

修士論文

**Designing a Gamified Habit Tracker Application for
Better Habit Formation using Mobile Gacha Game Model**

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理工学専攻

デザイン・メディア工学コース

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2024年09月

Master's Thesis

**Designing a Gamified Habit Tracker Application for
Better Habit Formation using Mobile Gacha Game Model**

Iwate University Graduate School of Integrated Arts and Sciences

Master's Program Science and Engineering

Design Media Engineering Course

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September 2024

ABSTRACT

Good habits are a necessary gateway to make one become a successful person. Yet knowing that fact humans often gravitate toward easier sources of gratification, rather than investing in the effort that leads to long-term rewards.

Adopting new positive habits hinges on a thorough understanding of habit formation and subtle adjustments to one's routines. While numerous habit-tracking tools exist to help decrease resistance and guide behavior change, ranging from analog options like daily planners to digital applications, many users find them unappealing and burdensome, viewing them merely as another daily task unlike what gains them instant cheap dopamine—e.g., Social Media, Games, Entertainment, etc.—Taking a look at that cause leading us to think of blending source of motivation from entertainment application—Mobile Gacha Game—to help improve the habit tracker.

In our design approach, we draw inspiration from the Gacha game model, which highly triggers dopamine responses, encouraging user engagement, and combine this approach with Gamification—known for its motivational boosts in education through using of game elements and approaches outside of the game context—and Habit Techniques—cue-carving-response-reward cycles—to design and create a habit-tracking application by enhancing its appeal and user satisfaction while reducing resistance and increasing motivation for habit formation.

Our application was designed and developed based on knowledge gathered from survey responses by 100 respondents and tested with 24 participants for one week. Results have shown the positive effect of a 7.88% increase in user habit

improvement and positive feedback for the application satisfaction of 70.31% from participants, highlighting the potential of Gacha habit-tracking game features to enhance user motivation to adopt new habits.

We have identified crucial knowledge and ways to improve our idea and will support future work to enhance user experience in habit adoption. We hope to improve the good habits of users—especially gamers—and make the habit of tracking fun like a game.

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CHAPTER 1

INTRODUCTION

INTRODUCTION

1.1 Habit

Habits are regular routines or practices, which are automatic responses to specific situations [1]. Learned impulses to perform a particular behavior, triggered outside of conscious awareness by a particular context[2]. It is what shapes what a person is like—Success or Failure. It is essential to stick with good habits for a better lifestyle. Still, bad habits persist due to humans' tendency toward instant gratification and less thinking about the negative consequences[3]. For example, people prefer social media, entertainment, and fast food because they offer instant satisfaction. On the other hand, more difficult activities like working and exercising offer delayed gratification[1], which requires more effort and time investment. They are addicted to cheap dopamine. However, it is not wrong to spend time on hobbies you like. But wouldn't it be nicer if the hobbies also improve your life?

1.2 Habit-Trackers

Humans seek ways to improve themselves[4], so they develop the tools to decrease resistance and guide behavior change with many strategies. The tools come in the form of daily writing, journals, calendars, to-do lists, applications, etc. You may not notice that these tools are in our daily lives. They are defined as habit trackers. It helps the habit adopter Increase awareness, increase motivation, record progress, remind, and give visual satisfaction when making progress[1][5].

In the digital era, where almost 7.5 billion people have access to mobile phones, the digital form of habit tracking application should be efficient. Ironically, unlike other kinds of applications—e.g., Social Media, Games, Entertainment, etc.—A high number of self-tracker device(including mobile applications) users eventually discontinue, often within the first 6 months of use because of various reasons such as technical difficulties or inconveniences, loss of interest, the belief that the data are simply not useful anymore or at all, and a sense that data do not reflect users' perceptions of themselves[6]. While some success may come from changing specific user habits, the critical failure point is that habit-tracking applications tend to be used sporadically, primarily when users are motivated.

To design a sustainable habit-tracking application that encourages the development of good habits, it must not only motivate users toward their habits but also enhance their willingness to consistently use the tracker itself as well.

1.3 Thesis Architecture

Chapter 1: Introduction

The statement of the problem of habit and habit trackers. Briefly mention that habit-tracking applications should be used consistently to keep users motivated toward their habits.

Chapter 2: Background

Explain a more detailed and in-depth discussion of the context of the research problem, which is Gamification, Gacha Game, and Habit Loop. State the purpose of the Study and create Hypotheses.

Chapter 3: Literature And Application Review

Reviewing related works, i.e., research papers, commercial habit-tracking applications, and gamified habit tracking Applications. Extracting knowledge around Gamification and Habit-related applications.

Chapter 4: Methodology

Gathering Data from Surveys of 100 digital natives around our interest context to design and develop an application. After the application is made, the idea and application are presented, experimented with, and evaluated by post-experiment and pre-experiment surveys.

Chapter 5: Result

Present the evaluated result and discussion of the knowledge gained. Discussion for each score was given to the participant's self-improvement, the score was given to each feature of the application, and entirely the score to the user's satisfaction with the application and Idea.

Chapter 6: Conclusion

The conclusion of chapters 1-5.

Chapter 7: Future Works

Discussion of future ideas for future work and application development.

1.5 Definition of Terms

- **Habit** - Routines performed regularly and shape our success or failure.

- **Habit Trackers** - Tools created to help reduce resistance and guide behavior change, both physical and digital, mostly mentioned in digital format in this research.
- **Gamification** - Usage of Game Elements outside of the game context. Highly increased motivation in the implemented context.
- **Gacha Game / Gacha Game Mechanic** - The game Mechanic that the player pays in-game currency or money to acquire random items from the pool. Highly increased Dopamine and excitement in the implemented game.
- **Banner** - Term used in the Gacha Game to describe the item in the pool, which is usually time-limited.
- **Habit Loop** - a well-established and effective framework for adopting new habits. The process of this framework is divided into four steps: Cue-Craving-Routine-Reward.
- **Digital Native** - Generations born in the digital era (Y, Z, Alpha) are familiar with digital devices and technology.

CHAPTER 2
BACKGROUND

BACKGROUND

2.1 Gamification

Gamification—incorporating game elements such as points, badges, leaderboards, challenges, and rewards into non-game contexts[\[7\]\[8\]](#)—has demonstrated its effectiveness in serious fields, positively impacting both learning[\[8\]](#) and habit formation[\[9\]\[10\]](#). The literature review indicates that gamification enhances motivation to learn, practice, and engage repeatedly.

This technique is also commonly applied in medical and health fields [\[9\]\[11\]\[12\]](#). It shows the positive effect on patient and the staff's hygiene habits. It would be beneficial to see more gamified habit trackers developed to support a broad range of habit-building goals—not limited to a single type of habit.

While notably prevalent in the education and medication fields, Gamification techniques also extend to other fields like business, such as product promotion through loyalty programs like stamps, point systems, and collectible toys. This suggests a strong link between gamification and habit development. Many companies now create engaging applications designed to encourage repeat use post-purchase.

2.2 Gacha Game

The most revenue applications on mobile are Games, according to Statista[\[13\]](#). This could be caused by the nature of those applications, which deliver instant gratification and motivation right away when playing, and the application's instant feedback and fun elements. It could be the right decision to approach habit tracking

with gamification alone, which directly relates to mobile games. However, to be more specific, most revenue and revisited games have frequent content updates and share a key point: the game included “a very attractive Gacha Game Mechanic.” What if we adopt the same idea of using that application on habit-tracking applications?

Gacha or Gachapon originally refers to capsule toys sold in vending machines by the Japanese company Bandai. The mobile game company uses this term to explain game mechanics that sell in-game contents—e.g., characters and items—via the random number generation from an item pool, i.e., banners. Lakić, N.; Bernik, A.; Čep, A. discuss the association between Gacha games and gambling^[14], noting that this type of game is highly addictive. The animation of a Gacha pull mimics the experience of a slot machine, providing a similar rush of adrenaline and a moment of pleasure and surprise. Even with limited time, Banner of Character is boosting the game's grinding rate and real money investment.

Most free-to-play games utilize this model to maintain player engagement and spending. We hypothesize that applying this technique to attract users' attention—rather than focusing on monetary transactions—to encourage daily habit performance for collectible content will be highly effective, similar to how players become engrossed in commercialized Gacha games.

2.3 Habit Loop

The Habit Loop is a well-established and effective framework for adopting new habits. It is based on Clear, J.'s Atomic Habits^[1] and other papers that present a

similar or original idea[15][16]. This framework's process is divided into four steps: cue, craving, response, and reward.

1. Cue is an environmental trigger—such as a specific event, location, time, or piece of information—that prompts the craving for a particular routine or response to obtain the reward.
2. Craving is the state that signals the brain to anticipate a reward and drives actions crucial for habit formation. This state is closely related to motivation.
3. Routine or response is the actual habit—an action to achieve the reward. The higher the motivation is, the less friction to act. As the response is repeated, it becomes more automatic, forming a routine triggered whenever the cue appears, and the habit is established.
4. Reward is the ultimate objective of the habit, representing personal satisfaction. It is the primary reason for forming the habit in the first place.

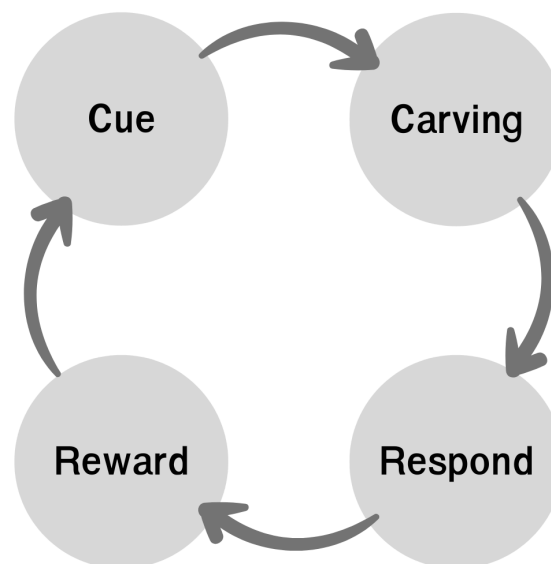


Figure 1: The Habit Loop

For example, if A person finds themselves obese(Cue), and desires to become fitter(Carving), they might start exercising (Respond), to lose their weight(Reward). To establish this as a routine, the person needs to maintain motivation to repeat this behavior regularly. However, motivation may wane due to obstacles and distractions, such as tiredness from exercise, work, distance to the gym, or cravings for favorite foods. Clear, in his book, suggests overcoming these obstacles by making cues obvious, cravings attractive, responses easy to perform, and rewards worthwhile. For instance, the person in our example could schedule their exercise routine for after work every day on their way home and give themselves a "score" each time they successfully reach the gym. To further reinforce the habit, they might enroll in a gym program to ensure they get value from their investment and stay committed.

2.4 Purpose of Study

This paper aims to design and develop an engaging habit-forming application by integrating Gacha game mechanics, gamification strategies, and the Habit Loop framework. It also aims to evaluate the potential effectiveness of this approach.

2.5 Hypotheses

H1: Utilizing Gacha Game Mechanics in Habit Tracker will Boost Engagement, Attention, and Enjoyment Similar to Commercialized Gacha Games.

H2: Gamification has demonstrated its effectiveness. Utilizing this technique will increase Enjoyment, Motivation, Engagement, and improvement in habit adoption.

