

# User Research Report

IE 403: Human Computer Interaction

Instructor: Prof. Kalyan Sasidhar P S.



## Digital Well-being in Mobile Gaming

### Group 4

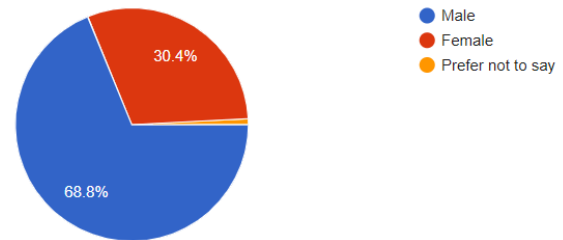
Group Members	
202103031	Rajnandani Ambasana
202103037	Srushti Kaneriya
202103042	Jay Rathod
202103050	Harsh Kanani

# 1. Methodology

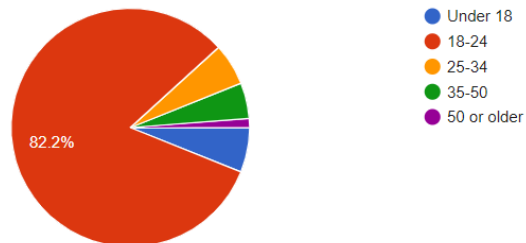
- We started by looking at how we use our phones and then thought about what problems others might face. We made a list of questions for a survey on Google Forms to ask people about their experiences. We tested the questions ourselves and then asked others to try them too.
- If the answers didn't make sense, we changed the questions. After finalizing the questions, we recruited participants through various methods, including circulating the form in college student groups for students and in faculty and family groups for parents, ensuring that our sample represented different backgrounds and experiences.
- We also came up with some questions for interviews to learn more about people's experiences. We planned to ask follow-up questions based on what people said during the interviews.
- Our participants were divided into different age groups: teenagers (under 18), adults (18-24), and elders (25 and above). Within these groups, we also considered gender, occupation, and how often they use technology. For example, we had males, females, and, prefer not to say, students and parents. We included parents to gather insights into their children's screen usage and their perspectives on parental control features within digital well-being. For students and participants above the age of 25 who were not parents, we asked questions about their screen usage habits.
- For our survey, we received over 245 responses from people of different ages and backgrounds.
- This gave us a lot of data to analyze and understand trends. In our interviews, we spoke with more than 40 participants in-depth.
- While the survey gave us a lot of responses, the interviews helped us understand the quality of people's experiences and perspectives. This combination of methods allowed us to get both a broad overview and deep insights into digital well-being on mobile screens. Let's discuss some demographics.

- Our survey received a total of 247 responses, with approximately 69% identifying as male (around 170 respondents), 30% as female (around 75 respondents), and 1% preferring not to disclose their gender (2 respondents). This distribution provides insights into the gender demographics of our participants.

Gender  
247 responses



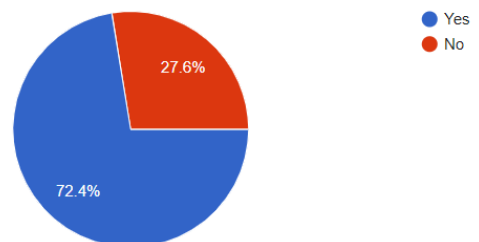
Age  
247 responses



- In terms of age demographics, out of 247 responses, the majority (82.2%) fell within the age range of 18-24, 6.1% were teenagers (below 18), followed by 5.7% aged between 25-34, 4.9% between 35-50, and 1.2% above 50.

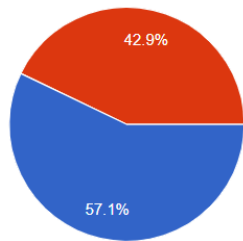
- Additionally, responses were also collected from participants over 25 years old. Out of 29 respondents in this age group, 72.4% were married, with the remaining unmarried.

Are you married?  
29 responses



Do you have children?

21 responses



● Yes  
● No

- Moreover, within this age group, 57.1% reported having children, while the rest did not, providing insights into the family demographics of our participants.

## 2. Experiment/study conducted

### Our experiment and hypothesis:

- We conducted two experiments to analyze user behavior across different age groups regarding their daily mobile phone screen usage. One experiment involved a survey form, while the other involved live interviews with selected individuals or parents.
- The experiments aimed to assess user behavior in specific categories through a series of questionnaires. Each interaction lasted 3 to 4 minutes and was designed to be precise, efficient, and less time-consuming for participants.
- The questionnaires covered topics such as screen usage patterns, knowledge of digital well-being, most frequently used apps, and post-app usage behavior. Additionally, the experiments helped many participants learn about digital well-being features they were not previously aware of or had never used.
- For conducting this experiment, we assumed that everyone owns a smartphone for daily use. We also presumed that participants use their smartphones for gaming, social media, or entertainment, in addition to other daily activities, based on their lifestyle. We predicted that social media usage would be higher than gaming among youth, while gaming would be more popular among preschool and school-age children. Additionally, we assumed that there would be increased mobile device usage in the post-COVID era. Due to these hypotheses, we interviewed parents as participants to analyze the behavior of their children regarding mobile phone usage.

