variables for showing the dashboard, leaderboard, and achievements sheets. The "calculateTotalScore()" adds up points from all unlocked achievements. The "incrementFlashcardCount()" sends this value to the leaderboard only when users view a flashcard for the first time.

```

func calculateTotalScore() -> Int {
    var totalScore = 0

    // Add points for all unlocked achievements
    for (achievementId, points) in achievementPoints {
        if isAchievementUnlocked(achievementId) {
            totalScore += points
            print("Adding \(points) points for \(achievementId)")
        }
    }

    print("Total Score: \(totalScore)")
    return totalScore
}

```

Figure 75 Competition Features: Code 3

```

func incrementFlashcardCount() {
    print("DEBUG - incrementFlashcardCount:")
    print("Total BEFORE: \(totalFlashcardsViewed)")

    totalFlashcardsViewed += 1
    saveData()

    print("Total AFTER: \(totalFlashcardsViewed)")
    print("Calling checkFlashcardAchievements...")

    checkFlashcardAchievements()

    // Submit total achievement score to Game Center leaderboard
    let totalScore = calculateTotalScore()
    print(" - Submitting total achievement score to leaderboard: \(totalScore)")
    GameCenterManager.shared.submitScore(totalScore)
}

```

Figure 40 Competition Features: Code 4

# Chapter 6: Testing and Evaluation

## 6.1 Heuristic Evaluation

### 6.1.1 Methodology

I conducted a systematic heuristic evaluation of Lazuri using Nielsen's ten usability principles [17]. Each interface element was assessed against these heuristics and assigned severity ratings from 0-4: cosmetic (1), minor (2), major (3), and catastrophic (4). The evaluation involved three passes: initial exploration, detailed interaction analysis, and consistency verification.

### 6.1.2 Heuristic Analysis

**Visibility of System Status:** Lazuri doesn't have a loading indicator for Screen Time data initialisation, which is a problem. This is confusing because it's just an empty space for a few seconds. Second, users have to figure out how much time is left until the blocking schedule ends on their own, without a countdown. Lastly, Shields doesn't say which app is being blocked, so users must remember (Severity: 3).

**Match Between System and Real World:** Lazuri uses a variety of metaphors. For example, the hourglass visualises how much time we have saved from digital distractions, which helps us manage our time better. The Georgian Brojgala symbol's circular design shows how digital habits are cyclical, which helps users break them and turn restrictions into meaningful personal growth. The term "future self" is meant to help people take personal responsibility (Severity: 0).

**User Control and Freedom:** Blocking schedules don't have a pause feature, but it would be easy to implement one with a second button on the custom shield I mentioned earlier. If users



revoke or not approving screentime permissions, they must do it manually; maybe there could be a button that starts the process (Severity: 3).

**Consistency and Standards:** Lazuri strictly follows iOS designs, starting with Standard TabView navigation and using SF Symbols throughout. The system colours make sure that the platform is consistent, and it supports dark mode (Severity: 0).

**Error Prevention:** Users who set a schedule for at least 15 minutes do not get a warning ahead of time. They only get a warning after they choose the time interval. Users can only have one schedule active at a time, which keeps things from getting mixed up but makes it less flexible. (Severity: 2).

**Recognition Rather Than Recall:** Lazuri's implementation minimize cognitive load. Users can always see their promises on the shields, selected apps stay visible, and saved schedules show all settings. The only small problem is that the system keeps track of the flashcards that users have seen, but it doesn't let them know which ones they have seen (Severity: 1).

**Flexibility and Efficiency:** As I mentioned before, users can't extend or freeze active schedules, there is no bookmark feature for favourite flashcards, and the single active schedule limitation makes it hard to use advanced patterns. (Severity: 2).

**Aesthetic and Minimalist Design:** The interface is simple and elegant, with three tabs that logically organise all the features. Each section only has essential elements, with the right visual hierarchy (Severity: 0).

**Help Users Recognise and Recover from Errors:** There are several mechanisms in the background to recover from errors, but most of them are behind the walls, and users are without any notice. Solutions for denied permissions are mostly manual instructions (Severity: 2).

**Help and Documentation:** There is no onboarding tutorial that explains how to use gestures, features, or set up Screen Time. CompeteView has a basic "About the Logo" section, but no guide (Severity: 3).

### 6.1.3 Priority Improvements

Based on severity ratings, critical improvements emerged:

1. Immediate: Fix problems with visibility and control. Add loading indicators for Screen Time data, countdown timers for active sessions, and the ability to pause and resume sessions.
2. High Priority: Make it easier for users to get started by creating a full onboarding tutorial, adding easier permission recovery, and showing upfront constraint warnings.
3. Medium Priority: Improve the recognition features by adding indicators for flashcards that have been viewed, a bookmarking system, and error messages for users when operations fail.

## 6.2 User Testing Results

### 6.2.1 Participant Demographics

Eight participants are aged between 18 and 53 with mixed genders and tested Lazuri using personal iPhones running iOS 17+. Selection criteria included diverse technical backgrounds and varying screen time habits.

### 6.2.2 Testing Methodology

Following ethics protocol, I presented the Lazuri Testing Checklist, and I installed the app on their personal devices; testing occurred independently over a week without observation.

Participants tested at their own pace, checking off working features and writing about problems in red boxes. The self-guided method eliminated observer bias and let people explore the app in a natural way.

### 6.2.3 Quantitative Findings

From final questionnaire responses:

- Overall rating: Average 9.4/10 (four 10/10, three 9/10, one 8/10)
- Daily use intention: 8/8 marked "YES"
- Recommendation: 8/8 marked "YES"
- All feature checkmarks were completed.

## 6.2.4 Qualitative Feedback

Common written comments:

- What worked best: Promise feature (3), Game Center/Dashboard (3), Educational flashcards (3), Precise notifications (1)
- Most confusing: Lack of onboarding tutorial (2)
- Additional comments: UI Compliments (2), helpful (2) Game Idea Disliked (1)

## 6.2.5 Key Insights

Participants were happy with the app: it averaged 9.4/10, and everyone said they'd recommend it. The most liked features were the Promises, the Game Center elements, and the flashcards (Learn tab). The main usability gap was the lack of an onboarding tutorial, especially for older users. Running the tests independently also helped; without me in the room, people explored more freely and gave more candid feedback.