H3: The Habit Loop Technique Enhances Motivation and Eases Habit Adoption in Habit Tracker Applications.

CHAPTER 3

LITERATURE AND APPLICATION REVIEW

LITERATURE AND APPLICATION REVIEW

3.1 Related Works

In the digital era, habit trackers have evolved with technology and are now commonly found on everyday devices like smartphones. Ibrahim, N. et al. [\[12\]](#) explored the potential of habit trackers to influence habit change, addressing obesity in Malaysia. Their research points out the importance of user interface (UI) design and ease of use, as these factors significantly impact user satisfaction. Their previous research [\[17\]](#) highlighted that persuasive visual design is important in motivating users to become loyal to technology. This research application uses effective techniques such as the cue-routine-reward model, social influence (e.g., posting photos on Instagram), and habit contracts paired with other users.

In the study "Habit Tracker Gamification Software Development in Community-Based Daily Personal Hygiene Using Octalysis Framework," Endrayadi, A. T. et al. [\[18\]](#) found that gamification was highly effective in enhancing user motivation. The target users, aged 15 to 65, enjoyed the application and experienced nearly an 82% improvement in daily personal hygiene. The research also highlights that community involvement significantly impacts members' habits, similar to the findings of Ibrahim, N. et al. [\[12\]](#).

3.2 Commercial Applications

Commercial habit trackers (e.g., Habit Now, Every Day, HabitKit, Proddy, HabitYou) usually include a calendar with additional tools like stopwatches and photo

uploads. These trackers typically use colorful grid charts to provide satisfaction when the grid is complete and a sense of dissatisfaction when there is space in it.

User reviews often praise these applications for their colorful UI and straightforward setup, resulting in high ratings. However, applications with lower ratings (1-3 stars) frequently mention limitations such as insufficient habit-tracking options and a lack of habit categorization. Despite these features, many current habit tracker applications still do not fully utilize the potential of habit-forming techniques like the cue-routine-reward model.

3.3 Gamified Application

One notable application is Habitica, which combines task management with game elements such as tutorials, scores, badges, points, levels, narratives, and customization. It is engaging and easy to use. However, unlike some habit trackers, it lacks a color grid for instant gratification and punishment and does not include a daily streak feature.

Another highly successful gamified application is Duolingo. It is highly interactive and focuses on daily language learning, forming a learning habit. The application utilizes streaks, scoring, and leaderboards to motivate users to engage daily, compete with others, and advance to higher ranks, demonstrating its effectiveness in building a language learning habit [\[19\]](#).

CHAPTER 4
METHODOLOGY

METHODOLOGY

Our research aims to enhance the design of an engaging and satisfying gamified application that helps users control their behavior and develop good habits.

4.1 Data Gathering

We started our research by reviewing related works mentioned in the section above. Then, we realized that we needed more specific details about our target group—digital natives who play games and have digital devices—suitable for our research. To formulate a hypothesis for the prototype application, we surveyed to gather information. The survey included 100 respondents aged 18 to 44 from research labs, online communities, and game communities across various countries.

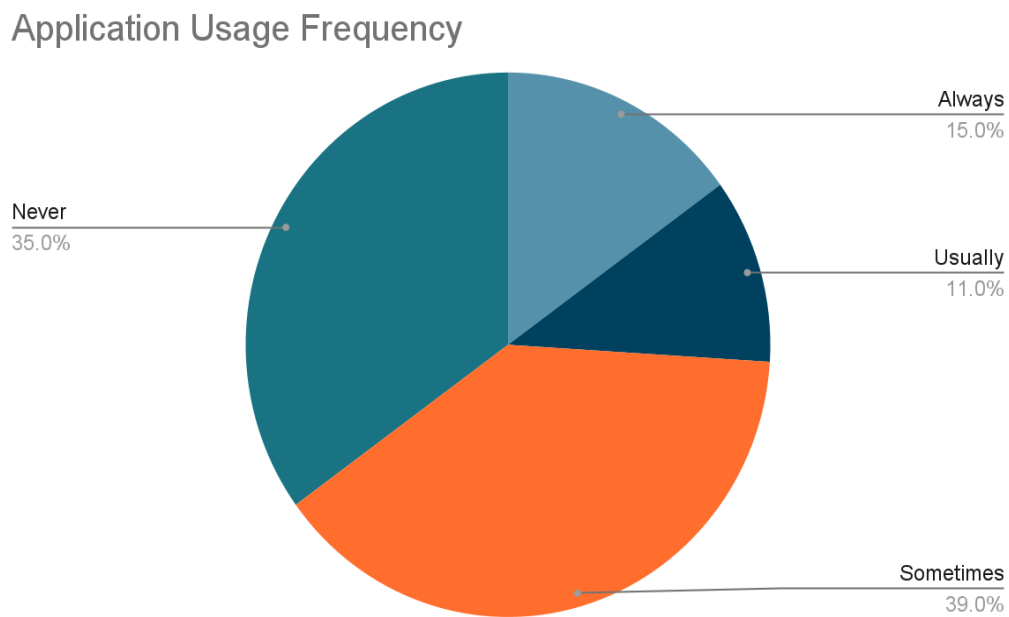


Figure 2: Habit-Tracking Application Usage Frequency

Kind of Habit tracker usage

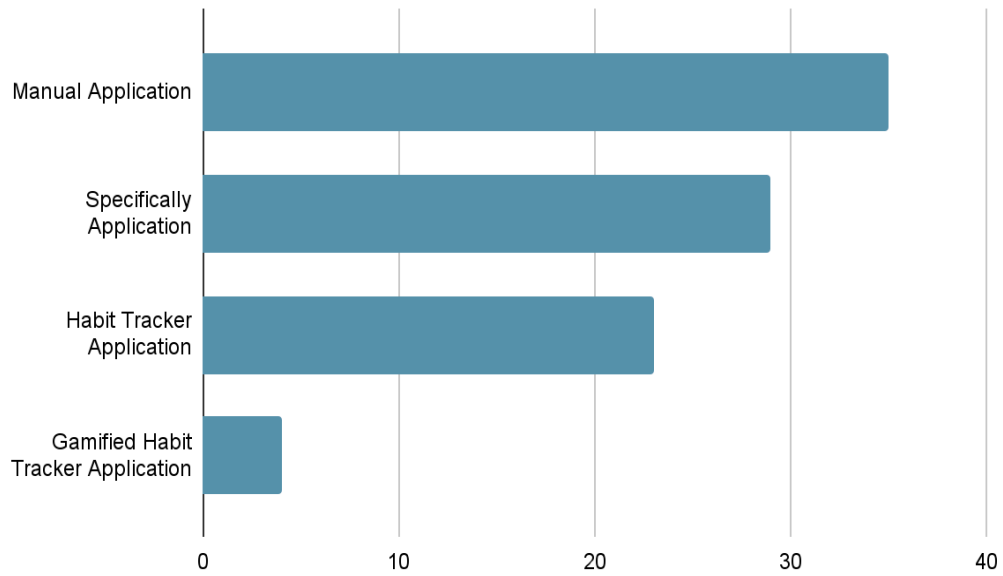


Figure 3: Kind of Habit Tracker usage

4.2 Survey Analysis

In the first part of the survey, 65 respondents had experience with habit-tracking apps. All respondents tracked some form of habit, with the most commonly tracked habits being money usage, sleep, exercise, practice, and eating.

Habit being tracked (from Both Application and Physical)

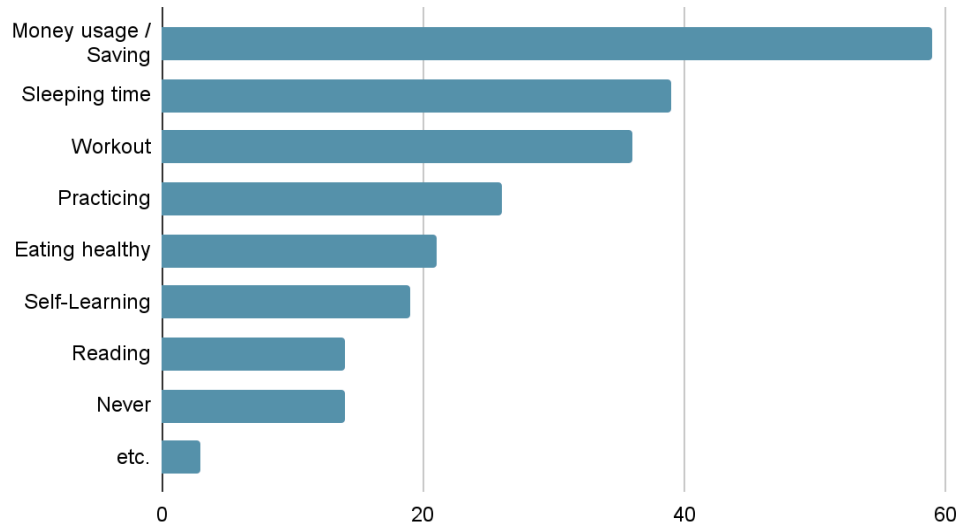


Figure 4: Habit being tracked (from Both Application and Physical)

Based on that, we designed the following functions to support tracking in our application:

Table 1: Habits and Functions

Habit	Function
Money Usage / Saving	Quota, Calculator
Sleeping time	Alarm
Workout, Practicing	Count down Timer, Stopwatch
Eating Healthy	Quota, Calculator
Other Task	Checklists

Users prefer to be honest about their daily habit activities and leave entries blank for unfinished habits.

Preferred Method to deal with Skipped Habits

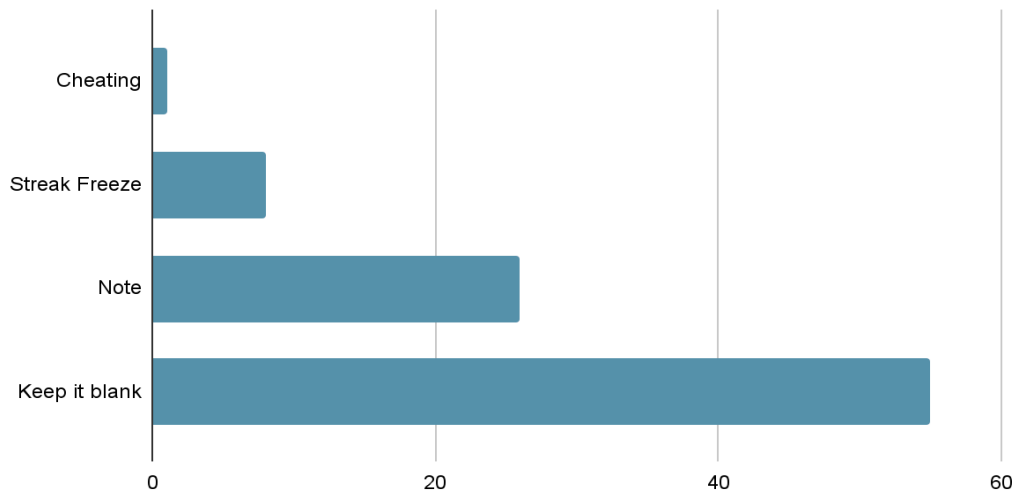


Figure 5: Preferred Method to Deal with Skipped Habit

Regarding the social influencing aspect, most habit-tracker users are not interested in sharing their success. Instead, we incorporated triggers that encourage players to share their accomplishments passively. This approach aligns with the theory that social influence can boost motivation by appealing to the ego.