## Questions for Survey and Interviews:

- We asked a variety of questions in both our survey (1) and interviews (2) to understand digital wellbeing. In our survey, we divided questions into different sections covering general digital wellbeing (i), mobile games (ii), social media (iii), and parental control (iv). During interviews, we asked participants about their awareness of digital wellbeing, screen time habits, favorite apps or games, and how they manage their screen time. These questions helped us gather valuable insights into users' experiences with digital wellbeing.

### 1) Survey Form Questions:

Here is the link to the survey form: <https://forms.gle/GrsFTRgT9JSKtMAm9>

#### i) General Questions on Digital Wellbeing:

No.	Questions	Type
1	Name	Text
2	Gender	Multiple choice
3	Age	Multiple choice
4	Which device do you primarily use?	Binary choice
5	Are you familiar with the concept of digital well-being?	Binary choice
6	What is your average daily screen time?	Multiple choice
7	Where do you spend the majority of your screen time?	Multiple Select

8	Among games, social media and entertainment, which consumes the most of your screen time?	Multiple choice
9	Have you used digital well-being features to reduce Screen Time ( gaming/Social Media/child's screen time) time for productivity?	Binary choice
10	If yes, do you find using digital well-being features effective in reducing your screen time ( gaming/Social Media/child's screen time)?	Binary choice
11	What features would you suggest to improve the effectiveness of digital well-being in reducing gaming time?	Text

## ii) Questions on Digital well-being in mobile games:

No.	Questions	Type
1	How many mobile games do you play on a daily basis?	Multiple choice
2	Which types of mobile games do you play the most in terms of time?	Multiple Correct
3	What is the main reason you play these games the most?	Multiple Correct
3	On average, how much time do you spend playing these games daily?	Multiple choice
4	How do you feel after playing these games?	Multiple choice

### iii) Questions on Digital well-being in Social Media:

No.	Questions	Type
1	On average, how much time do you spend on social media and entertainment apps daily?	Multiple choice
2	Among social media and entertainment apps, which one do you use the most?	Multiple Select
3	What is the main reason you use this app the most?	Multiple choice
4	How do you feel after using these apps?	Multiple choice

### iv) Questions on Digital well-being feature - Parental Control:

No.	Questions	Type
1	Age of Your Child	Text
2	Does your child use mobile phones?	Binary choice
3	Does your child have a personal phone, or do they use yours?	Binary choice
4	Which device does your child primarily use?	Binary choice
5	Are you familiar with the concept of digital well-being?	Multiple choice

6	How much time does your child spend using the phone on average?	Multiple choice
7	Are you aware of parental control features in digital well-being?	Binary choice
8	Have you used parental control features to monitor your child's activities on the phone?	Binary choice
9	Where does your child spend the majority of his/her screen time?	Multiple Correct

## 2) Questions for interview on Digital well-being in mobile games:

Name of User
ID of User
Age of User
Gender of User
Which device does the User use?
Do you know digital wellbeing?
Do you regularly check your screen time?
If yes, then how often?
What is your approx screen time?
Do you analyze this time and try to reduce it?
Do you play games?
If yes, then how often?
Which types of games do you play?
Why do you like the particular game?



How do you feel after playing the games?
Do you think that you are addicted to that game?
Do you want to reduce this addiction?
Have you tried using wellbeing to help you?
What kind of features do you like in digital wellbeing to reduce screen time?

## User Requirements

- We took 3 to 5 minutes to analyze users' reactions to our designed questions. The user is required to give their response as per their interactions and usage of games or social media.

## 3. Findings

As mentioned earlier, we conducted both a survey (1) and interviews (2) to gather insights into digital well-being. Also, we mentioned earlier that our survey, divided into distinct sections covering general digital wellbeing (i), mobile gaming (ii), social media usage (iii), and parental control features (iv), provided structured data. Simultaneously, interviews offered deeper insights, allowing participants to share personal experiences on various aspects like awareness of digital wellbeing, screen time habits, favorite apps or games, and strategies for managing screen time.

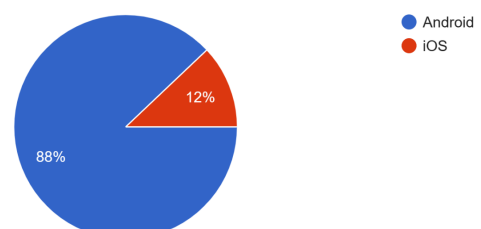
### 1) Observation and analysis for Survey Form:

#### i) For General Questions:

- We gathered the user's name and ID. Then, we proceeded to collect information on common characteristics such as gender, age, marital status, and whether they have children, which we discussed in the demographics in section 1 (Methodology).