# Chapter 7: Conclusion

## 7.1 Summary of Achievements

In this dissertation, I presented the development process of Lazuri, a novel iOS application designed to tackle the escalating challenges to digital well-being through an innovative integration of screen-time management, educational content, and gamification. The research aimed to address the gap identified in existing digital detox applications, which often fail to sustain user engagement beyond the first two weeks.

Lazuri's biggest contribution was the successful integration of the education part and promised-based motivation system into the digital well-being app with the traditional restrictive app blocking system. Unlike digital wellness apps that simply restrict and block access, Lazuri transforms the moment of restriction into an opportunity for self-assessment and learning. Rather than simply blocking access, it offers users opportunities for learning and self-reflection.

## 7.2 Research Questions Addressed

RQ1: Lazuri successfully answered all research questions; it can block apps using Apple's Screen Time framework with FamilyControls.

RQ2: A JSON-based flashcard system with easy swipe navigation and category filtering organises educational content well, making learning fun and easy to access.

RQ3: Using App Groups with UserDefaults containers, near real-time data synchronisation between the main app and its four extensions was possible.

RQ4: Finally, a custom shield demonstrates that we can make meaningful changes to the UI within iOS limitations.

### 7.3 User Testing Outcomes

Based on my testing, we can say that the app generally fulfils its purpose. Users found the hourglass feature and the ability to leave messages most useful. They commented that the flashcard system was engaging and easy to use. They also noted the Game Center integration's achievements and leaderboard as motivating. The latency issue with the Screen Time chart, the lack of a tutorial for older users and some of the other problems I mention in section 6.1.3 were the most important issues Lazuri had.

### 7.4 Limitations

Unsurprisingly, I encountered many obstacles within the Apple ecosystem. First, I couldn't display users' live views on the custom shield, I couldn't add videos or photos, I couldn't even change the position or shape of the button, and finally, I was limited to making all schedules within a minimum of 15 minutes. But that's not all; I had to purchase Apple's \$99 developer account to run some tests. To test on real devices with a wider audience, I had to modify my app to Apple's specifications and submit it for approval. Even the approval process can take at least a month; because of that, I had to have a limited test group. The paid nature of the work is a significant challenge, especially for low-budget researchers and developers.

### 7.5 Future Work

Future development needs to address these limitations through multiple channels. The flashcard system needs to be connected to the custom server, and cards need to be updated remotely; loading states need to be implemented in the relevant places, the onboarding flow needs to be

added for older or unfamiliar users (we need to address all the problems we have detected), widget extensions need to be added, and most importantly, the application needs to be made cross-platform using the MERN stack so that more people can benefit from Lazuri.

## 7.6 Final Remarks

I believe Lazuri is a significant contribution to the field of digital wellbeing, emphasising the importance of education and transforming blocking into an opportunity for people to understand themselves and remember their commitments, rather than portraying it as a restrictive action. It's a pioneering initiative that empowers people to access applications not through restriction alone, but through conscious education, and the selection of appropriate gamification technologies will keep users interested for a longer period of time. I'm confident Lazuri will leave a significant mark on the field of human-computer interaction.

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# Appendix 1: Software Testing With Users Compliance Form – UG & PGT Projects

## Software Testing With Users Compliance Form – UG & PGT Projects\*

### School of Engineering and Informatics, University of Sussex

This form should be used in conjunction with the document entitled “Ethical Review Guidance for Student Projects”.

Prior to conducting your project, you and your supervisor must discuss the ethical implications of your project. If your proposed project complies with **all** of the points in this form, then may use this form.

If you use this form, you must also prepare either (a) an information sheet and a consent for your participant to sign, or (b) prepare an Introduction and Debriding Script to read to your participant before the test (see appendix below). These must be approved by you supervisor.

Include the signed copy of this form with your final project report/dissertation.

If your proposed project does not comply with all the points, you should refer back to the “Research Ethics Guidance for UG and PGT Projects” document for further guidance.

- 
1. Participants were not exposed to any risks greater than those encountered in their normal working life.

*You have a responsibility to protect participants from physical, mental and emotional harm during the testing. The risk of harm must be no greater than in ordinary life. Areas of potential risk that require ethical approval include, but are not limited to, investigations that require participant mobility (e.g. walking, running, use of public transport), unusual or repetitive activity or movement, physical hazards or discomfort, emotional distress, use of sensory deprivation (e.g. ear plugs or blindfolds), sensitive topics (e.g. sexual activity, drug use, political behaviour, ethnicity) or those which might induce discomfort, stress or anxiety (e.g. violent video games), bright or flashing lights, loud or disorienting noises, smell, taste, vibration, or force feedback.*

2. The study materials are paper-based or comprises software running on standard hardware.

*Participants should not be exposed to any risks associated with the use of non-standard equipment: anything other than pen-and-paper, standard PCs, mobile phones, and tablet computers is considered non-standard.*

3. All participants must explicitly state that they agreed to take part, and that their data can be used in the project.

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\*This form was originally developed by Professor Steven Brewster at the University of Glasgow, and modified by Dr Judith Good for use at the University of Sussex with his permission.

*Participants cannot take part in the test without their knowledge or consent (i.e. no covert observation). Covert observation, deception or withholding information are deemed to be high risk and require ethical approval through the relevant C-REC.*

*If the results of the evaluation are likely to be used beyond the term of the project (for example, the software is to be deployed, the data is to be published or there are future secondary uses of the data), then it will be necessary to obtain signed consent from each participant. Otherwise, verbal consent is sufficient, and should be explicitly requested in the introductory script (see Appendix 1).*

4. No incentives will be offered to the participants.

*The payment of participants must not be used to induce them to risk harm beyond that which they risk without payment in their normal lifestyle. People volunteering to participate may be compensated financially e.g. for reasonable travel expenses. Payments made to individuals must not be so large as to induce individuals to risk harm beyond that which they would usually undertake.*

5. No information about the evaluation or materials is intentionally withheld from the participants.

*Withholding information from participants or misleading them is unacceptable without justifiable reasons for doing so. Any projects requiring deception (for example, only telling participants of the true purpose of the study afterwards so as not to influence their behaviour) are deemed high risk and require approval from the relevant C-REC.*

6. No participant is under the age of 18.

*Any studies involving children or young people are deemed to be high risk and require ethical approval through the relevant C-REC.*

7. No participant has a disability or impairment that may have limited their understanding or communication or capacity to consent.