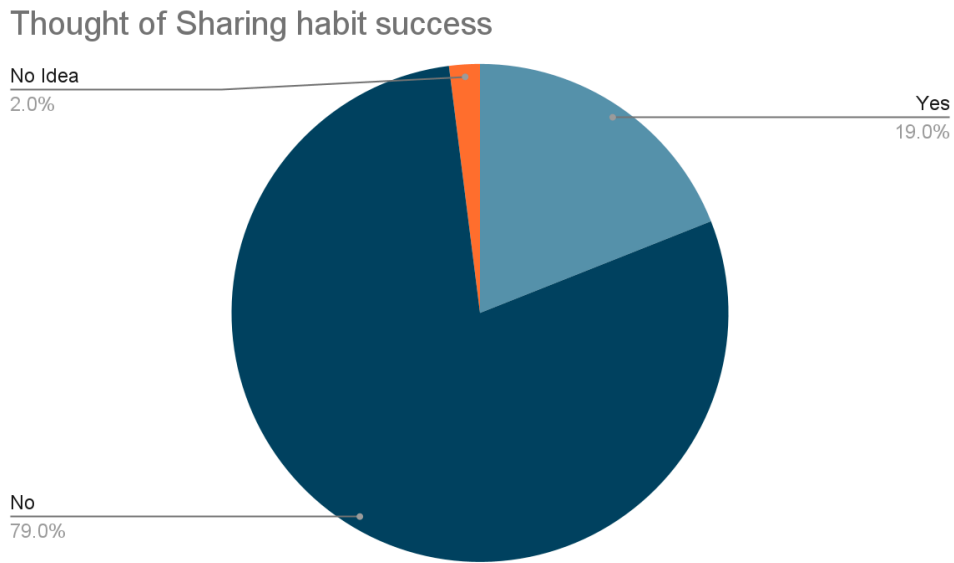


Figure 6: Thought of Sharing Habit Success

In the second part of the survey, we ask about players' behavior regarding daily quest completion. The respondents mostly played games daily and were interested in various genres, depending on their preferences. Only 26 out of 93 gamers (27.96%) who play daily finished all their daily quests as expected. We did not find a pattern between game genre and daily quest completion.

If we intend to reduce resistance in the habit-tracking game, the habit quests and gameplay we develop should not be too challenging. Additionally, as some habits are not performed daily, we support this by allowing users to choose the specific days of the week, month, or interval they perform the habit, making it more convenient for them.

Frequency of Daily Quest completion

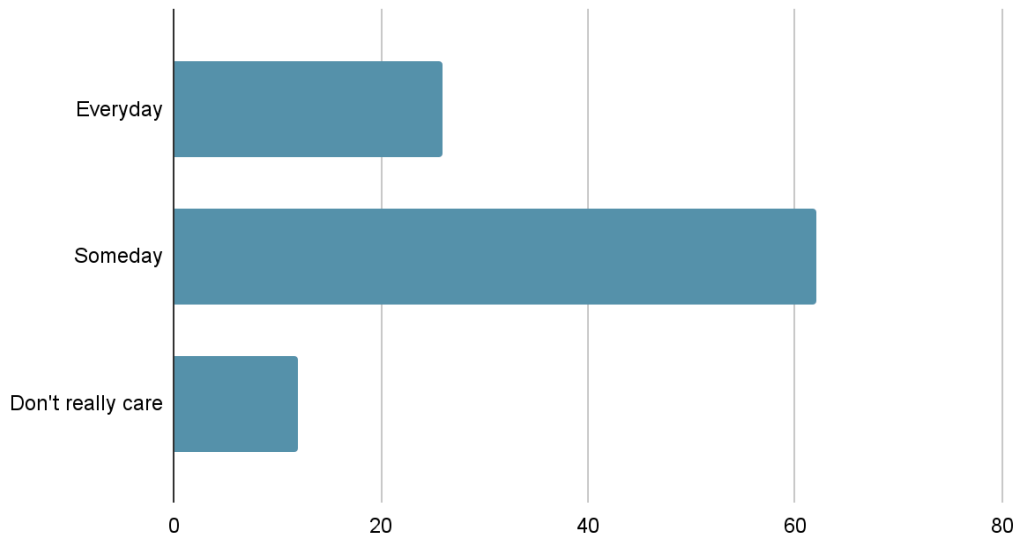


Figure 7: Frequency of Daily Quest completion

Quantity of Daily Quest completion

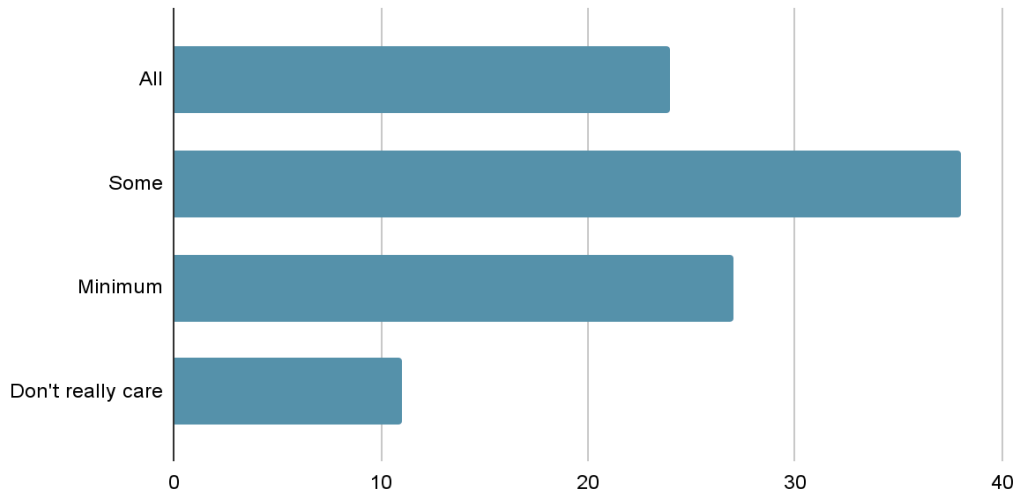


Figure 8: Quantity of Daily Quest completion

The primary motivation for quest completion is the desire for rewards. The highest expectation is for currency, but if it is too easy to acquire, the game may become boring—respondent gamers like Gacha, characters or items, stories, content, and EXP.

Drive of Quest completion

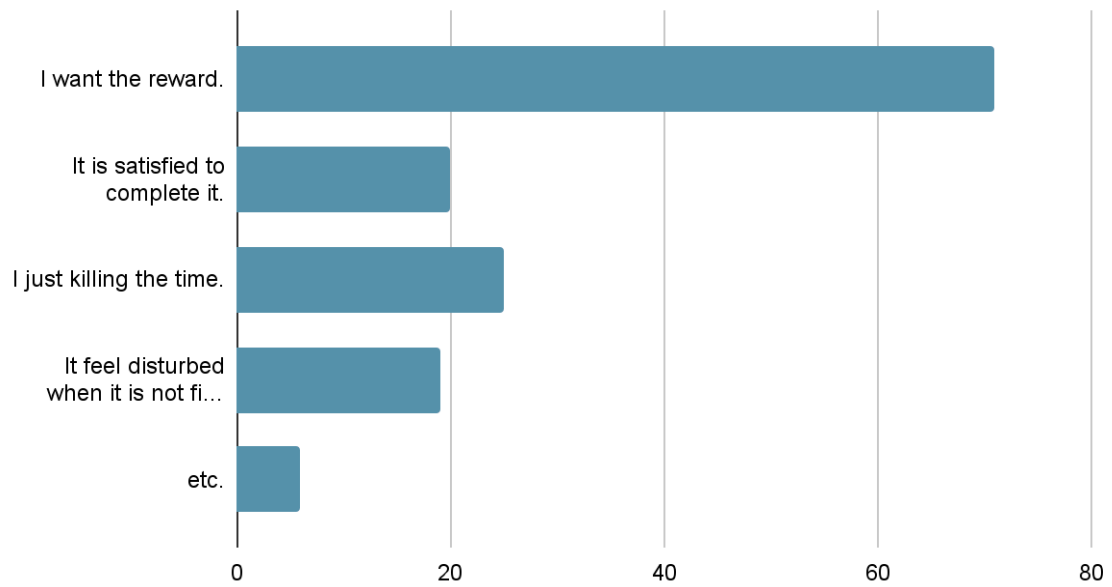


Figure 9: Drive of Quest completion

Expected rewards

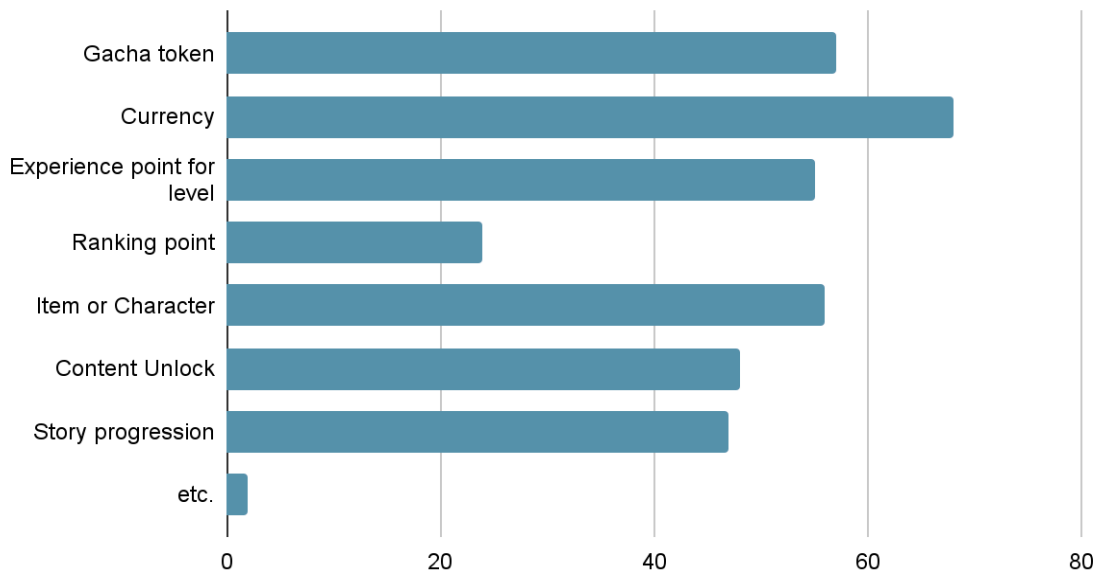


Figure 10: Expected rewards

An extra question is asked to see how many people like the idea without seeing the prototype at first. This further proves that rewards, even in-game rewards, are very important.

If a game reward is paired with a habit in real life, would you do that habit every day?

