

Game Design for Female Teenagers

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Abstract: Presently, gaming has evolved into an essential component for a multitude of individuals. Additionally, there is a wide array of game genres available in the market. However, the majority of games are not especially tailored to the interests of a particular demographic, but rather aim to accommodate the widest possible range of individuals. The research method employed in this study consists of an in-depth review of existing literature and the conducting of a questionnaire. This research gives a comprehensive analysis of the game preferences of adolescent girls, aged 12 to 18, through the use of a questionnaire. It examines participants' perspectives on several aspects of the game, including visual and sound effects, difficulty level, characters, and plot. The optimal strategy is to create a game that fulfills the gameplay requirements of this particular audience. The aim of this study is to investigate the gaming preferences of a particular demographic and develop a game tailored to their interests. It is of the opinion that games developed in this manner have the potential to be more competitive within the gaming industry.

Keywords: Game design, Game preference, Questionnaire, female teenagers

1. Introduction

Playing games is a popular form of amusement that involves participating in activities with the goal of reaching a specified condition, while following specific rules [1]. Owing to the immense popularity of games, the potential for profit in the gaming industry is enormous. However, the market is fiercely competitive, with a constant influx of numerous games being introduced on a daily basis. In order to enhance their competitiveness in the market, games must implement a range of gamification techniques and game aspects that can captivate existing players and entice new players. Teenagers, being a significant consumer segment in the gaming market, play a major role in determining a game's competitiveness based on their preferences for various features inside the game. This paper will specifically examine the game preferences of adolescent females through the utilization of a questionnaire as a means of data collection. Through the analysis of participants' responses, we will ascertain the impact of many factors, such as visual and auditory effects, originality, storytelling, characters, level of challenge, and social interaction, on players' preferences for the game. Based on the questionnaire findings, the author will develop a game that is specifically designed to attract female teenagers and get a competitive edge in the market.

2. Methodology

Prior research has unveiled the gaming preferences and disparities between adults and adolescents [2]. The survey targets adolescent females. In this study, we conducted a more precise selection of the research sample by restricting the age range of minors to individuals between 12 and 18 years old. Additionally, our primary focus was on females, as indicated in table 1. Adolescents between the ages of 12 and 18 predominantly attend middle and high school and are more inclined to possess gaming equipment and possess more proficiency compared to children under the age of 12 (as seen in Table 2). Teenagers between the ages of 12 and 18 are more inclined to have a greater amount of leisure time available for playing games, in comparison to adults. Consequently, this age demographic constitutes a significant portion of the consumer base in the gaming industry. Furthermore, the majority of popular games on the market tend to cater more effectively to the gaming preferences of male players, leaving a limited number of well-known titles that exclusively cater to female users. The author aims to create a game that specifically appeals to the majority of adolescent females, with a focus on this age group.

Table 1: Gender of Participants

Choice	Number	Percentage
Male	6	7.89%
Female	65	85.53%
Others	5	6.58%
Total:	76	

Table 2: Age of Participants

Choice	Number	Percentage
12 or below	1	1.32%
12 -- 18	66	86.84%
18 -- 28	3	3.95%
28 -- 38	4	5.26%
38 -- 48	0	0%
48 -- 55	2	2.63%
66 -- 65	0	0%
65 or above	0	0%
Total:	76	

To examine the gaming preferences of the target participants, we devised a comprehensive questionnaire that encompasses several aspects of games. The questionnaire comprises fundamental inquiries, such as the participants' occupations, their typical gaming duration, and their preferred genres of games. In addition, the questionnaire seeks players' perspectives on several aspects of games, including visual and auditory impacts, originality, narratives, characters, level of difficulty, challenges, and social interaction.

Initially, the visual and auditory aspects significantly influence the satisfaction and immersion experience of players. The questionnaire includes inquiries about players' preference for visual and

sound effects, as these factors are known to have a direct correlation with the addictive potential of a game. These inquiries cover topics such as players' preference for scene and picture styles, the emphasis on various visual elements, and different sound effects.