*Projects involving participants with disabilities are deemed to be high risk and require ethical approval from the relevant C-REC.*

8. Neither I nor my supervisor are in a position of authority or influence over any of the participants.

*A position of authority or influence over any participant must not be allowed to pressurise participants to take part in, or remain in, any study.*

9. All participants will be informed that they can withdraw at any time.

*All participants have the right to withdraw at any time during the investigation. They should be told this in the introductory script (see Appendix 1).*

10. All participants will be informed of my contact details, and the contact details of my supervisor.

*All participants must be able to contact the investigator and/or the supervisor after the investigation. They should be given contact details for both student and supervisor as part of the debriefing.*

11. The evaluation will be described in detail with all of the participants at the beginning of the session, and participants will be fully debriefed at the end of the session. All participants will be given the opportunity to ask questions at both the beginning and end of the session.

*Participants must be provided with sufficient information prior to starting the session, and in the debriefing, to enable them to understand the nature of the investigation.*

12. All the data collected from the participants will be stored securely, and in an anonymous form.

*All participant data (hard-copy and soft-copy) should be stored securely (i.e. locked filing cabinets for hard copy, password protected computer for electronic data), and in an anonymised form.*

**Project title:** Mobile App: Educate & Manage Screen Time

**Student's Name:** Emre Kulaber

**Student's Registration Number:** 22411942

**Student's Signature:** 

**Date:** 14/08/2025

**Supervisor's Name:** Prof. Kate Howland

**I have read and authorised either (a) the participant information sheet and consent form or**

**(b) the Introduction and Debrief scripts.**

**Supervisor's Initials:**   KH  

**Supervisor's Signature:**  \_\_\_\_\_

**Date:**

  18/08/2025

## **Software Testing With Users Compliance Form**

### **Appendix 1: Introduction and Debriefing Scripts**

#### **INTRODUCTION SCRIPT**

Lazuri App Testing Study  
MSc Dissertation Project, 2024-2025  
Emre Kulaber (Candidate Number: 291117)

The aim of this study is to verify that Lazuri functions correctly as part of my dissertation project. My dissertation focuses on developing an iOS application that reduces smartphone addiction by combining education with screen time management. I need real users to test whether the app works properly on different devices, which is why I need to run studies like these.

If you agree to take part, I will install the Lazuri app on your iPhone and provide you with a paper checklist to complete. After installation, you will test all app features independently at your own pace until August 30, 2025.

Only the paper checklist will be collected and I will not be observing or monitoring your usage. If you have any questions during testing, please contact me via email, and please return the completed checklist by the deadline.

You will test the app on your own without my presence. Please remember that it is the app's functionality, not your abilities, that is being evaluated.

You are welcome to withdraw from the study at any time. Please be assured that any data collected will be stored securely and in an anonymous form. Only the paper checklist will be collected, with no personal information except an optional first name/nickname.

Do you agree to take part in this evaluation? Do you have any questions before we start?

## **DEBRIEFING SCRIPT**

Lazuri App Testing Study  
MSc Dissertation Project, 2024-25  
Emre Kulaber (Candidate Number: 291117)

Thank you for testing Lazuri. My dissertation aimed to develop an iOS application that helps people reduce their smartphone addiction through education and screen time management. The testing you completed helps verify that the app I developed works correctly.

The app's main features you tested were:

- The Learn tab: An interactive educational system with flashcards teaching digital wellbeing concepts, complete with swipe navigation, category filtering, and content sharing
- The Focus tab: A comprehensive screen time management system that blocks selected apps during custom schedules, displays usage statistics, and tracks minutes saved
- The Compete tab: A motivation system combining Game Center leaderboards with personal commitment tracking, where your written promises appear when attempting to access blocked apps

Your testing helps confirm that the app functions properly on different iOS devices and identifies any technical issues.

Do you have any questions about the testing?

Here are my contact details, [ek507@sussex.ac.uk](mailto:ek507@sussex.ac.uk), and those of my supervisor Professor Kate Howland [K.L.Howland@sussex.ac.uk](mailto:K.L.Howland@sussex.ac.uk), and please let us know if you have any further questions about this study.

Thank you for your help.