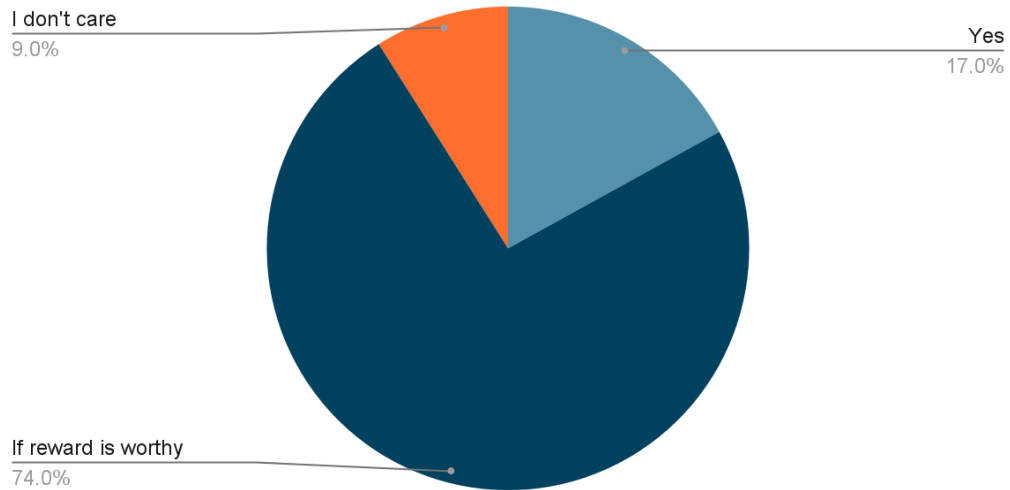


Figure 11: "If a game reward is paired with a habit in real life..."

4.3 Knowledge Extraction

Based on the knowledge gained from literature reviews, application reviews, and survey analysis, we have designed ideas and prototypes to address gaps in existing applications and enhance the user experience as much as possible. Our list includes habit tracker components, gamification elements, and each game element that supports habit formation, according to Clear's theory in his book, *Atomic Habits*.[\[3\]](#)

Table 2: Habit Loop and Gamified Application Design

Habit loop	Gamified Application Design
Cue: Make it Obvious	Organized Habit Display Mobile Notification In-game Notification of completion
Carving: Make it Attractive	Gacha Game Elements <ul style="list-style-type: none"> - Collectible Character and Item - Time Limited Banner - RNG factor (Gambling) Colorful Grid Chart Progression mechanic Gacha Game's experience <ul style="list-style-type: none"> - Currency - Score
Routine: Make it Easy	Simple UI design

	<p>Simple Gameplay that pairs with habit</p> <p>Minimum Option*</p> <p>Gacha Game’s experience</p> <ul style="list-style-type: none"> - Customizable setting
Reward: Make it Satisfying	<p>Colorful Grid Chart</p> <p>Visual Effect</p> <p>Daily Streak</p> <p>Gacha Game’s experience</p> <ul style="list-style-type: none"> - Random Reward - Instant feedback - Interactive - Win/Lose condition

*Minimum Option is a simple task designed to keep the streak going, adapted from “The Two-Minute Rule^[1]”—a simple act that is easy to do and never skipped or done differently. It's better to show up for a habit than to miss it entirely.

4.4 Application Development: ConsisTenant

“Consistent” is the name of our gamified application, a word that combines “Habit Consistent” and “Dorm(Building) Tenant.” These words play on words that emphasize “Habit Building,” which leads to using “Dorm Building” from mobile Gacha games as the core mechanic. This serves not only a playful purpose but also provides a clear visual and similar vertical layout to traditional habit trackers.

The dorm consists of floors, each representing a habit. It displays the day's completion status, streak, and a hint of success. It provides satisfaction through visual effects (which intensify with longer streaks), a colorful grid chart, decorations, and collectible character displays.

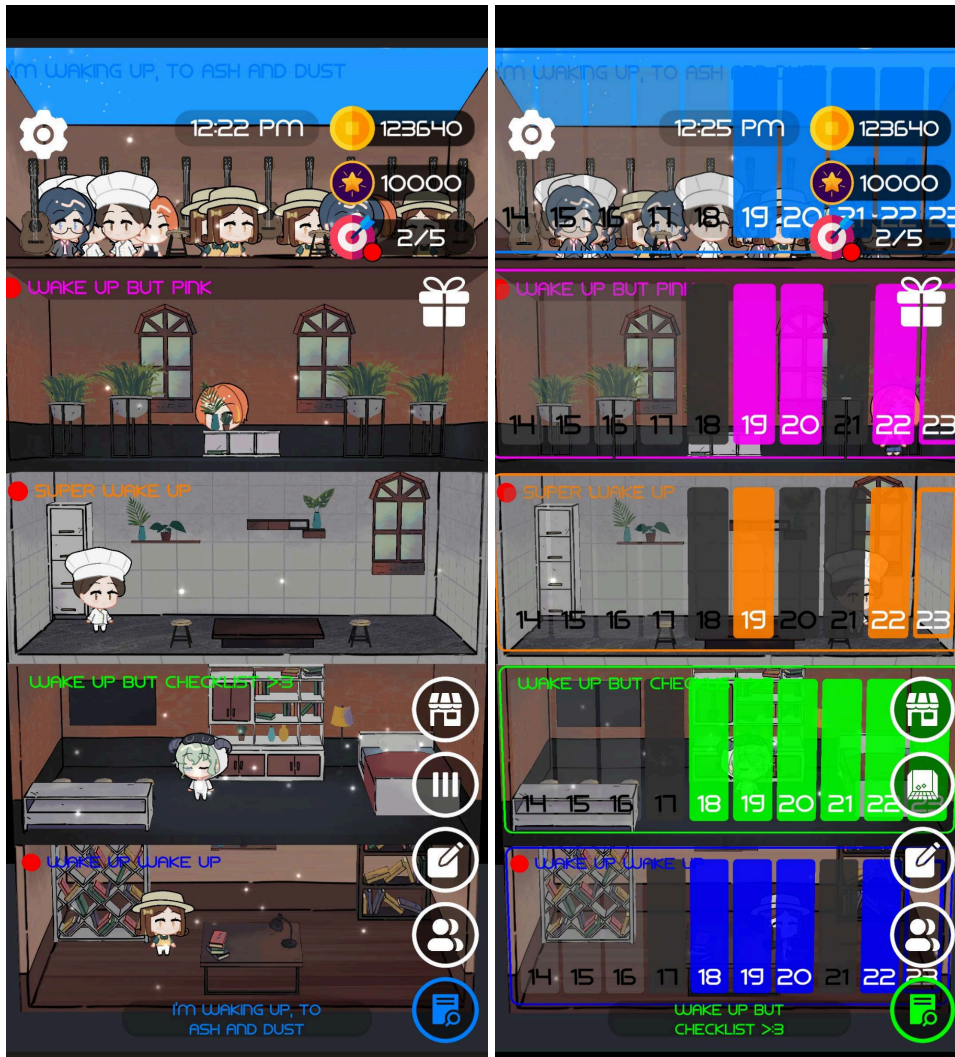


Figure 12: Consistent's Dorm building Mechanic

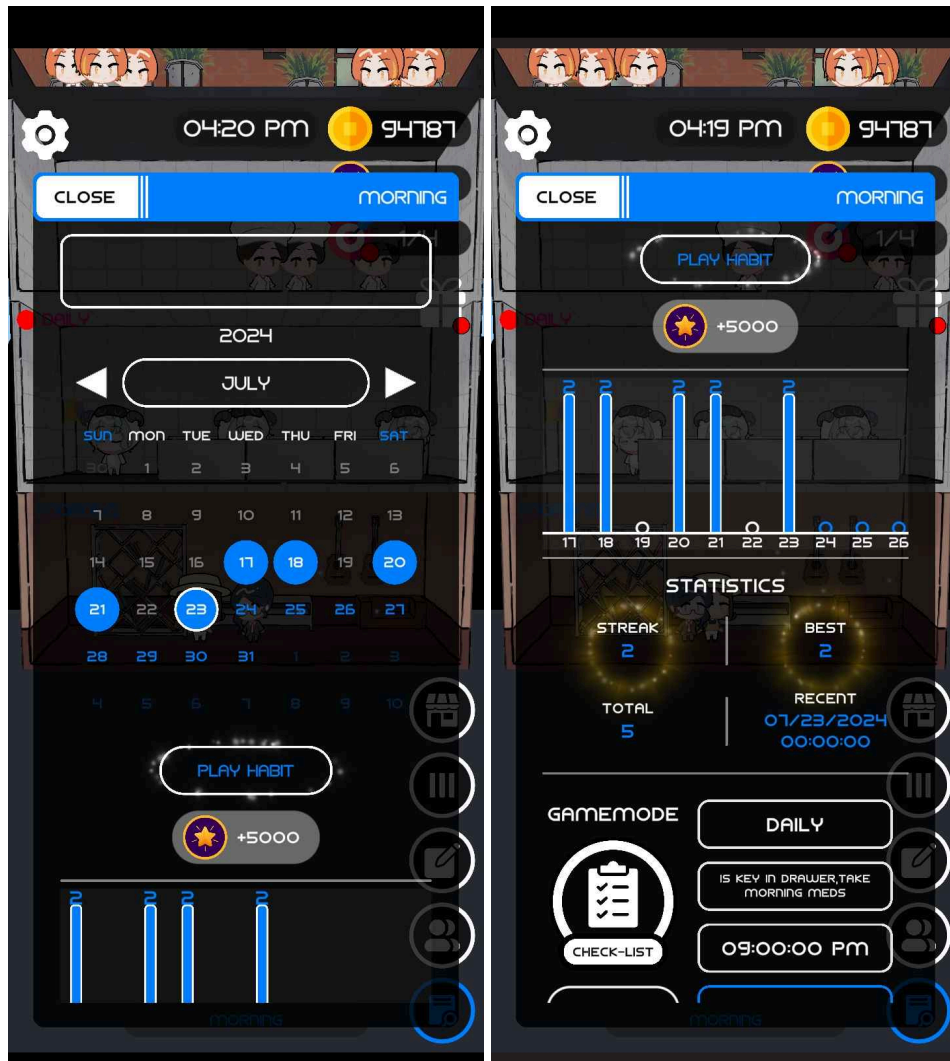


Figure 13: Consistentant's Habit Status Display

The look and progression of dorm decoration also theoretically encourage players to share their screens with others, thereby passively sharing their habit success with their close person, which is associated with Social Influence.

To implement the knowledge from [Table 2](#), each habit that the user adds to their dorm can choose a unique tracker type according to [Table 1](#), providing maximum convenience for tracking habits. Users won't need to install multiple applications to track different types of habits. When setting up a habit, players can

freely choose the schedule for the habit and specify when mobile notifications should appear, ensuring flexibility.

Furthermore, a notification is added with additional detail to indicate how many habits were done today. The icon will be happy if all is done, and vice versa. A sad face icon is shown if a habit is made less than 50%. This gives the feeling and instant feedback for doing good or bad on habits.