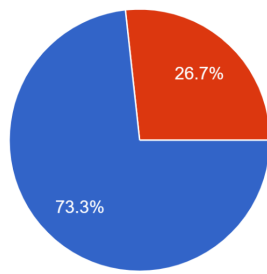
- Then we distinguished users based on the types of devices

Which device do you primarily use?  
241 responses



they use because iOS and Android serve different interfaces, and we found 88% Android users and 12% iOS users.

Are you familiar with the concept of digital wellbeing?  
243 responses



● Yes  
● No

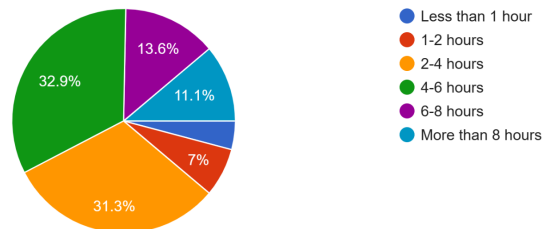
Then, we need to ensure whether the user is familiar with the concept of digital well-being or not. If they are not familiar, we will briefly describe it to them, and based on their understanding, we will ask the relevant questions.

-We found that more than 70% of the users were familiar with digital well-being!

- To design a digital well-being interface, the first essential data we need is screen time. So here is what we get from the users.

- We can observe that around 30% of the population uses their phones for 1 to 2 hours, and 30% spend 2-4 hrs on phones, with very few people, around 4%, using less than 1 hour. This encourages us to design a useful application to help them reduce their screen time and try living a little healthier life.

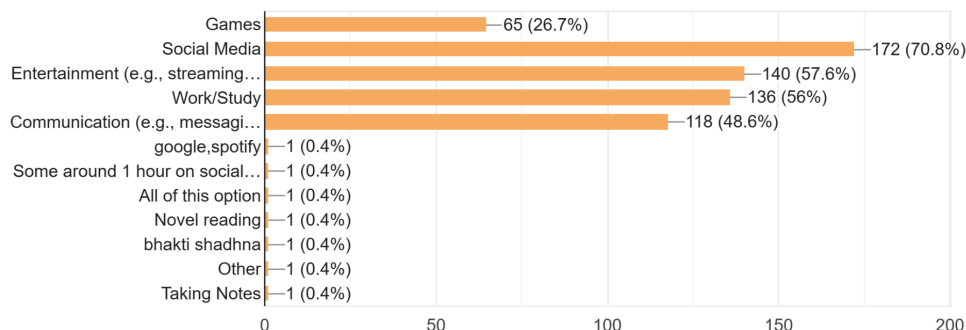
What is your average daily screen time?  
243 responses



● Less than 1 hour  
● 1-2 hours  
● 2-4 hours  
● 4-6 hours  
● 6-8 hours  
● More than 8 hours

- Another feature that we want to include precisely is tracking of screen usage time. If a user is spending their screen time on urgent and useful work, they may prefer not to avoid using the device. However, if the screen time is primarily dedicated to gaming or social media, then we have cause for concern. Here is what we found.

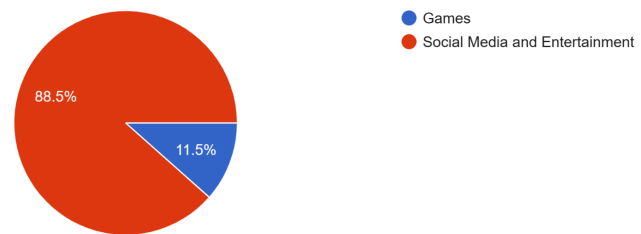
Where do you spend the majority of your screen time?  
243 responses



- Around 70% of people use social media, 57% for entertainment, 56% for work or studies, 48.6% for communication, and 26.7% for gaming. These are the top five categories of screen time usage on the basis of our survey.

- So, we focused precisely on where the time goes, particularly between gaming and social media. We discovered that the majority of users (88.5%) were engaged in social media activities.

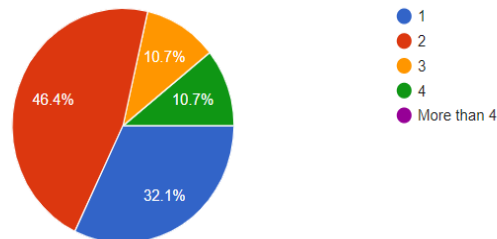
Among games, social media and entertainment, which consumes the most of your screen  
243 responses



## ii) For Digital well-being in mobile games:

How many mobile games do you play on a daily basis?