# Appendix 2: Lazuri App - User Testing Checklist

| LAZURI APP - USER TESTING CHECKLIST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                  |
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| <b>INSTALLATION</b><br><input checked="" type="checkbox"/> App installed by Email<br><input checked="" type="checkbox"/> Icon on home screen<br><input checked="" type="checkbox"/> Opens without crash<br><input checked="" type="checkbox"/> Screen Time popup<br><input checked="" type="checkbox"/> Notification popup<br><input checked="" type="checkbox"/> Works if declined<br><input checked="" type="checkbox"/> Features unlock if accepted<br><br><b>Problems:</b><br><br><br><br>                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>FOCUS TAB - SCREEN TIME</b><br><b>Setup &amp; Permissions</b><br><input checked="" type="checkbox"/> Screen Time permission popup<br><input checked="" type="checkbox"/> Clear instructions if declined<br><input checked="" type="checkbox"/> Settings button opens iOS Settings<br><input checked="" type="checkbox"/> Returns to app after granting<br><input checked="" type="checkbox"/> Hourglass icon shows time<br><input checked="" type="checkbox"/> Minutes counter accurate<br><input checked="" type="checkbox"/> Usage chart displays<br><input checked="" type="checkbox"/> Today/Week toggle works<br><br><b>App Selection</b><br><input checked="" type="checkbox"/> "Select Apps" button visible<br><input checked="" type="checkbox"/> App picker sheet opens<br><input checked="" type="checkbox"/> Can select multiple apps<br><input checked="" type="checkbox"/> App categories filter works<br><input checked="" type="checkbox"/> Shows selected app count<br><input checked="" type="checkbox"/> Selection saves correctly<br><br><b>Schedule Creation</b><br><input checked="" type="checkbox"/> "+" button opens schedule form<br><input checked="" type="checkbox"/> Can type schedule name<br><input checked="" type="checkbox"/> Set start time picker<br><input checked="" type="checkbox"/> Set end time picker<br><input checked="" type="checkbox"/> Select individual days<br><input checked="" type="checkbox"/> "Weekdays" quick select<br><input checked="" type="checkbox"/> "Weekends" quick select<br><input checked="" type="checkbox"/> "Create" button saves<br><input checked="" type="checkbox"/> New schedule appears in list<br><br><b>Problems:</b><br><br><br><br> | <b>FOCUS TAB - SCHEDULES</b><br><b>Schedule Use</b><br><input checked="" type="checkbox"/> Toggle ON<br><input checked="" type="checkbox"/> Lock icon shows<br><input checked="" type="checkbox"/> Start notification<br><input checked="" type="checkbox"/> Apps blocked<br><input checked="" type="checkbox"/> Sheet appears<br><input checked="" type="checkbox"/> Shows promise text<br><input checked="" type="checkbox"/> Can't bypass<br><input checked="" type="checkbox"/> "I won't break" → self note notification<br><input checked="" type="checkbox"/> End notification<br><input checked="" type="checkbox"/> Apps unlock<br><input checked="" type="checkbox"/> OFF → Instant<br><input checked="" type="checkbox"/> Edit when OFF<br><input checked="" type="checkbox"/> Delete button<br><br><b>Chart</b><br><input checked="" type="checkbox"/> Bottom chart<br><input checked="" type="checkbox"/> Day/Week view<br><input checked="" type="checkbox"/> Empty state (shows when no data)<br><input checked="" type="checkbox"/> Blue bars<br><input checked="" type="checkbox"/> Total average<br><br><b>Problems:</b><br><br><br><br> | <b>COMPETE TAB - GAME CENTER</b><br><b>Game Center</b><br><input checked="" type="checkbox"/> Login popup<br><input checked="" type="checkbox"/> Sign in works<br><input checked="" type="checkbox"/> 3 buttons show<br><input checked="" type="checkbox"/> Leaderboard<br><input checked="" type="checkbox"/> Total Points<br><input checked="" type="checkbox"/> Your score<br><input checked="" type="checkbox"/> Other users' scores visible<br><input checked="" type="checkbox"/> Achievements<br><input checked="" type="checkbox"/> Achievements list displays<br><input checked="" type="checkbox"/> All Activity<br><input checked="" type="checkbox"/> Dashboard<br><br><b>Problems:</b><br><br><br><br> | <b>FINAL QUESTIONS</b><br><b>What worked best?</b><br><u>Gamification features, flash card</u><br><br><b>What didn't work?</b><br><u>Nothing</u><br><br><b>Most confusing?</b><br><u>About Section</u><br><br><b>Comments:</b><br><u>I like the colours its like apple apps.</u><br><br><u>1</u> |
| <b>LEARN TAB</b><br><b>Card Viewing</b><br><input checked="" type="checkbox"/> Cards readable<br><input checked="" type="checkbox"/> Blue category tag<br><input checked="" type="checkbox"/> Counter shows (1/100)<br><input checked="" type="checkbox"/> Tab/content clear<br><br><b>Swipe Actions</b><br><input checked="" type="checkbox"/> LEFT → next card<br><input checked="" type="checkbox"/> RIGHT → previous<br><input checked="" type="checkbox"/> UP → share menu<br><input checked="" type="checkbox"/> Share works<br><input checked="" type="checkbox"/> Links to first<br><br><b>Category &amp; Tap</b><br><input checked="" type="checkbox"/> Category buttons<br><input checked="" type="checkbox"/> "All" works<br><input checked="" type="checkbox"/> Filter works<br><input checked="" type="checkbox"/> Blue when selected<br><input checked="" type="checkbox"/> Tap cards<br><br><b>Problems:</b><br><br><br><br> | <b>COMPETE TAB</b><br><b>Promises</b><br><input checked="" type="checkbox"/> Add button<br><input checked="" type="checkbox"/> Type text<br><input checked="" type="checkbox"/> Character count<br><input checked="" type="checkbox"/> Save works<br><input checked="" type="checkbox"/> New saved<br><input checked="" type="checkbox"/> Edit later<br><br><b>Problems:</b><br><br><br><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>GENERAL APP USE</b><br><b>Navigation &amp; Performance</b><br><input checked="" type="checkbox"/> 3 tabs work<br><input checked="" type="checkbox"/> Switch fast<br><input checked="" type="checkbox"/> Icons visible<br><input checked="" type="checkbox"/> Responsive<br><input checked="" type="checkbox"/> No freezing<br><input checked="" type="checkbox"/> No crashes<br><input checked="" type="checkbox"/> Buttons work<br><br><b>Data &amp; Scenarios</b><br><input checked="" type="checkbox"/> Schedules saved<br><input checked="" type="checkbox"/> Promises saved<br><input checked="" type="checkbox"/> Background OK<br><input checked="" type="checkbox"/> Force quit OK<br><input checked="" type="checkbox"/> Low battery OK<br><br><b>Problems:</b><br><br><br><br>                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                  |