Figure 14: Consistentant's habit creation page

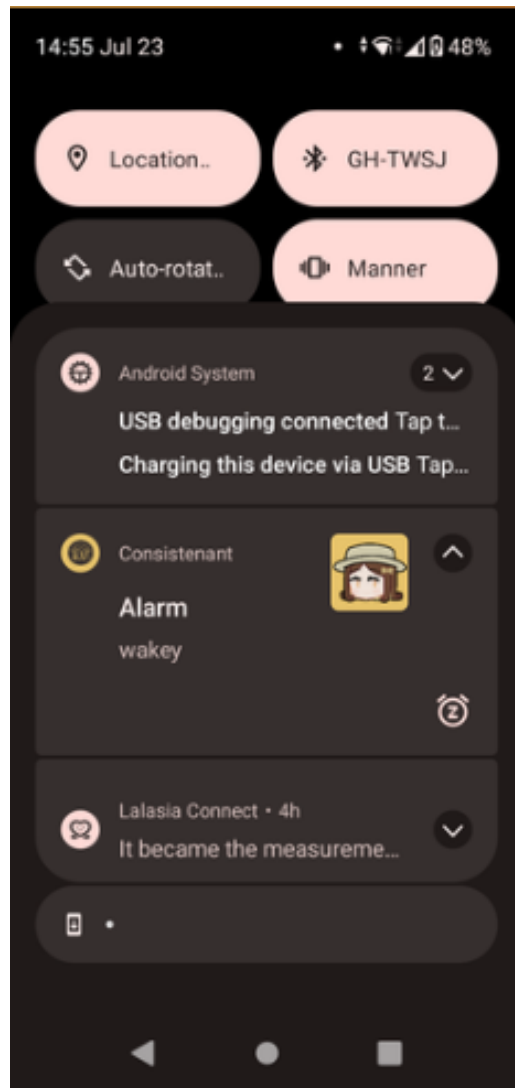


Figure 15: Consistentant's Notification



Figure 16: Consistentant's Notification Icon Variant

Individual gameplay for each tracker type is intended to provide a variety of experiences when using the application—i.e., shaking the phone to stop the alarm, receiving a bonus score when using the timer to surpass the minimum goal of the day, experiencing confetti for checklist completion, and using the quota calculator and progress bar.

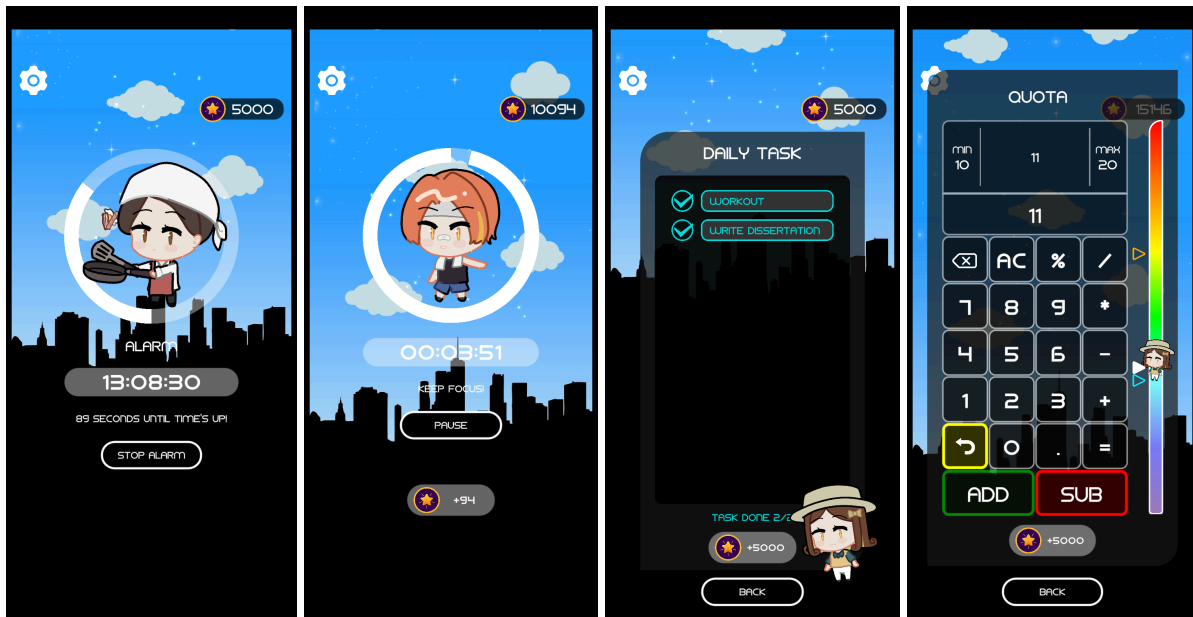


Figure 17: Consistent's tracker type

Each habit completion rewards the player with a score that can be converted into coins to buy items in Gacha.



Figure 18: Consistentant's Gachapon and Shop

This creates a loop of habit—"I see a banner for a new Gachapon that contains a cute character" > "I want them in my collection" > "I engage in activities to earn points" > "I acquire the reward, now I can get what I want." This could be more effective if the banner is time-limited and the reward is also time-limited.

We also adopt another technique used by most companies that develop Lifetime Service Games, i.e., daily rewards. These help users log in every day and lead players to another, more challenging habit—"Your goal might be to run a marathon, but your gateway habit is to put on your running shoes" (Clear, J., 2018)[\[1\]](#).

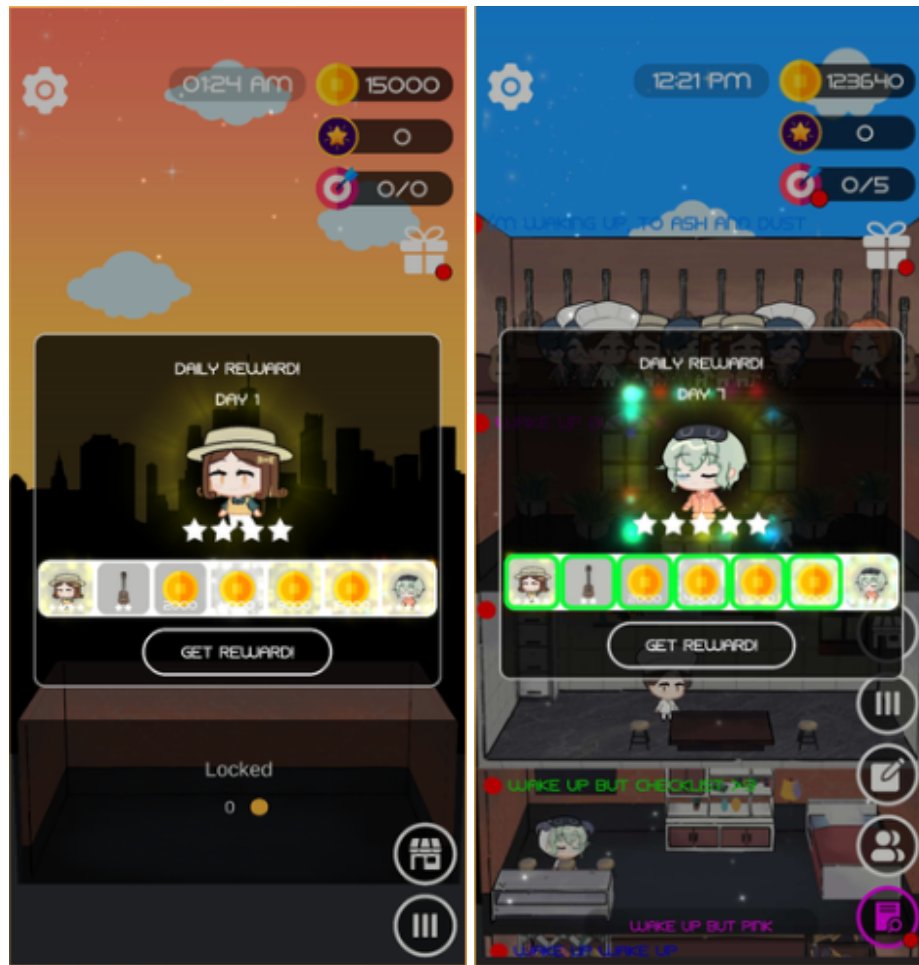


Figure 19: Consistentant's Daily rewards

4.5 Application and Theory Evaluation

We conduct an experiment involving pre- and post-experiment surveys with participants interested in testing the application. 24 participants used the application on their devices for a week. Questions from pre- and post-experiment will be paired and compared to see improvement in each category: Confidence, Motivation, Awareness, and Consistency in tracking/completing the habits. The participants will also rate the application, considering that the application is only a prototype and for research only to see the potential of the idea and implementation of each feature and entire application.



Figure 20: Consistent's Icon



Figure 21: Consistent's user screen

CHAPTER 5

RESULT

RESULT

5.1 User Habit Adoption

In this section, participants will be asked about their thoughts and feelings regarding habit adoption and the importance of habit trackers, focusing on motivation, confidence, awareness, and consistency. These aspects will be rated on a scale from 1 to 5 (1 represents 0% or Strongly Disagree, and 5 represents 100% or Strongly Agree). Overall, users show some improvement in their habit adoption.

The question is as follows:

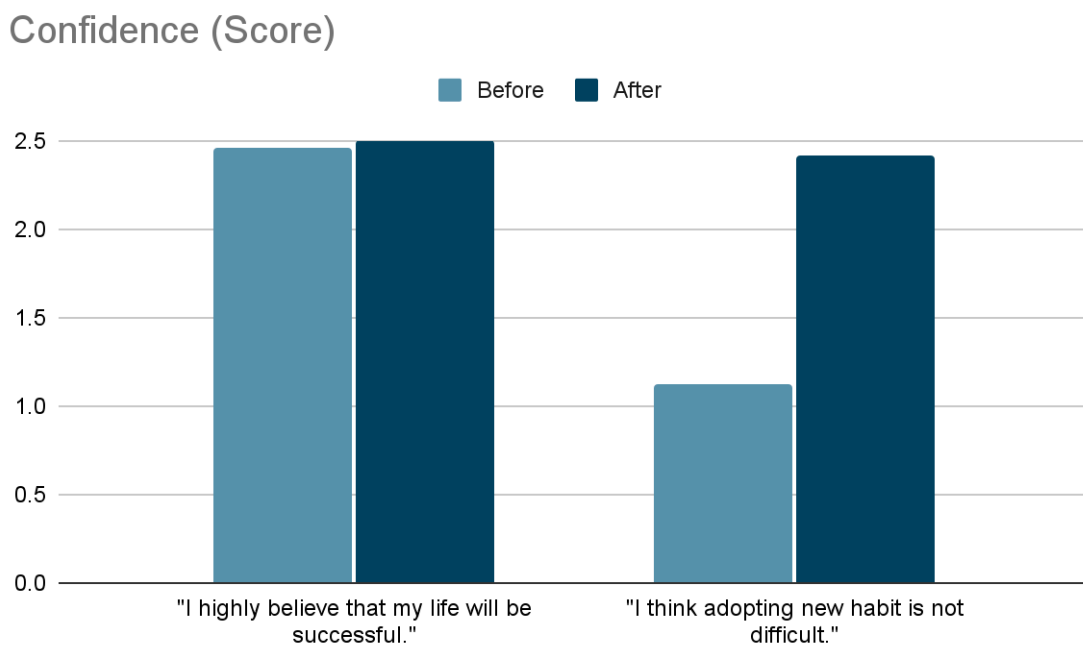


Figure 22: Pre- and Post-Experiment Survey's User Confidence by Score (1-5)

Motivation (Score)