28 responses

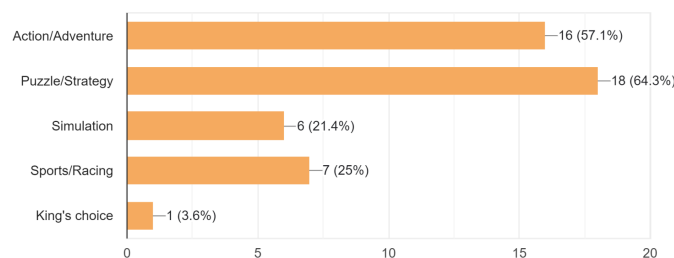


-It was found that 46.5% of participants play 2 games daily, making it the most common choice. Around 32.1% play 1 game, while 10.7% play 4 games, and 10.4% play 3 games daily. Interestingly, none of the respondents reported playing more than 4 games per day.

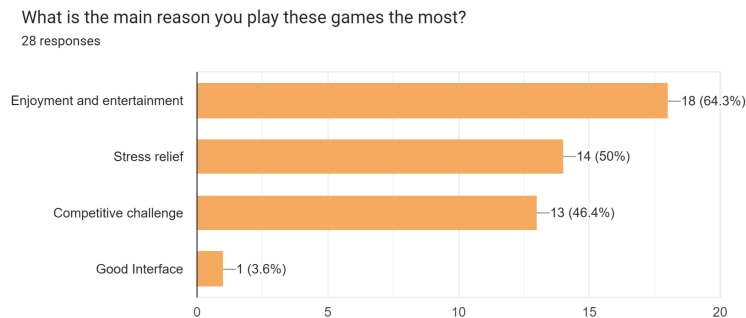
- The most popular types of mobile games played in terms of time

Which types of mobile games do you play the most in terms of time?

28 responses



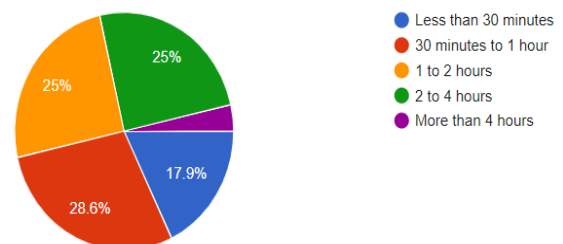
are Action/Adventure and Puzzle/Strategy, with 57.1% and 64.3% of respondents choosing these options, respectively. Additionally, 21.4% of participants indicated playing Simulation games the most, while 25% preferred Sports/Racing games. Only a small percentage, 1%, selected 'others' as their preferred game type.



- The main reasons for playing mobile games the most varied among respondents. The majority, 64.3%, mentioned enjoyment and entertainment as their primary motivation, indicating that they play games for fun. Additionally, 50% of participants highlighted stress relief as a key factor, suggesting that gaming serves as a means of relaxation. A significant portion, 46.4%, cited the competitive challenge offered by games as their main reason for playing. Only a small percentage, 3.6%, mentioned a good interface as their primary motivation for playing games.

- The most common range reported was between 30 minutes to 1 hour, with 28.6% of respondents falling within this category. Additionally, 25% reported playing for 1 to 2 hours, and another 25% for 2 to 4 hours. A smaller proportion, 17.9%, indicated

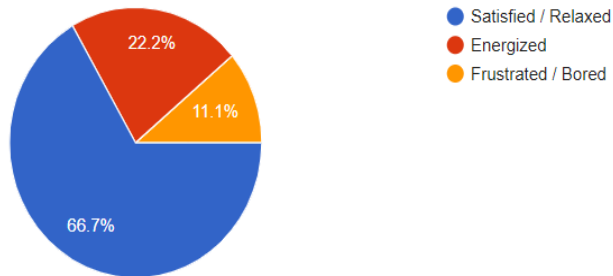
On average, how much time do you spend playing these games daily?  
28 responses



spending less than 30 minutes gaming daily. Conversely, only 3.6% reported spending more than 4 hours gaming each day.

How do you feel after playing these games?

27 responses

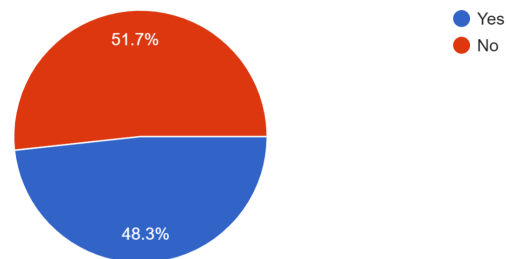


-The majority, 66.7%, reported feeling satisfied or relaxed after gaming sessions. Additionally, 22.2% mentioned feeling energized, suggesting a positive impact on their mood. A smaller proportion, 11.1%, reported feeling frustrated or bored after playing games.

-Responses to the question regarding the use of digital well-being features to reduce gaming time for productivity were evenly split, with 48.3% answering 'Yes' and the other 51.7% answering 'No'.