| LAZURI APP - USER TESTING CHECKLIST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                          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<u>18.6.2</u> Contact: <u>ms577@nasser.ac.uk</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                       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It should be more simple. It carries on for a long time request.</u><br><br><u>1</u> |
| <b>LEARN TAB</b><br><b>Card Viewing</b><br><input checked="" type="checkbox"/> Cards readable<br><input checked="" type="checkbox"/> Blue category tag<br><input checked="" type="checkbox"/> Counter shows (1/100)<br><input checked="" type="checkbox"/> Tab/content clear<br><br><b>Swipe Actions</b><br><input checked="" type="checkbox"/> LEFT → next card<br><input checked="" type="checkbox"/> RIGHT → previous<br><input checked="" type="checkbox"/> UP → share menu<br><input checked="" type="checkbox"/> Share works<br><input checked="" type="checkbox"/> Links to first<br><br><b>Category &amp; Tap</b><br><input checked="" type="checkbox"/> Category buttons<br><input checked="" type="checkbox"/> "All" works<br><input checked="" type="checkbox"/> Filter works<br><input checked="" type="checkbox"/> Blue when selected<br><input checked="" type="checkbox"/> Tap cards<br><br><b>Problems:</b><br><u>All of them functions</u><br><br><br><br> | <b>COMPETE TAB</b><br><b>Promises</b><br><input checked="" type="checkbox"/> Add button<br><input checked="" type="checkbox"/> Type text<br><input checked="" type="checkbox"/> Character count<br><input checked="" type="checkbox"/> Save works<br><input checked="" type="checkbox"/> New saved<br><input checked="" type="checkbox"/> Edit later<br><br><b>Problems:</b><br><u>All of them functions</u><br><br><br><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>GENERAL APP USE</b><br><b>Navigation &amp; 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# LAZURI APP - USER TESTING CHECKLIST

MARK ✓ FOR WORKING | MARK # FOR ISSUES | DESCRIBE PROBLEMS IN RED BOXES

Page 51 Date 25.02.19 Time 14:14 PM Ver 1.8.6.2 Contact: a5077@business.ac.uk

| INSTALLATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | FOCUS TAB - SCREEN TIME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FOCUS TAB - 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<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Recommend? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Signature: </p> <p>THANK YOU FOR YOUR FEEDBACK</p> <p>NOTE: You can stop testing at any time and withdraw without giving a reason.</p>         |
| <p><b>Learn Tab</b></p> <p><b>Card Viewing</b></p> <p><input checked="" type="checkbox"/> Cards readable</p> <p><input checked="" type="checkbox"/> Blue category tag</p> <p><input checked="" type="checkbox"/> Counter shows (1/10)</p> <p><input checked="" type="checkbox"/> Tab/content clear</p> <p><b>Swipe Actions</b></p> <p><input checked="" type="checkbox"/> LEFT -&gt; next card</p> <p><input checked="" type="checkbox"/> RIGHT -&gt; previous</p> <p><input checked="" type="checkbox"/> UP -&gt; share menu</p> <p><input checked="" type="checkbox"/> Share works</p> <p><input checked="" type="checkbox"/> Links to list</p> <p><b>Category &amp; Tap</b></p> <p><input checked="" type="checkbox"/> Category buttons</p> <p><input checked="" type="checkbox"/> Tap works</p> <p><input checked="" type="checkbox"/> Filter works</p> <p><input checked="" type="checkbox"/> Blue when selected</p> <p><input checked="" type="checkbox"/> Tap cards</p> <p>Problems:</p> | <p><b>Schedule Creation</b></p> <p><input checked="" type="checkbox"/> "+" button opens schedule form</p> <p><input checked="" type="checkbox"/> Can type schedule name</p> <p><input checked="" type="checkbox"/> Set start time picker</p> <p><input checked="" type="checkbox"/> Set end time picker</p> <p><input checked="" type="checkbox"/> Select individual days</p> <p><input checked="" type="checkbox"/> "Weekdays" quick select</p> <p><input checked="" type="checkbox"/> "Weekends" quick select</p> <p><input checked="" type="checkbox"/> "Create" button saves</p> <p><input checked="" type="checkbox"/> New schedule appears in list</p> <p>Problems:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><b>COMPETE TAB</b></p> <p><b>Primitives</b></p> <p><input checked="" type="checkbox"/> Add button</p> <p><input checked="" type="checkbox"/> Type text</p> <p><input checked="" type="checkbox"/> Character count</p> <p><input checked="" type="checkbox"/> Time works</p> <p><input checked="" type="checkbox"/> View saved</p> <p><input checked="" type="checkbox"/> Exit later</p> <p>Problems:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>GENERAL APP USE</b></p> <p><b>Navigation &amp; Performance</b></p> <p><input checked="" type="checkbox"/> 3 tabs work</p> <p><input checked="" type="checkbox"/> Switch fast</p> <p><input checked="" type="checkbox"/> Icons visible</p> <p><input checked="" type="checkbox"/> Responsive</p> <p><input checked="" type="checkbox"/> No freezing</p> <p><input checked="" type="checkbox"/> No crashes</p> <p><input checked="" type="checkbox"/> Buttons work</p> <p><b>Data &amp; Scenarios</b></p> <p><input checked="" type="checkbox"/> Schedules saved</p> <p><input checked="" type="checkbox"/> Promises saved</p> <p><input checked="" type="checkbox"/> Background OK</p> <p><input checked="" type="checkbox"/> Force quit OK</p> <p><input checked="" type="checkbox"/> Low battery OK</p> <p>Problems:</p> | <p><b>What worked best?</b></p> <p>Flash card system</p> <p><b>What didn't work?</b></p> <p>Everything works</p> <p><b>Most confusing?</b></p> <p>No tutorials</p> <p><b>Comments:</b></p> <p>Useful app</p> <p>Rating (1-10): 10/10</p> <p>Use daily? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Recommend? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Signature: </p> <p>THANK YOU FOR YOUR FEEDBACK</p> <p>NOTE: You can stop testing at any time and withdraw without giving a reason.</p> |