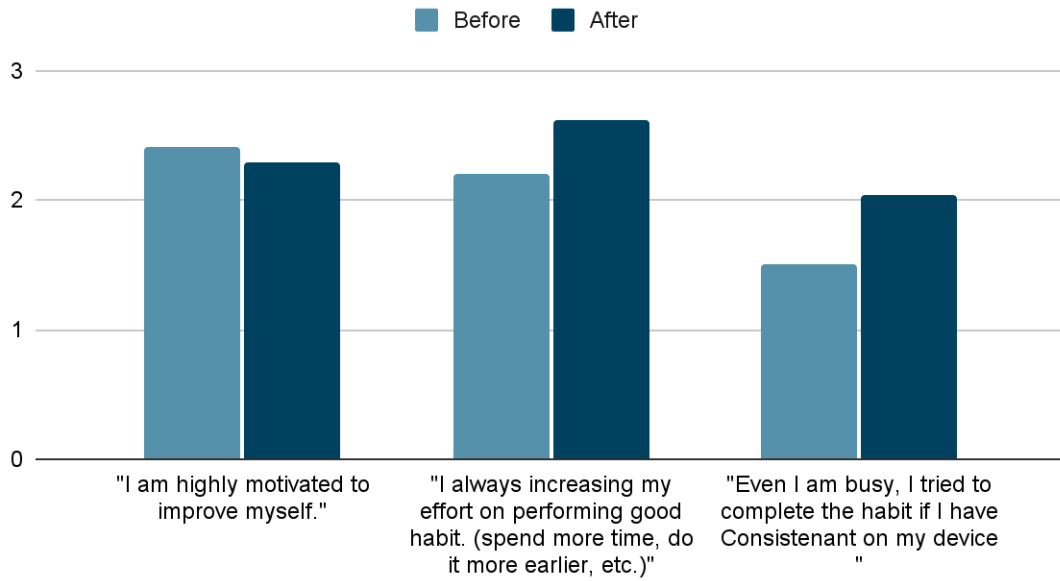


Figure 23: Pre- and Post-Experiment Survey's User Motivation by Score (1-5)

Awareness (Score)



Figure 24: Pre- and Post-Experiment Survey's User Awareness by Score (1-5)

Consistency (Score)

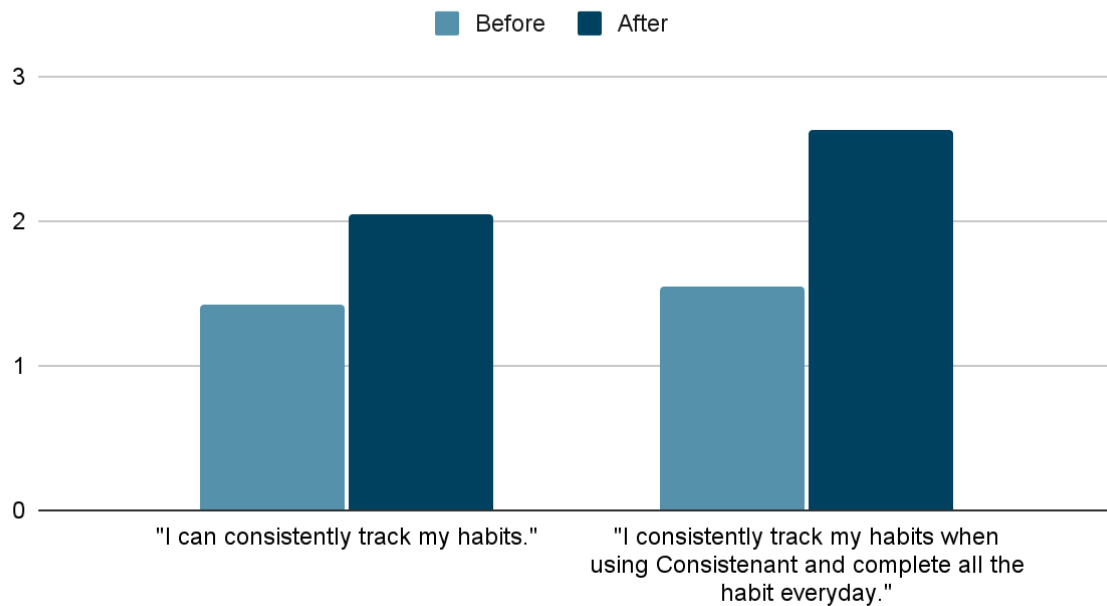


Figure 25: Pre- and Post-Experiment Survey's User Consistency by Score (1-5)

Table 3: User Habit Adoption

Average (Score to %)	Confidence	Motivation	Awareness	Consistency	Total
Before	44.79%	51.04%	75.00%	36.98%	53.26%
After	61.46%	57.99%	64.58%	58.33%	61.14%
Diff	16.67%	6.94%	-10.42%	21.35%	7.88%

P.S. The questions for the pre- and post-experiment are not precisely the same but represent the same meaning. This is because it is easier to communicate and express this meaning with the participant in context.

However, the result may be influenced by external factors such as participation in the experiment, varying levels of personal busyness, and application performance.

Ultimately, the success of habit adoption will depend on the users themselves, and our goal is to provide as much support as possible to facilitate their habit adoption.

5.2 Features Satisfaction

In this section, participants will rate and provide feedback on each game element and feature in Consistent to evaluate which adaptations have the most potential.

Participants generally provided positive feedback on the main display components, particularly the calendar, which was praised for its clear presentation of information.

Survey Question:

- Dorm Building: Does the Dorm Building Gameplay drive your feeling to improve habit tracking for more decoration?
- Colorful Grid Chart: Does the visual of the Grid Chart View satisfy you when it is filled?
- Calendar Grid Chart: Does the visual of the calendar view satisfy you when it is filled?
- Streak: Does the visual of the chart & statistic section satisfy you?

Table 4: User Satisfaction on Main Display Component

Dorm Building	Colorful Grid Chart	Calendar Grid Chart	Streak
68.75%	57.29%	73.96%	60.42%



Figure 26: Colorful Grid Chart



Figure 27: Calendar Grid Chart



Figure 28: Streak

The gameplay features of the tracker types—such as the alarm, timer, checklist, and quota—effectively support habit development.

Survey Question:

- Alarm: Does disabling the alarm in time affect your habit development?
AND In Alarm, does spam tapping/shaking phone gameplay satisfy you

with more than one tap to disable the alarm like other applications? —

AVG: 63.16% AND AVG: 50.0%

- Timer: In GoalTimer, is the mixing of a Countdown timer and Stopwatch giving a bonus score is satisfying for you?
- Check-list: In Checklist, does this feature satisfy you?
- Quota: In Quota, does this feature satisfy you?

Table 5: User Satisfaction on Gameplay Feature

Alarm	Timer	Check-list	Quota
56.58%	67.65%	73.81%	53.13%

The checklist received the highest score of 73.81% despite being the simplest feature among all tracker types. This and the participants' comments indicate that more straightforward features tend to be more favorably received by users. Feedback also indicated that participants would have rated it higher if the alarm feature included sound notifications even when the mobile phone and application were not in focus.

Overall, the currency-related features received positive feedback. It highlighted that the Gacha and daily reward features play a crucial role in encouraging daily engagement, as predicted. Participants noted that the shop lacked content, and due to the excessive generation of coins and an abundance of rewards, coins almost became irrelevant. Most participants acquired almost all the items in just a week.

Survey Question:

- Shop: Does the Shop system affect your willing to keep your habit tracked?
- Gacha: Does the Gacha system affect your willing to keep your habit tracked? AND Does the Gacha Rolling give motivate or addictive toward habit adoption? — AVG: 64.58% AND AVG: 56.25%
- Daily Rewards: Does the Daily Reward system affect your willingness to keep checking your habits every day?
- Currency Generation: Do you think overall Money Generation, rewards, and currency system is well balanced?

Table 6: User Satisfaction on Currency and Items Feature

Shop	Gacha	Daily Rewards	Currency Generation
46.88%	60.42%	70.83%	60.42%

The notification feature received a rating of 60.53%(The survey Question is “Does the Notification system trigger you to check the habit tracker?”), with feedback indicating that its display needs more consistency. Additionally, users expressed interest in a "Dorm Visiting" feature(The survey Question is “Do you think adding a "Dorm Visiting Feature" will help motivate you to engage more with this habit tracker?” scored 78.26%), similar to those in other Gacha games, where players can view other users' dorms. This is a possible way to enhance the social aspect of the application in future works.

5.3 Overall Satisfaction

In this section, participants rate and give an overall opinion after using Consistent according to the HMSAM measurement framework. The result of this experiment is positive and gives 16.67% more satisfaction compared to their previously used habit tracker or gamified application that boosts motivation in habit adoption. Participants reported that 62.50% agreed that Consistent has the potential to help them become better at habit.

Survey Question:

- Enjoy: "Overall satisfaction with Consistent's Idea."
- Usefulness: "I believe that Consistent has the potential to help me become a better person."
- Ease of Use: "I think that Consistent potentially helps adaptation toward the habit faster & easier ."
- Intention to Use: "I am motivated to use a Consistent regularly if the application is fully functional."
- Habit: "Does Consistent feeling attractive to use?"
- Social Influence: "Do you feel more engaged in sharing habit success with your friends and family when paired with Dorm building gameplay?"

Table 7: Users' Overall Satisfaction

Enjoy	Usefulness	Ease of Use	Intention to Use	Habit	Social Influence	Average
76.04%	62.50%	68.75%	70.83%	71.88%	63.54%	70.31%

However, the feedback indicates an average likelihood of 51.04% that participants will stop using the application once their habit is adopted. This highlights the need for future work to focus more on strategies to enhance user consistency in using the tracker to develop additional good habits or to encourage those users' self-awareness to keep finding habits that would improve themselves.

In the open-ended feedback section, the comments have pointed to a few similar concepts that are categorized into 4 ideas:

Idea 1: This approach works nicely for those familiar with the Gacha concept and does not impress those not playing the Gacha Game and more for those who do not regularly play the game or have tracking habits.

Idea 2: All those familiar with the Gacha game will already mention that continually updating content and the Gacha banner will likely gain more success in our idea, which we have already expected but was currently limited by the research context. Also, almost all experienced participants suggested more Gacha games and Gamification elements that potentially upgrade the gameplay, such as weekly challenges, community challenges, tooltips, and tutorials.

Idea 3: Most participants find that the number of rewards given per hour and daily habits completion is too sufficient; it was shown that much due to the limited experiment time and attempt for all users able to explore all the content in that

limited time. This suggests that adjusting to a currency system that would balance between stalling in the game and too much difficulty is the most necessary aspect in order to keep all users stuck to our application. Adding more playable content rewards and increasing the prices of the Gacha may also help. For future studies, it is also suggested that game marketing be researched.

Idea 4: For people unfamiliar with the game or Gacha mechanics, it suggests defining clear goals for them regarding what they should expect from this application. Like Duolingo, the application's goal is clearly to learn a new language. If future works would like to extend the target group to those, this aspect of the game is also valuable.

Participants were also asked if they had seen the implementation of this idea anywhere. So far, there is no implementation concept like this anywhere. Still, it has some application that partly implements the Gamification or Habit technique with not much gaming aspect like ours yet.

CHAPTER 6

CONCLUSION

CONCLUSION

We researched a habit tracker using a Gacha game approach, a highly engaging feature known for providing a dopamine boost through gamification techniques. This approach combines game elements with habit formation to enhance engagement, motivation, and effectiveness. Our research involved gathering data on digital natives who use habit trackers and/or play games, focusing on their preferred environments for habit adaptation.