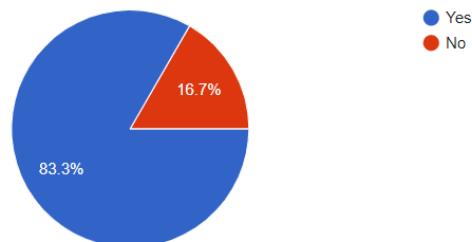
Have you used digital wellbeing features to reduce gaming time for productivity?

29 responses



If Yes, Do you find the digital wellbeing feature effective in reducing your gaming time?

18 responses

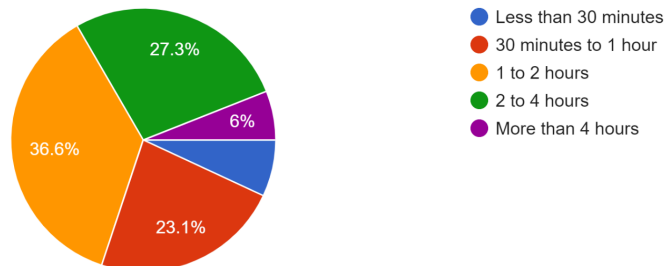


-Among those who reported using digital well-being features to reduce gaming time for productivity, the majority (83.3%) found the feature effective. However, a minority (16.7%) indicated that they did not find the digital well-being feature effective in reducing their gaming time.

### iii) For Digital well-being in Social media:

On average, how much time do you spend on social media and entertainment apps daily?

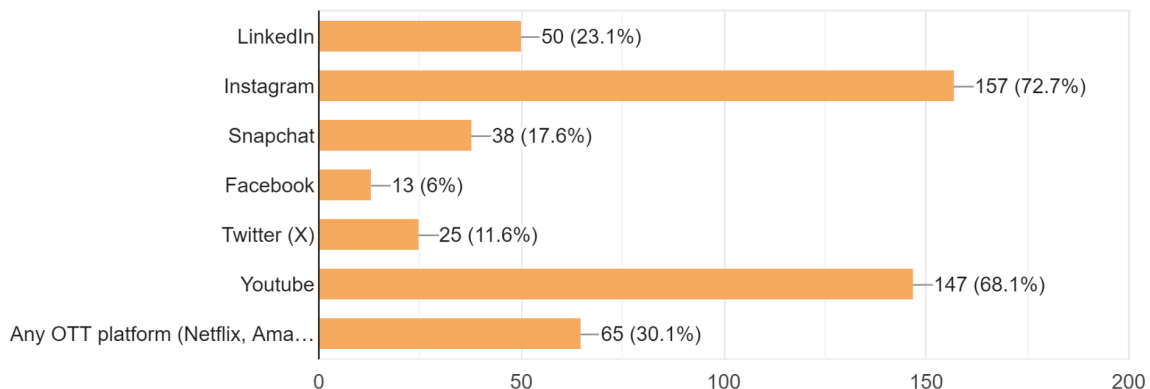
216 responses



- Analysis shows that 7% spend less than 30 minutes, 23.3% spend between 30 minutes to 1 hour, 36.3% spend between 1 to 2 hours, 27.4% spend between 2 to 4 hours, and 6% spend more than 4 hours per day. This suggests that a significant portion of respondents engage with these platforms for 1 to 2 hours daily while only a small fraction spends less than 30 minutes or more than 4 hours daily.

Among social media and entertainment apps, which one do you use the most?

216 responses

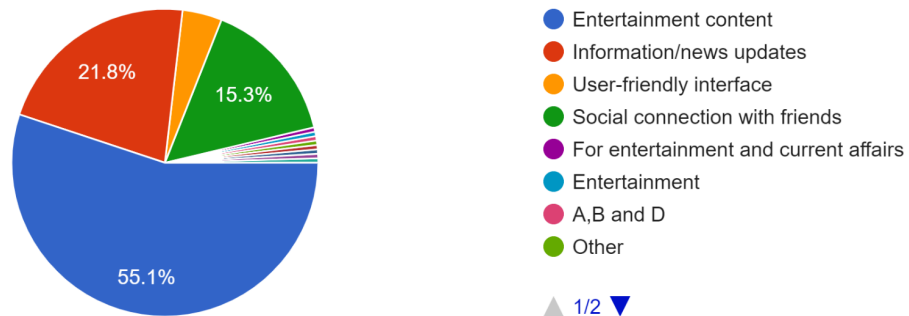


- Instagram was the most commonly used by 72.6% of participants, followed by YouTube at 67.9%, and LinkedIn at 23.3%. Snapchat was used by 17.7% of respondents, while Facebook and Twitter were used by 6% and 11.6% respectively. Additionally, 30.2% of users reported using other over-the-top (OTT) platforms, such as Netflix or Amazon. These suggest the popularity of Instagram

and YouTube among the respondents, with LinkedIn also showing significant

What is the main reason you use this app the most?