# LAZURI APP - USER TESTING CHECKLIST

MARK ✓ FOR WORKING | MARK # FOR ISSUES | DESCRIBE PROBLEMS IN RED BOXES

Page 53 Date 24/02/2025 Time 14:14 PM Ver 1.8.6.2 Contact: a5077@business.ac.uk

| INSTALLATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | FOCUS TAB - SCREEN TIME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FOCUS TAB - SCHEDULES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | COMPETE TAB - 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| <p><b>App installed by Error</b></p> <p><input checked="" type="checkbox"/> App icon on home screen</p> <p><input checked="" type="checkbox"/> App icon without crash</p> <p><input checked="" type="checkbox"/> Screen Time popup</p> <p><input checked="" type="checkbox"/> Notification popup</p> <p><input checked="" type="checkbox"/> Works if declined</p> <p><input checked="" type="checkbox"/> Features unlock if accepted</p> <p>Problems:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Setup &amp; Permissions</b></p> <p><input checked="" type="checkbox"/> Screen Time permission popup</p> <p><input checked="" type="checkbox"/> Clear instructions if declined</p> <p><input checked="" type="checkbox"/> Settings button opens iOS Settings</p> <p><input checked="" type="checkbox"/> Return to app after granting</p> <p><input checked="" type="checkbox"/> Younglives icon shows time</p> <p><input checked="" type="checkbox"/> Minutes counter accurate</p> <p><input checked="" type="checkbox"/> Usage chart displays</p> <p><input checked="" type="checkbox"/> Today/Week toggle works</p> <p><b>App Selection</b></p> <p><input checked="" type="checkbox"/> "Select App" button visible</p> <p><input checked="" type="checkbox"/> App picker sheet opens</p> <p><input checked="" type="checkbox"/> Can select multiple apps</p> <p><input checked="" type="checkbox"/> App categories filter works</p> <p><input checked="" type="checkbox"/> Shows selected app count</p> <p><input checked="" type="checkbox"/> Selection saves correctly</p> <p><b>Schedule Creation</b></p> <p><input checked="" type="checkbox"/> "+" button opens schedule form</p> <p><input checked="" type="checkbox"/> Can type schedule name</p> <p><input checked="" type="checkbox"/> Set start time picker</p> <p><input checked="" type="checkbox"/> Set end time picker</p> <p><input checked="" type="checkbox"/> Select individual days</p> <p><input checked="" type="checkbox"/> "Weekdays" quick select</p> <p><input checked="" type="checkbox"/> "Weekends" quick select</p> <p><input checked="" type="checkbox"/> "Create" button saves</p> <p><input checked="" type="checkbox"/> New schedule appears in list</p> <p>Problems:</p> | <p><b>Schedule Use</b></p> <p><input checked="" type="checkbox"/> Toggle On</p> <p><input checked="" type="checkbox"/> Lock icon shows</p> <p><input checked="" type="checkbox"/> Start notification</p> <p><input checked="" type="checkbox"/> Apps blocked</p> <p><input checked="" type="checkbox"/> Sheet appears</p> <p><input checked="" type="checkbox"/> Shows promise text</p> <p><input checked="" type="checkbox"/> Can't toggle</p> <p><input checked="" type="checkbox"/> "I won't break!" - self note notification</p> <p><input checked="" type="checkbox"/> End notification</p> <p><input checked="" type="checkbox"/> Apps unlock</p> <p><input checked="" type="checkbox"/> OFF -&gt; Instant</p> <p><input checked="" type="checkbox"/> Exit when OFF</p> <p><input checked="" type="checkbox"/> Delete button</p> <p><b>Chart</b></p> <p><input checked="" type="checkbox"/> Bottom chart</p> <p><input checked="" type="checkbox"/> Day/Week view</p> <p><input checked="" type="checkbox"/> Empty state (shows when no data)</p> <p><input checked="" type="checkbox"/> Blue bars</p> <p><input checked="" type="checkbox"/> Annotations</p> <p>Problems:</p> | <p><b>Game Center</b></p> <p><input checked="" type="checkbox"/> Login popup</p> <p><input checked="" type="checkbox"/> Sign in works</p> <p><input checked="" type="checkbox"/> 3 buttons show</p> <p><input checked="" type="checkbox"/> Leaderboard</p> <p><input checked="" type="checkbox"/> Total Points</p> <p><input checked="" type="checkbox"/> Your score</p> <p><input checked="" type="checkbox"/> Other user's score visible</p> <p><input checked="" type="checkbox"/> Achievements</p> <p><input checked="" type="checkbox"/> Achievements list displays</p> <p><input checked="" type="checkbox"/> All Activity</p> <p><input checked="" type="checkbox"/> Dashboard</p> <p>Problems:</p>                                                                                                                      | <p><b>What worked best?</b></p> <p>Flash card system</p> <p><b>What didn't work?</b></p> <p>Everything works</p> <p><b>Most confusing?</b></p> <p>No tutorials</p> <p><b>Comments:</b></p> <p>Useful app</p> <p>Rating (1-10): 10/10</p> <p>Use daily? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Recommend? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Signature: </p> <p>THANK YOU FOR YOUR FEEDBACK</p> <p>NOTE: You can stop testing at any time and withdraw without giving a reason.</p> |
| <p><b>Learn Tab</b></p> <p><b>Card Viewing</b></p> <p><input checked="" type="checkbox"/> Cards readable</p> <p><input checked="" type="checkbox"/> Blue category tag</p> <p><input checked="" type="checkbox"/> Counter shows (1/10)</p> <p><input checked="" type="checkbox"/> Tab/content clear</p> <p><b>Swipe Actions</b></p> <p><input checked="" type="checkbox"/> LEFT -&gt; next card</p> <p><input checked="" type="checkbox"/> RIGHT -&gt; previous</p> <p><input checked="" type="checkbox"/> UP -&gt; share menu</p> <p><input checked="" type="checkbox"/> Share works</p> <p><input checked="" type="checkbox"/> Links to list</p> <p><b>Category &amp; Tap</b></p> <p><input checked="" type="checkbox"/> Category buttons</p> <p><input checked="" type="checkbox"/> Tap works</p> <p><input checked="" type="checkbox"/> Filter works</p> <p><input checked="" type="checkbox"/> Blue when selected</p> <p><input checked="" type="checkbox"/> Tap cards</p> <p>Problems:</p> | <p><b>Schedule Creation</b></p> <p><input checked="" type="checkbox"/> "+" button opens schedule form</p> <p><input checked="" type="checkbox"/> Can type schedule name</p> <p><input checked="" type="checkbox"/> Set start time picker</p> <p><input checked="" type="checkbox"/> Set end time picker</p> <p><input checked="" type="checkbox"/> Select individual days</p> <p><input checked="" type="checkbox"/> "Weekdays" quick select</p> <p><input checked="" type="checkbox"/> "Weekends" quick select</p> <p><input checked="" type="checkbox"/> "Create" button saves</p> <p><input checked="" type="checkbox"/> New schedule appears in list</p> <p>Problems:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><b>COMPETE TAB</b></p> <p><b>Primitives</b></p> <p><input checked="" type="checkbox"/> Add button</p> <p><input checked="" type="checkbox"/> Type text</p> <p><input checked="" type="checkbox"/> Character count</p> <p><input checked="" type="checkbox"/> Time works</p> <p><input checked="" type="checkbox"/> View saved</p> <p><input checked="" type="checkbox"/> Exit later</p> <p>Problems:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>GENERAL APP USE</b></p> <p><b>Navigation &amp; Performance</b></p> <p><input checked="" type="checkbox"/> 3 tabs work</p> <p><input checked="" type="checkbox"/> Switch fast</p> <p><input checked="" type="checkbox"/> Icons visible</p> <p><input checked="" type="checkbox"/> Responsive</p> <p><input checked="" type="checkbox"/> No freezing</p> <p><input checked="" type="checkbox"/> No crashes</p> <p><input checked="" type="checkbox"/> Buttons work</p> <p><b>Data &amp; Scenarios</b></p> <p><input checked="" type="checkbox"/> Schedules saved</p> <p><input checked="" type="checkbox"/> Promises saved</p> <p><input checked="" type="checkbox"/> Background OK</p> <p><input checked="" type="checkbox"/> Force quit OK</p> <p><input checked="" type="checkbox"/> Low battery OK</p> <p>Problems:</p> | <p><b>What worked best?</b></p> <p>Flash card system</p> <p><b>What didn't work?</b></p> <p>Everything works</p> <p><b>Most confusing?</b></p> <p>No tutorials</p> <p><b>Comments:</b></p> <p>Useful app</p> <p>Rating (1-10): 10/10</p> <p>Use daily? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Recommend? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Signature: </p> <p>THANK YOU FOR YOUR FEEDBACK</p> <p>NOTE: You can stop testing at any time and withdraw without giving a reason.</p> |