Furthermore, the degree of novelty exhibited by a game, which refers to its utilization of inventive methods to distinguish itself from other competing games, might impact players' inclination towards the game. Certain players may favor distinctive games, while others may gravitate towards more mainstream ones. Hence, the questionnaire comprises inquiries regarding players' disposition towards the novelty of a game, as well as the specific unique aspect that players prioritize.

Third, several games incorporate storylines, while some do not. Enhanced narratives enhance players' awareness of their existence inside the game, which is likely to heighten players' feeling of being fully engaged. We are uncertain about the exact manner in which female teenagers may respond to games that convey storylines. Consequently, the questionnaire includes inquiries that inquire about participants' preferences about games with narratives, their preferred theme of narratives, and their most favored plot type [3-4].

Fourth, the characters within the game have a significant impact on the gamers. The unique attributes of characters, such as their gender, tend to have varying impacts on players and often elicit distinct views and biases from players as well [5], hence emphasizing the importance of character designation in a game. The questionnaire aims to investigate the preferences and attitudes of adolescent girls towards various characters, as well as their inclination to create characters in response to these trends. Participants are asked to provide specific details about the characters they enjoy in a game, such as their personality, gender, and the number of characters they prefer. Additionally, participants are asked to specify the type of relationship they prefer to have with their preferred character, such as friends, lovers, or family members.

Furthermore, the difficulty or challenge level of a game is widely recognized as a fundamental aspect of game design that significantly influences players' involvement, enjoyment, and preference for a game [6-7]. In order to develop a game that appeals to the majority of female teenagers, it is important to consider the game's likability trend in relation to its level of difficulty. The questionnaire includes inquiries regarding users' preferences for the difficulty and challenges in a game. This encompasses their overall choice for the level of difficulty, the flow and evolution of problems, and their inclination to enhance their skills through encountering obstacles and challenges.

Ultimately, in order to satisfy the psychological needs of players, the presence of interacting with others, which serves as a significant gaming incentive that enhances players' engagement with the game [8], may be of utmost importance. While this pattern suggests that these players are likely to encourage social interaction in a game, it is necessary to have specific information on how female teenagers respond to socialization in a game. The questionnaire includes inquiries regarding participants' preferences for socializing methods and objects of interaction.

3. Results and Analysis

Table 3: Statistic of the Questionnaire

Questions	Most common choice(s)
1. Gender	Female (85.53%)
2. Age	12-18 (86.84%)
3. Job occupation	Students (88.16%)
4. Do you often play games?	Yes (88.16%)

Table 3: (continued).

5. Device preference (choose 1-2 answer)	Mobile games (67%)
6. You prefer:	Multiplayer games (61.84%)
7. Type of game that you prefer (Choose 3 answer):	Role playing games (14.91%); Action games (10.53%); Music games (14.47%)
8. Favorite Game (free response):	Eggy Party (40.42%)
9. You like innovative games	Yes (96.06%)
10. You like popular, universal games	Yes (73.68%)
11. What do you think should be include in an innovative game (choose 1-3 answer):	Unique gameplay (31.49%); Unique style of visual effect on scenes and characters (27.62%)
12. You like games with good visual effects	Yes (98.68%)
13. What elements do you think are needed for good visual effects (choose 2-3 answer):	Color matching and layering (31.25%); (art) Composition (17.31%)
14. You like:	3D game interface (61.84%)
15. Which of the following game elements do you value most for their visual presentation (choose 1-2 answer):	Character (hairstyle, facial features) (77.63%); Special effects (e.g., combat effects) (38.16%)
16. Which of the following visual styles do you prefer	Pity (26.32%); Cute (18.42%)
17. You prefer games that include narratives or stories	Yes (80.26%)
18. What kind of plot of narratives do you like	Tangled and complicated (35.53%); Twists and turns (30.26%)
19. What topics of narratives do you like (choose 2-3 answer):	Adventures in different places (17.42%); Investigating cases (21.91%); Meet and socialize with various characters (18.54%)
20. You prefer games that contain character (s)	Yes (94.74%)
21. You'll be substituting your favorite characters as	Yourself (51.32%)
22. You prefer (___) character (s) (choose 1-2 answer):	Female (43.64%)
23. You prefer presence of (___) character (s) in the game:	More than 30 (23.68%); 3-7 (27.63%)
24. You like character with this personality:	Justice (10.52%); Tenderness (10.52%)
25. You prefer playing games with the sound turned on	Yes (81.58%)
26. You like to hear (choose 1-3 answer)	Sound effect of clicking buttons (20.22%); Background music of the game (20.79%)

Table 3: (continued).