216 responses

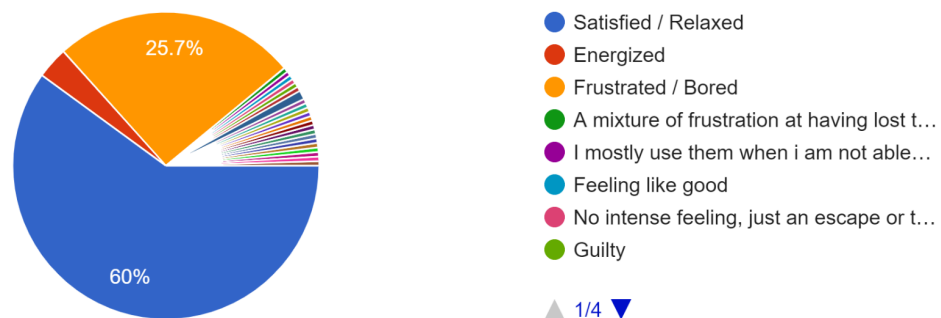


usage, while platforms like Facebook and Twitter are less commonly utilized.

- Majority of users (55.1%) chose entertainment content. Additionally, 21.8% of users selected information/news updates, while 15.3% opted for social connections with friends, and only 4.2% cited a user-friendly interface as their main reason. These findings indicate that a significant proportion of users prioritize entertainment content when choosing their preferred app, with a smaller percentage focusing on information/news updates or social connections with friends.

How do you feel after using this apps?

210 responses

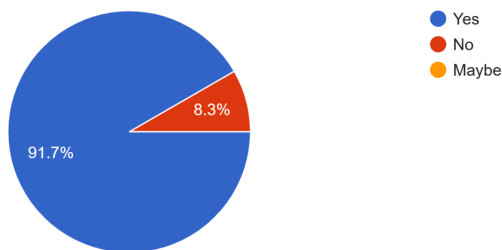


- After using social media and entertainment apps, the majority of users (60.3%) reported feeling satisfied or relaxed. A small percentage (3.3%) felt energized, while a notable portion (25.8%) felt frustrated or bored. Additionally, 10.6% of respondents selected other feelings not explicitly mentioned in the options. So above findings suggest that for many users engaging with social media and entertainment content leads to feelings of satisfaction or relaxation.

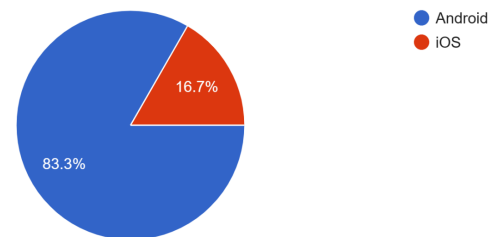
#### iv) For Parental control: a digital well-being feature

- Survey options were presented to individuals aged 25 and above who had children. Approximately 60% of respondents had children between the ages of 0 and 15, while the remaining had older children.

Does your child use mobile phones?  
12 responses

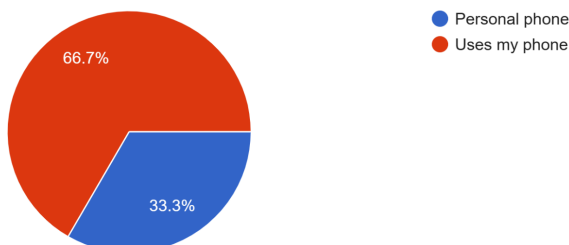


Which device does your child primarily use?  
12 responses

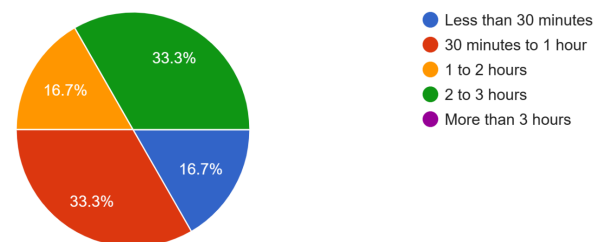


- Among all the children surveyed, 90% were reported to be using mobile phones. Parents also indicated that 66% of their children used their parents' mobile phones for playing games, while the rest had their own devices. Among these children, Android devices are more used than iOS devices.

Does your child have a personal phone, or do they use yours?  
12 responses



How much time does your child spend using the phone on average?  
6 responses

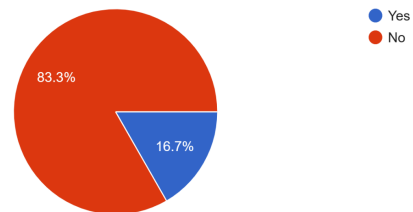




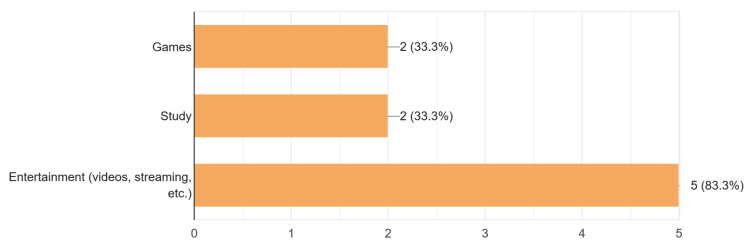
- Parents were also asked about their children's digital well-being. It was noted that the majority of respondents were familiar with the concept, while only a few were unaware of it. The time spent by children on mobile devices varied.