# SALEARY AT - USER TESTING

**MARK ✓ FOR WORKING | MARK # FOR ISSUES | DESCRIBE PROBLEMS IN RED BOXES**

Apk 18 Date 21.08.25 Phone: 11 iOS 8.6.2

Contact: sst@qasurax.co.uk

| INSTALLATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | FOCUS TAB - SCREEN TIME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | FOCUS TAB - SCHEDULES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | COMPETE TAB - GAME CENTER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | FINAL QUESTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> App installed by Email</li> <li><input checked="" type="checkbox"/> Scan on Home screen</li> <li><input checked="" type="checkbox"/> Opens without crash</li> <li><input checked="" type="checkbox"/> Screen Time pop up</li> <li><input checked="" type="checkbox"/> Notification appear</li> <li><input checked="" type="checkbox"/> Works if disabled</li> <li><input checked="" type="checkbox"/> Will allow unlock if accepted</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Problems:</b><br/> <br/><br/><br/><br/> </div> | <p><b>Setup &amp; Permissions</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Screen Time permission popup</li> <li><input checked="" type="checkbox"/> Clear instructions if declined</li> <li><input checked="" type="checkbox"/> Settings button opens iOS Settings</li> <li><input checked="" type="checkbox"/> Prompts to app after granting</li> <li><input checked="" type="checkbox"/> Instructions icon shows time</li> <li><input checked="" type="checkbox"/> Minutes counter accurate</li> <li><input checked="" type="checkbox"/> Usage chart displays</li> <li><input checked="" type="checkbox"/> Hide/shows toggle works</li> </ul> <p><b>App Selection</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> "Select Apps" button visible</li> <li><input checked="" type="checkbox"/> App picker sheet opens</li> <li><input checked="" type="checkbox"/> Can select multiple apps</li> <li><input checked="" type="checkbox"/> App categories filter works</li> <li><input checked="" type="checkbox"/> Shows selected app count</li> <li><input checked="" type="checkbox"/> Selection saves correctly</li> </ul> | <p><b>Schedule Use</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Tapge On</li> <li><input checked="" type="checkbox"/> Lock can show</li> <li><input checked="" type="checkbox"/> Start notification</li> <li><input checked="" type="checkbox"/> Apps blocked</li> <li><input checked="" type="checkbox"/> Sheet appears</li> <li><input checked="" type="checkbox"/> Shows promise text</li> <li><input checked="" type="checkbox"/> Can't bypass</li> <li><input checked="" type="checkbox"/> won't break! -- self note notification</li> <li><input checked="" type="checkbox"/> Line indication</li> <li><input checked="" type="checkbox"/> Apps unblock</li> <li><input checked="" type="checkbox"/> Off -- instant</li> <li><input checked="" type="checkbox"/> Exit when Off</li> <li><input checked="" type="checkbox"/> Create button</li> </ul> <p><b>Chart</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Chart shown</li> <li><input checked="" type="checkbox"/> Zoomable view</li> <li><input checked="" type="checkbox"/> Empty state (shows when no data)</li> <li><input checked="" type="checkbox"/> No bars</li> <li><input checked="" type="checkbox"/> Outrange</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Problems:</b><br/> <br/><br/><br/><br/> </div> | <p><b>Game Center</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Login popup</li> <li><input checked="" type="checkbox"/> Sign in with</li> <li><input checked="" type="checkbox"/> 3 options show</li> <li><input checked="" type="checkbox"/> Leaderboard</li> <li><input checked="" type="checkbox"/> Top Points</li> <li><input checked="" type="checkbox"/> Friend score</li> <li><input checked="" type="checkbox"/> Show friend's score visible</li> <li><input checked="" type="checkbox"/> Achievement</li> <li><input checked="" type="checkbox"/> Achievements list displays</li> <li><input checked="" type="checkbox"/> All Activity</li> <li><input checked="" type="checkbox"/> Dashboard</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Problems:</b><br/> <br/><br/><br/><br/> </div>                                                                                                                                                        | <p><b>Final Questions</b></p> <p>What worked best?<br/> <i>View your promises feature was cool.</i></p> <p>What didn't work?<br/> <i>All good</i></p> <p>Most confusing?<br/> <i>Easy to understand</i></p> <p>Comments:<br/> <i>It helps my Instagram addiction.</i></p> <p>Rating (1-10): <u>10/10</u></p> <p>Use daily? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Recommend? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Signature: _____</p> <p style="text-align: center;"><b>THANK YOU FOR TESTING!</b></p> <p style="font-size: small; text-align: center;">NOTE: You can stop testing at any time and withdraw without giving a reason.</p> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Schedule Creation</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> "+" button opens schedule form</li> <li><input checked="" type="checkbox"/> Can type schedule name</li> <li><input checked="" type="checkbox"/> Set start time picker</li> <li><input checked="" type="checkbox"/> End and time picker</li> <li><input checked="" type="checkbox"/> Good individual days</li> <li><input checked="" type="checkbox"/> Weekdays' quick select</li> <li><input checked="" type="checkbox"/> Weekend' quick select</li> <li><input checked="" type="checkbox"/> "Create" button saves</li> <li><input checked="" type="checkbox"/> New schedule appears in list</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Problems:</b><br/> <i>Lateness issue with screen time chart</i> </div>                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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MARK ✓ FOR WORKING | MARK ✗ FOR ISSUES | DESCRIBE PROBLEMS IN RED BOXES