27. You prefer games that have	Medium difficulty (53.95%)
28. You prefer games with its difficulty	Gradually changing (85.53%)
29. You will consciously train your gaming skills	Yes (77.63%)
30. You like to interact with characters in the game	Yes (81.58%)
31. You like to interact with other players in the game	Yes (67.11%)
32. You prefer to (___) with other players in game (choose 1-2 answer)	Chat (28.57%); Game together (21.43%)

Based on the data presented in table 3, it can be observed that 85.53% of the participants were female and 86.84% were between the ages of 12-18. This aligns with the objective of targeting female adolescents, indicating that the data collected from this questionnaire is more likely to provide an accurate reflection of the preferences and needs of female teenagers.

According to the poll, a majority of participants (67%) expressed a preference for mobile multiplayer games. Among all the different sorts of games, role-playing games (14.91%), action games (10.53%), and music games (14.47%) were found to be the most popular choices.

Furthermore, when compared to universal games, a greater proportion of female teenagers exhibit a preference for distinctive and groundbreaking ones. Specifically, 96.06% of all participants express a liking for innovative games. According to the responses of the participants, an innovative game should place emphasis on a unique gameplay experience (31.49%) and employ a distinctive style of visual effects for both scenes and characters (27.62%), in order to be considered truly "innovative". Nevertheless, a significant majority of participants, amounting to 73.68%, express a preference for global and widely recognized games. This indicates that our game should incorporate gameplay elements that are both universally appealing and familiar to players.

Visual effects are highly valued and appreciated by female teenagers, with 98.68% of participants expressing a preference for games with good visual effects. This indicates that our game should prioritize the design of frames and photos to enhance its appeal. Moreover, the outcome of the questionnaire indicated that the game should prioritize its color layering and frame composition. Additionally, it should strive to achieve excellent visual presentations for game characters and special effects in order to create an overall impressive visual impact. Furthermore, a majority (61.84%) of the participants express a preference for a 3D game interface. The most prevalent selections for participants' visual style preference are concise (26.32%) and cute (18.42%).

From a narrative standpoint, a significant majority of players, specifically 80.26%, express a preference for games that incorporate storylines. Out of all the options, "tangled and complicated" (35.53%) and "twists and turns" (30.26%) are the top two choices among participants when it comes to their preferred style of plot in the game. This suggests that female teenagers are more inclined towards intricate storylines. The most favored topics for narratives are "adventures in different places" (17.42%), "Investigating cases" (21.91%), and "meeting and socializing with various characters" (18.54%). By integrating these three elements into a cohesive narrative, including the players' exploration of different locations to solve cases and their encounters with diverse personalities, the game has the potential to captivate and resonate with female teenage players.

94.74% of participants enjoy games with characters, particularly female characters (43.64%) and characters with the traits of justice (10.52%) and tenderness (10.52%). This indicates a preference for more female characters and the creation of impressive characters with the qualities of justice and

tenderness. Alternatively, when considering the character count, it is observed that more than 30 characters (23.68%) receive a comparable number of votes compared to the range of 3-7 characters (27.63%), albeit with a little larger vote count for the 3-7 character range. In order to accommodate both options, we choose to generate a total of approximately 30 characters, with a specific emphasis and concentration on only 5 of them.

Audio or sound effects are crucial in game production, with 81.58% of participants indicating that they enable sound while playing games. Specifically, participants highly value the sound effect of clicking buttons (20.22%) and the background music of the games (20.79%). This suggests that these two sound effects should receive greater attention during game design.

A majority of the participants (53.95%) expressed a preference for medium level, and the majority of participants desire the game's difficulty to transition gradually. Within our game, we can first establish the difficulty at a moderate-low level and thereafter raise it in accordance with the players' abilities and advancements during the game. Furthermore, a significant majority of 77.63% of participants admit to enjoying honing their skills while playing the game. Hence, in our game, we may incorporate a segment that facilitates participants in honing their abilities and getting ready for progressively challenging stages of the game.