We developed a gamified application based on the gathered data and principles from "Atomic Habits." We then experimented with volunteers from the same group from which the data was gathered, assessing their habit adoption and satisfaction after using the application for a week. The results showed a slight 7.88% improvement in habit adoption, with participants providing an overall positive feedback rating of 70.31%.

The findings suggest integrating Gacha game mechanics, gamification, and habit loop into habit trackers can significantly enhance user engagement and motivation. This approach could inform the development of future habit-forming applications and contribute to more effective behavior change strategies, especially for the target group already playing the Gacha game. However, it can keep them consistent in adopting new habits; future studies may require or can improve by adding more content to the game.

Overall, the idea has significant potential if developed with the proposed improvements. While habit tracking and building may not appeal to everyone,

enhancing the application's allure—through elements such as gamification and balanced currency systems—can help attract more users to adopt good habits.

It is important to note that this approach may not suit individuals unfamiliar with or inclined toward gaming. Therefore, the application should primarily target gamers who are more likely to engage with and benefit from these game-like features.

If implemented effectively, this approach could revolutionize habit formation tools by combining motivational game elements with practical habit tracking, potentially offering a more engaging and effective solution for users aiming to build and maintain good habits.

CHAPTER 7

FUTURE WORKS

FUTURE WORKS

Because of the limited time and knowledge to develop the application, we could not express all the ideas without technical issues.

From the survey comments and result analysis, several areas for improvement have been identified to enhance user experience in habit adoption:

- **First-Time Use:** Users find the initial experience overwhelming and would benefit from an introductory tutorial.
- **Game Elements:** Players are interested in incorporating additional game elements such as clear goals, achievements, rewards, weekly challenges, a Leaderboard, and a progress bar.
- **Customization:** Expanding customization options would increase user satisfaction and enjoyment.
- **Habit Completion:** While users value honesty in tracking their habits, real-life conditions often prevent daily completion. Incorporating some flexibility is necessary to sustain engagement without causing demotivation.
- **Detailed Statistics:** Serious habit adopters seek detailed statistics, including performance tracking, comparisons, and time spent on habits.
- **Cues and Notifications:** Cues need to be more noticeable and consistent. Users expect notifications to work effectively as intended.
- **Simplicity:** Users generally prefer simpler features that are easy to use and understand.

- **Gacha Approach:** Implementing a Gacha game approach could be highly effective if there is a robust array of content and collectible items. Regular updates with new and limited-time items will help keep user motivation high.
- **Currency Balance:** Too many rewards can lead to currency inflation and user boredom. Balancing the currency system is crucial. Introducing additional ways to spend currency, such as dorm upgrades or daily charges, can help prevent stagnation.
- **Social Aspects:** Users are keen on more social features. Adding options to share progress on social media or a dorm visiting feature would enhance user engagement.
- **User Retention Strategies:** Explore strategies to increase long-term engagement, such as implementing personalized reminders, periodic habit challenges, or milestone rewards.
- **Habit Verification and Fair Reward Distribution:** We need to establish methods for users to provide proof of their habit completion and ensure fair reward distribution, especially if the application incorporates social features.

ACKNOWLEDGEMENT

This research faced time constraints, leading to development challenges that resulted in various bugs and performance issues within the application. Additionally, the limited number of participants due to specific testing conditions may affect the generalizability of the results. A larger sample size might yield different outcomes.

I would like to express my gratitude to Professor Tanaka for providing opportunities to study abroad, do this research, and help through the guidelines, as well as for all lab members, both senior and same-level, for giving feedback when the question is raised or asked.

Thank you to the developer and artist team who helped me during the development period, providing me with assistance and suggestions for development and fixing technical issues.

Thank you to all participants and survey respondents who provided resourceful information and joined the experiment; without them, I would never have completed this paper.

Lastly, I would also like to thank my friends, both in Research facilities and back home, my family, and Miss Kobayashi, who gave me suggestions and support when I needed it, both mentally and scholarly.

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APPENDIX

A-3 Online survey

1 - User Experience on Habit Trackers and Games' Daily Quests

This survey collects insights regarding Habit tracking and games' daily behavior

Section 1: Informed Consent

1. Informed Consent (*All personal and/or sensitive information entered in this Questionnaire will be utilized exclusively for research purposes and handled with the utmost confidentiality. May we kindly request your consent to use this information to conduct our research? Your cooperation is highly appreciated.*)
 - a. Yes
 - b. No

Section 2: Respondent's Profile (*The information collected in this section will be used for statistical analysis in our research study.*)

1. Name:
2. Gender:
3. Country:
4. Occupation:
5. Age:

Section 3: Habit

1. Do you ever track any habits?
 - a. Never

- b. Sleeping time
 - c. Workout
 - d. Eating healthy
 - e. Reading
 - f. Self-Learning
 - g. Money usage / Saving
 - h. Practicing (Sport, Music, Drawing, etc.)
 - i. Other
2. Have you been using any applications that help you track those habits recently?
- a. Always
 - b. Usually
 - c. Sometimes
 - d. Never
3. What kind of habit tracker are you using?
- a. Physical Habit Tracker (e.g., Diary, Gridchart, etc.)
 - b. Manual Digital Habit Tracker (e.g., Excel, Google Sheet, etc.)
 - c. Habit Tracker Application (e.g., Everyday, Habit Now, etc.)
 - d. Gamified Habit Tracker Application (e.g., Habitica, etc.)
 - e. The application that specifically tracks certain habits (e.g., Home Workout, Duolingo, Wallet, etc.)
4. If you have skipped a habit a day, could be from forgetting or an emergency.
You will...

- a. Fill the tracker with "completed" to make the streak look nice.
(Cheating)
 - b. Fill the tracker normally with the mind that you can only do this once a week. (Streak Freeze)
 - c. Paint it with a different color or put a note on it for skipped.
 - d. Keep it blank.
5. Do you like sharing your habit success?
- a. Yes
 - b. No
 - c. Other...
6. How do you share your success of habit?
- a. I post the image on my social media feeds.
 - b. I write a diary on my social media feed.
 - c. I shared my social media feed directly from the application I use.
 - d. I tell my friend about it.
 - e. I record the video/Vlog/Short.
 - f. Other...
7. What sounds best for you?
- a. A Habit tracker that serves one specific habit with in-depth knowledge and guidelines.
 - b. A Habit tracker that tracks multiple habits in general with guidelines to follow.
 - c. A Habit tracker that allows you to track many habits at once and is customizable.

Section 4: Games' daily quest *(If you are playing a game, this section will ask you about your daily quest experience, whether it is a mobile, console, or computer game.)*

1. How frequently do you play mobile, console, and computer games?
 - a. Never
 - b. Rarely
 - c. Some days in a week
 - d. Every day, less than an hour
 - e. Everyday, 1-3 hours
 - f. Everyday, 3-5 hours
 - g. Every day, more than 5 hours

2. What characteristic of the game do you like to play?
 - a. Competitive
 - b. Casual
 - c. Educational
 - d. Roleplaying
 - e. Storytelling
 - f. A lot of cute or cool character
 - g. Gambling/Gacha
 - h. Other...

3. Do you finish the game's Daily quest every day?
 - a. Every day, I never miss.
 - b. Someday, when I can.
 - c. I don't really care about the daily quest.

4. How do you finish the Daily quest?
 - a. All of them each day
 - b. Some of them
 - c. Minimum just to keep the streak going
 - d. I don't care about the daily quest, as said above.

5. Why do you do the Daily Quest? (**if you say you do not care about the daily quest, please skip this question*)
 - a. I want the reward.
 - b. It is satisfying to complete it.
 - c. I just killing the time.
 - d. It feels disturbing when it is not finished.
 - e. Other...

6. What reward do you want from completing a mission or a quest?
 - a. Gacha token
 - b. Currency
 - c. Experience point for level
 - d. Ranking point
 - e. Item or Character
 - f. Content Unlock
 - g. Story progression
 - h. Other...

7. If a game reward is paired with a real-life habit, would you make that habit every day?
 - a. Yes, no matter how much the reward is.

- b. Yes, if the reward is worth it.
 - c. I don't really care much about the reward.
- 8. Would you like to experiment with a mobile Gacha game that is paired with real-life habits? (Currently, the gameful experience habit tracker is under development. We would like to invite you as our participant using one example, a gamified habit tracker and our own habit-forming game.)
 - a. Yes, contact me
 - b. Maybe I will leave a contact
 - c. No
- 9. Contact(*Email, Discord, Facebook, Line, Twitter are preferred*):

2 - Consistent Participant: Pre-Experiment Survey

This survey collects insights before beginning your experiment on Consistent regarding feelings and thoughts of habit-trackers

Section 1: Information

1. Informed Consent and willingness to participate
 - a. Yes
 - b. No
2. Name (**This is required for post-experiment survey sending.*)
3. Contact (**This is required for post-experiment survey sending.*)
4. What day will you taking this experiment? (**Only anyone who start after 17th will see this question.*)
 - a. July, 17th-24th
 - b. July, 18th-25th
 - c. July, 19th-26th
 - d. July, 20th-27th
 - e. July, 21st-28th
5. Copyright Information (*The contents of this research application are copyrighted and belong exclusively to the author. By participating in this study, you agree not to use, distribute, or share any part of this application outside of this experiment and the associated research. Do you acknowledge and agree to these terms?*)
 - a. Yes
 - b. No

Section 2: Forming Habits (*This section will gather your background information toward habit forming—Feeling, Motivation, Consistency*)

1. "I highly believe that my life is now successful."
 - a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
2. "I highly believe that my life will be successful."
 - a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
3. "I am highly motivated to improve myself."
 - a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
4. "I am aware of the habits I need to change to improve myself."
 - a. Strongly Disagree
 - b. Disagree
 - c. Neutral

- d. Agree
 - e. Strongly Agree
5. Habits that I want to adopt to improve myself. (*Could write down more than 1 habit*):
6. "I can consistently track my habits."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
7. "I believe that tracking my habits will help me become a better person."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
8. How many habits are you currently tracking, if any? :
9. "I always increase my effort to develop good habits. (spend more time, do it more earlier, etc.)"
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree

10. "I think adopting a new habit is hard."

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

11. "I mostly forgot to perform the planned habits."

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

12. "I am usually too busy to adopt new habits."

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

13. What are the other challenge you are facing in.

Section 3: Habit Tracker *(This section will gather your background information and thoughts on the previous habit tracker)*

1. Have you used a habit-tracking app or tool before? If yes, which one(s)?

*(*Say no if never used) :*

2. How satisfied are you with your current habit-tracking methods? (**Say no if never used*)
- a. Very Low
 - b. Low
 - c. Neutral
 - d. High
 - e. Very High
3. "I think that habit-tracking tool(s) is necessary to make adaptation toward the habit easier."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
4. "I am motivated to use a habit-tracking tool(s) regularly."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
5. "I think habit-tracking is attractive in general."
- a. Strongly Disagree
 - b. Disagree

- c. Neutral
 - d. Agree
 - e. Strongly Agree
6. How long do you take to adopt any habit using a habit tracker? (**Say no if never used*)
7. "I will likely to stop tracking Habit after I feel like I already adopted it."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
8. What features do you expect from a habit-tracking tool? :

3 - Consistent Participant: Post-Experiment Survey

This survey collects insights after using Consistent regarding feelings and thoughts of habit-trackers

Section 1: Personal information

1. Name:

Section 2: User Personal Improvement (*This will ask similar questions as the Pre-Experiment Survey to assess user change in behavior and thought, focusing on reflecting of the idea of design (Using a game as a motivation tool)*)

1. "I highly believe that my life will be successful after trying to adopt good habits for a week."
 - a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
2. "I am highly motivated to improve myself when using Consistent."
 - a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
3. "I have a clearer awareness of the habits I need to change to improve myself when using Consistent."

- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
4. "I consistently track my habits when using Consistent and complete all the habit everyday."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
5. If you haven't completed the habit every day, please tell us why. :
6. "I believe that Consistent has potential to help me become a better person."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
7. "I increase my effort in performing good habits when using Consistent. (spend more time, do it more earlier, etc.)"
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral

- d. Agree
 - e. Strongly Agree
8. "I think adopting new habits is easier when using Consistent."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
9. "I remember and am less likely to forget performing the planned habits if I have it set on Consistent."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
10. "Even when I am busy, I try to complete the habit if I have Consistent on my device."
- a. Strongly Disagree
 - b. Disagree
 - c. Neutral
 - d. Agree
 - e. Strongly Agree
11. "I feel like Consistent help solving challenge I faced when trying to adopt new habits."

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

Section 3: Habit Forming Technique & Gamified Component Feedback (*This evaluates the user's satisfaction with each game element.*)

1. Does the Dorm Building Gameplay drive your feeling to improve habit tracking for more decoration? (e.g., I need to complete a habit to get coins in order to roll Gacha. Also, do you know if the habit is completed, the room will slightly emit glowing particles more and more?) (1-5 Score)



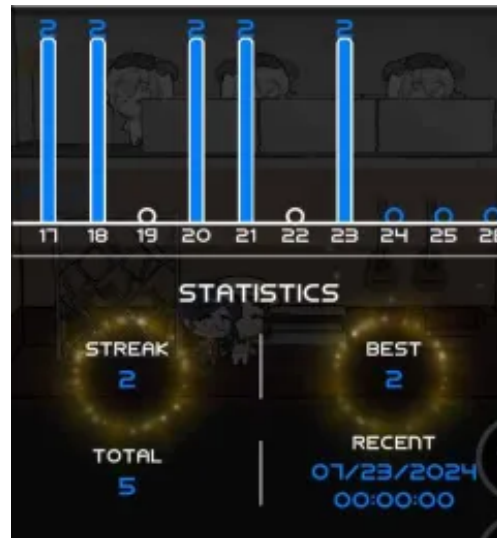
2. Does the visual of the Grid Chart View satisfy you when it is filled? (e.g., I need to complete a habit to get coins in order to roll gacha.) (1-5 Score)



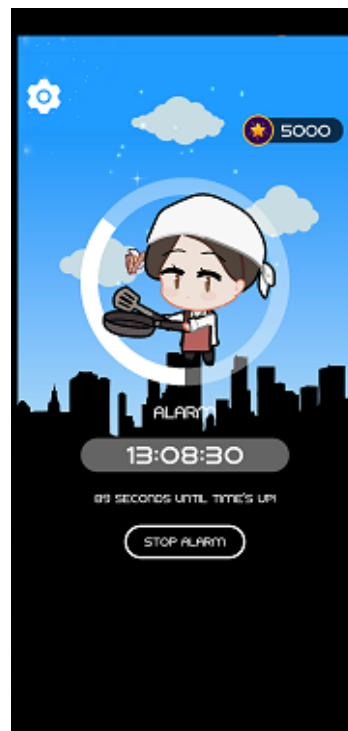
3. Does the visual of the calendar view satisfy you when it is filled? (e.g., I need to complete habit to get coin in order to roll gacha.) (1-5 Score)



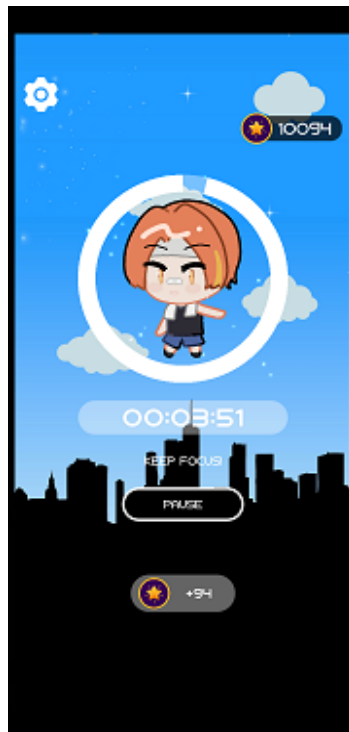
4. Does the visual of the chart & statistic section satisfy you? (e.g., *I need to complete a habit to get coins in order to roll gacha.*) (1-5 Score)



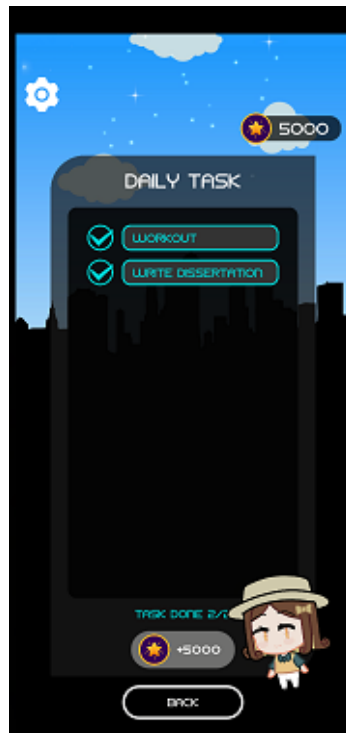
5. In Alarm, does the disabling of the alarm in time affect your habit development? (e.g., *I need to complete a habit to get coins in order to roll gacha.*) (1-5 Score)



6. In Alarm, does spam tapping/shaking phone gameplay satisfy you with more than one tap to disable the alarm like other applications? (**Leave it blank if you never this feature*) (1-5 Score)
7. Comment for Alarm Gamemode:
8. In GoalTimer, is the mixing of Countdown timer and Stopwatch giving bonus score is satisfying for you? (**Leave it blank if you never this feature*) (1-5 Score)



9. Comment for GoalTimer Gamemode
10. In Checklist, does this feature satisfy you? (**Leave it blank if you never this feature*) (1-5 Score)



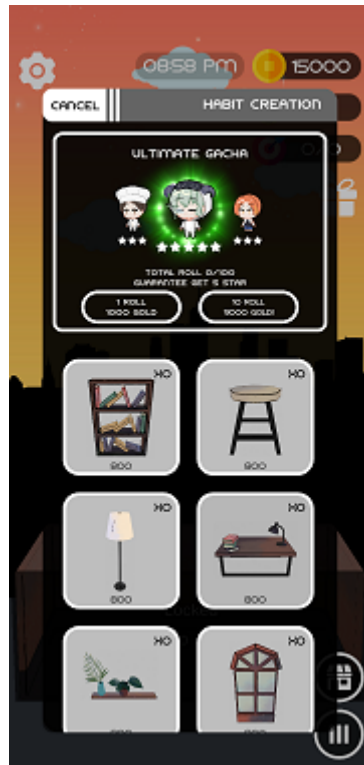
11. Comment for Checklist Gamemode:

12. In Quota, does this feature satisfy you?



13. Comment for Quota Gamemode:

14. Does the Shop system affect your willingness to keep your habit tracked? (e.g., *I need to complete the habit to get coins to buy more items. /I can get specific items via the shop*) (1-5 Score)

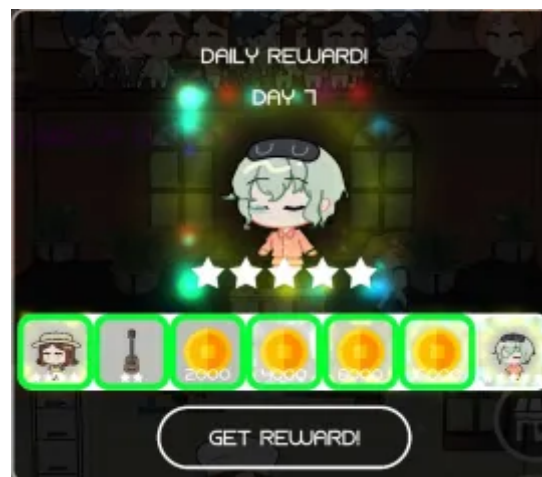


15. Does the Gacha system affect your willing to keep your habit tracked? (e.g., *I need to complete a habit to get coins in order to roll gacha. /If the banner is changed, I need to spend money to collect all collectible characters from the banner, so I must never lose track of my habits.*) (1-5 Score)



16. Does the Gacha Rolling give motivate or addictive toward habit adoption?
(e.g., excited, addicted, or surprised) (1-5 Score)

17. Does the Daily Reward system affect your willingness to keep checking your habit every day? (1-5 Score)

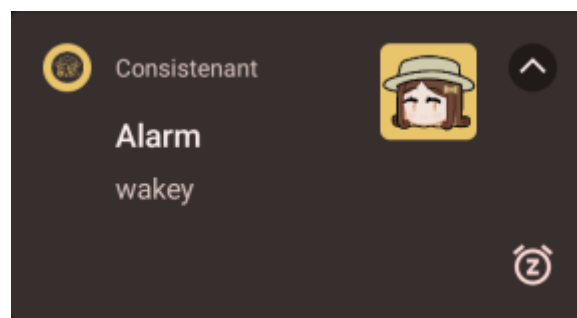


18. Do you think overall Money Generate, rewards, and currency system is well balanced? (1-5 Score)



19. From Money Generate, rewards, and currency system questions, please explain why. (*e.g., rewards are too much / rewards insufficient / etc.*)

20. Does the Notification system trigger you to check the habit tracker? (1-5 Score)



21. Do you think adding a "Dorm Visiting Feature" will help motivate you to engage more with this habit tracker? (*i.e., see other person's habit house, leave encouraging messages, or interact with anything inside other person's dorm.*)

(1-5 Score)

Section 4: Overall User Feedback (*This evaluates the user's satisfaction with the overall idea of the application.*)

1. Overall satisfaction on Consistent's Idea (**Using Game elements and rewards as tools to increase motivation in adopting good habits*) (1-5 Score)
2. Is Consistent easy to use? (1-5 Score)
3. Does Consistent feel attractive to use? (1-5 Score)
4. "I think that Consistent potentially helps adaptation toward the habit faster & easier ." (1-5 Score)

5. "I am motivated to use a Consistent regularly if the application is fully functional." (1-5 Score)
6. "I will likely stop using Consistent after I feel like I already adopted it, even if the application is fully functional." (1-5 Score)
7. Do you think the Game Elements and Feeling(Vibe) in the game are sufficient?
(1-5 Score)
8. Do you feel more engaged in sharing habit success with your friends and family when it is paired with Dorm building gameplay? (*i.e., showing the screen of beautiful dorm screen to your friends and being proud of your change in habit of yours*) (1-5 Score)
9. Have you seen this implementation of the idea anywhere else? If yes, please tell us where. (1-5 Score)
10. Please leave us feedback to improve the future design of Consistent (1-5 Score)