- Half of the parents were aware of parental control options for managing their children's mobile phone usage and tracking their activities. However, despite the awareness, only 16% of parents reported using parental controls.

Have you used parental control features to monitor your child's activities on the phone?  
6 responses



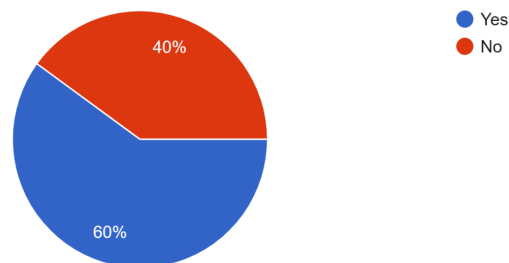
Where do your child spends majority of his/her screen time?  
6 responses



- Parents reported that their children were primarily engaged in entertainment activities, followed by playing games, with only a few using mobile devices for studying purposes.

- Most parents had attempted to reduce their children's screen time, with 60% using digital well-being features to monitor screen time.

If yes, do you find using digital wellbeing features effective in reducing your child's screen time?  
5 responses



- When asked about features they would like to see added to digital well-being tools, most parents expressed interest in the ability to automatically block apps after a certain period. Others suggested features such as being able to track their children's phone usage separately from their own and the ability to block specific features within certain apps like YouTube or Google.

## Findings of Interviews

Here is a brief of what we found from the interview.

- First, we gathered characteristic information such as name, age, gender, etc. On asking the question, "Do you know digital well-being?", we got the following response. Out of the 37 interview participants, 35 respondents answered 'Yes', indicating that they are familiar with digital well-being. Meanwhile, 2 respondents answered 'No', suggesting that a very small minority of interviewees are unfamiliar with digital well-being.
- When asked how regularly they check their screen time, out of the 37 respondents, 24 stated that they do so regularly. Conversely, 11 respondents admitted to not regularly checking their screen time, potentially indicating a less conscious approach to their digital habits. Additionally, 2 respondents mentioned irregular checking patterns, specifying they do so "not daily, but often" or "not often," suggesting varying levels of engagement with screen time monitoring.
- We received various responses regarding screen time monitoring frequencies, with 24 participants providing specific frequencies. These ranged from checking once per week to as frequently as 10 times per day, showcasing a wide spectrum of monitoring habits among respondents.
- When interviewed about their approximate screen time, respondents provided a wide range of estimates. Reported screen times varied significantly, with durations spanning from 1 hour to over 8 hours. This variation highlights the diverse usage patterns among participants, reflecting differing levels of engagement with digital devices.
- Then, we need to determine if users attempt to reduce their screen time or not. Twenty participants indicated that they do try to decrease their screen time by analyzing their usage patterns and making efforts to cut back. Among those who strive to reduce their screen time, various strategies were mentioned, including

limiting the usage of specific apps or platforms such as WhatsApp, Instagram, YouTube, and gaming apps.

- 17 participants stated that they do not actively analyze or attempt to reduce their screen time. Overall, it appears that a significant portion of participants make efforts to analyze and reduce their screen time, while others do not actively engage in this practice.
- Now we wanted to distinguish users by their habit of playing games. The majority of respondents, 35 out of 37, reported that they play games, indicating a strong presence of gaming within the group.
- This suggests that gaming is a popular activity among the individuals interviewed, with most of them engaging in gaming regularly. However, it's worth noting that 2 respondents mentioned that they do not play games, showing that there is some variation in gaming habits among the interviewees.
- Then we asked user how frequently they play the games. The responses of users suggest that they have different playtimes. People play games for various durations, with some playing for short periods like half an hour to an hour, while others play for longer, like 2 to 6 hours or more. Despite the different playtimes, most people play games regularly, either daily or weekly, showing that gaming is a consistent part of their leisure activities.
- Some mentioned playing games on specific devices like mobile phones or PCs, showing they have preferences for where they play, which is important to consider for designing gaming experiences.
- Next, we proceed to categorize the genres of gaming to analyze the tendency of user interest. It reveals that people have different kinds of interests, enjoying a variety of games like sports, action, strategy, and puzzles, showing diverse interests in gaming. Among these genres, action, strategy, and puzzles appear to be more popular among the respondents, indicating common preferences in gaming.
- When users were asked the reason for playing the particular game, some respondents mentioned a personal history with the game, having played it since childhood or being addicted to it for several years, which indicates their strong attachment or familiarity with the game.
- Some of the respondents like game attributes. They cited specific aspects of the game that they enjoy, such as the user interface (UI), graphics, updates, or gameplay mechanics. These factors, like a good UI or exciting achievements, enhance the overall gaming experience and contribute to their liking for the game.