Sp. 23 Date: 22-08-25 Phone: 16 Pro iOS 18.6.1 Contact: a507@postsec.uk.ac

### INSTALLATION

- ☒ App installed by Email
- ☒ App on home screen
- ☒ Opens without crash
- ☒ Screen Time popup
- ☒ Notification popup
- ☒ Works if declined
- ☒ Features unlock if accepted

Problems:

### FOCUS TAB - SCREEN TIME

Setup & Permission

- ☒ Screen Time permission popup
- ☒ Clear instructions if declined
- ☒ Settings button opens iOS Settings
- ☒ Returns to app after granting
- ☒ Homeglass icon shows time
- ☒ Minutes counter accurate
- ☒ Usage chart displays
- ☒ Today/Week toggle works

App Selection

- ☒ "Select Apps" button visible
- ☒ App picker shows all games
- ☒ Can select multiple apps
- ☒ App categories filter works
- ☒ Shows selected app count
- ☒ Selection saves correctly

Schedule Creation

- ☒ "+" button opens schedule form
- ☒ Can type schedule name
- ☒ Set start time picker
- ☒ Set end time picker
- ☒ Select individual days
- ☒ "Weekdays" quick select
- ☒ "Weekends" quick select
- ☒ "Create" button saves
- ☒ New schedule appears in list

Problems:

### FOCUS TAB - SCHEDULES

Schedule List

- ☒ Toggle ON
- ☒ Lock icon shows
- ☒ Start notification
- ☒ Apps blocked
- ☒ Silent appears
- ☒ Shows promise text
- ☒ Can't toggle
- ☒ "I won't break" → self note notification
- ☒ End notification
- ☒ Apps unlock
- ☒ OFF → Instant
- ☒ Exit when OFF
- ☒ Delete button

Chart

- ☒ Bottom chart
- ☒ Day/Week view
- ☒ Empty state (shows when no data)
- ☒ Blue bars
- ☒ Total average

Problems:

### COMPLETE TAB - GAME CENTER

Game Center

- ☒ Login popup
- ☒ Sign in works
- ☒ 3 buttons show
- ☒ Leaderboard
- ☒ Total Points
- ☒ Your score
- ☒ Other users' scores visible
- ☒ Achievements
- ☒ Achievements list displays
- ☒ All Activity
- ☒ Dashboard

Problems:

### FINAL QUESTIONS

What worked best?

Leaderboard and the achievements were great and a promise feature, that's impressive.

What didn't work?

Nothing, everything works fine.

What confusing?

It is not confusing

Comments:

I love the minimalist and I (user interface)

Rating (1-10): 10/10

Use daily? ☒ YES ☐ NO

Recommend? ☒ YES ☐ NO

Signature: 

THANK

NOTE: You can stop looking at any time and submit without giving a reason.

### LEARN TAB

Card Viewing

- ☒ Cards readable
- ☒ Blue category tag
- ☒ Counter shows (1/100)
- ☒ "Next/Cancel" clear

Swipe Actions

- ☒ LEFT → next card
- ☒ RIGHT → previous
- ☒ UP → share menu
- ☒ Share works
- ☒ Loop to first

Category & Tap

- ☒ Category buttons
- ☒ "AF" works
- ☒ AF works
- ☒ Blue when selected
- ☒ Tap cards

Problems:

### GENERAL APP USE

Navigation & Performance

- ☒ 3 tabs work
- ☒ Switch fast
- ☒ Icons visible
- ☒ Responsive
- ☒ No freezing
- ☒ No crashes
- ☒ Bottom work

Data & Scenarios

- ☒ Schedules saved
- ☒ Promises saved
- ☒ Background OK
- ☒ Force quit OK
- ☒ Low battery OK

Problems:

### COMPLETE TAB

Problems:

- ☒ Add button
- ☒ Type text
- ☒ Character count
- ☒ Save works
- ☒ View saved
- ☒ Edit later

Problems:

# LAZURI APP - USER TESTING CHECKLIST

| MARK ✓ FOR WORKING   MARK ✗ FOR ISSUES   DESCRIBE PROBLEMS IN RED BOXES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Date: 20.08.25 Phone: 12-13 iOS: 17.6.1 Contact: a1507@exeter.ac.uk |  |
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# LAZURI APP - USER TESTING CHECKLIST

| MARK ✓ FOR WORKING   MARK ✗ FOR ISSUES   DESCRIBE PROBLEMS IN RED BOXES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Name: (optional) Age: 23 Date: 25/08/2025 Phone: iPhone15 iOS: 18.2 Contact: a1507@exeter.ac.uk |  |
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