- Some respondents mentioned social aspects, like playing with friends, as a reason for liking the game. Additionally, others mentioned stress relief, relaxation, or time passing, indicating that gaming serves as a form of escapism or entertainment, helping them unwind or pass the time.
- After playing games, 16 individuals felt relaxed, suggesting gaming as a form of stress relief. Six reported feeling guilty for time spent gaming, while three each felt satisfied, bored, and frustrated. The rest remained unaffected by gaming. These varied responses highlight the diverse emotional experiences associated with gaming.
- Out of the respondents, 17 admitted to phone addiction, while 14 denied it. Six individuals were uncertain about their addiction level, highlighting the complexity of smartphone dependence among users.
- Among the group of respondents who admitted to phone addiction, the majority (14 out of 17) expressed a strong desire to lessen their addiction. Conversely, the remaining three individuals did not express a similar intention to reduce their addiction.
- Then we found that among the respondents, 21 individuals actively employ well-being features to address addiction, while 16 have never attempted to do so. Reasons for not utilizing these features may include lack of awareness, denial of addiction, or finding it challenging to integrate well-being practices into their routine.

### **What features would you suggest to improve the effectiveness of digital well-being in reducing screen time?**

- We asked this question in both the survey form and interviews. We targeted to analyze what users expected from well-being features in both gaming and social media. Here is the combined observation we did from both the survey and interview. When seeking suggestions to enhance the effectiveness of digital well-being in reducing screen time, participants provided a diverse range of insights reflecting their varied usage habits and lifestyles.
- When asking participants, "What features would you suggest to improve the effectiveness of digital well-being in reducing screen time?" a wide array of answers were reported. The diversity in responses stemmed from the varied usage habits of individuals with different lifestyles.

- Most participants were youth, many of whom were somewhat addicted to either gaming or social media. A common suggestion was to have apps blocked after a certain period of use.
- Some suggested that once the time limit was reached, the app should be inaccessible, while others proposed that certain media apps like WhatsApp could be accessed for emergencies if specific and genuine reasons were provided. Others suggested implementing prior notifications for apps when a usage limit was set, such as receiving a notification sometime before the limit is reached.
- Some believed that people need motivation and awareness to realize their excessive usage, suggesting that notifications with positive reminders and motivating messages could reduce usage by over 50%. For example, notifications like "You have already used Instagram for 1 hour, do you still want to continue?" Additionally, it was suggested that health reports after using such apps or games should be displayed in notifications.
- Suggestions included allowing users to use only a fraction of the set time limit for continuous usage in a day. For instance, if a 2-hour timer was set for an app, the user could use it for a maximum of 30 minutes in one continuous session. After this, the app would be blocked for at least 2 hours before becoming available again for another 30-minute session. Additionally, some users reported that they tend to use apps more during certain peak hours of the day. Therefore, users should be able to specify these peak hours when setting the time limit. This would encourage users to reduce their app usage during these times, helping them to reduce addiction to the app.
- Regarding responses from gaming participants, there were various suggestions related to setting limits on gaming apps. Some suggested that once the time limit was reached, the game could not be opened again. Others proposed that after reaching the time limit, games would start lagging, causing annoyance and discouraging further play.
- Many participants suggested changing the game's user interface to black and white would make users lose interest in further engaging with the game. Other suggestions included having an alarm ring on the screen which will only be stopped by closing the game when the game is opened again after reaching the time limit, with the time limit unchangeable.

- Some participants suggested allowing users to set daily, weekly, or monthly time limits, with the game being inaccessible during specific periods once the limit is reached. For gaming, a specific suggestion was to allow users to set limits up to certain levels, after which the game would be blocked. Additionally, participants wanted the following features: - Customize daily time limits, Real-time progress tracking, In-app reminders for breaks, Reward-based incentives for time management, Parental controls with remote monitoring.

## 4. Conclusion

Based on the findings from our user research on digital well-being, it's evident that mobile screen usage is prevalent among participants, with various factors influencing their behaviors. Many participants are aware of digital well-being concepts and regularly monitor their screen time. However, there's a wide range in the amount of time spent on screens daily, with some spending several hours engaged with digital devices.

Interestingly, a significant portion of participants expressed efforts to reduce screen time, often targeting specific apps or platforms. Strategies for reducing screen time included limiting usage of social media, gaming apps, and video platforms like YouTube. Despite these efforts, a considerable number of participants do not actively analyze or attempt to reduce their screen time.

Overall, our research highlights the importance of promoting digital well-being awareness and providing effective tools and strategies to help individuals manage their screen time effectively. It's clear that there's a need for continued efforts to support users in maintaining a healthy balance between digital engagement and real-life activities.

## 5. References

- Lecture Slides
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