Finally, in terms of interacting with others, a majority of players (81.58%) engage in interactions with in-game characters, whilst a smaller proportion (67.11%) connect with other players. Therefore, our game will endeavor to enhance opportunities for player-character interaction, such as by incorporating dialogues. Regarding the activities that participants are keen to engage in with other players, "chat" (28.57%) and "game together" (21.43%) are the most prevalent preferences. This indicates that our game should provide convenient in-game chatting for players, as well as provide ample multiplayer gameplay options.

4. Game design

The game, Island Cosmos, was designed by the author. This is a global mobile multiplayer game. There are numerous diverse methods of playing, however, it also provides players with the chance to exhibit their creativity.

The game showcases a design inspired by the cosmos of an island. This design not only provides players with a feeling of novelty as they navigate various islands, but it also grants them a sense of ownership and the opportunity to manifest their own concepts and ingenuity by constructing and situating their own Island within Island Cosmos.

4.1. Narrative and avatar

A primary narrative will be included, and progressing through this narrative will yield various rewards such as objects or island money. The plot centers around players utilizing assistance and hints from various characters to ascertain the identities of all four members of the interplanetary pirate organization who have disrupted the Island Cosmos and discover their concealed wealth. During the quest for clues, players must journey to other islands in order to gather clues or engage in conversations with characters. The player's journey commences with a dialogue with a shepherd atop the tallest peak on the primary landmass and culminates with a triumphant banquet alongside amiable individuals on Red Maple Island. Players must traverse Icefield Island, Desert Island, Ocean Island, Dream Island, and several public islands.

Furthermore, the player's in-game representation will take the form of an elliptical sphere, with two additional spherical objects representing their hands. Star coins can be utilized by players to acquire various costumes or facial expressions. Upon initial entry into the game, players are given the option to select the gender and nickname for their avatar.

4.2. Environmental design

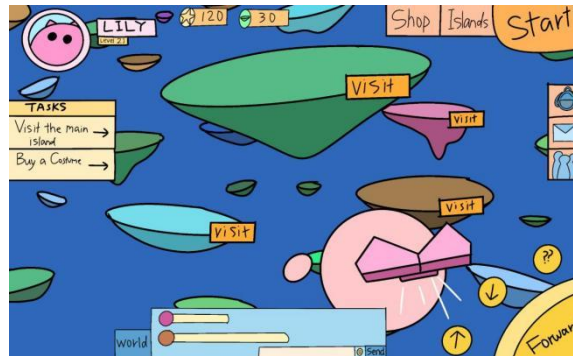


Figure 1: Initial game interface – Player initializes in a random spot near the main island in Island Cosmos



Figure 2: Game interface after the player enters specific island

The universe in Island Cosmos consists of numerous islands (fig.1). Main Island is situated at the center of the universe and holds the distinction of being the most expansive island. The player begins their journey at the base of the tallest peak on the primary island (fig.2). The main island is surrounded by five smaller islands: Icefield Island, Desert Island, Ocean Island, Dream Island, and Red Maple Island, all of which are slightly smaller in size. Players must achieve levels of 10, 15, 30, 50, and 75 in order to gain access to these five islands. In addition to these islands, there are numerous smaller islands in the vicinity, some of which are accessible to the public while others are reserved only for players. The admittance requirements for public islands are diverse, with some necessitating a specific degree of progression, others demanding star coins, and some mandating players to have already completed the preceding plot or seen specific characters in order to gain access. Players will encounter storylines, characters, or goods that are available for unlocking on these publicly accessible islands. Players have the option to utilize island coins to establish their own island within Island Cosmos, in addition to the pre-existing public island. The proximity to the main island directly correlates with the amount of island coins that need to be expended. A player has the ability to generate numerous miniature islands. Players have the ability to acquire various terrains and buildings to embellish their islands by utilizing island money. Simultaneously, participants have the ability to establish ticket prices or admission restrictions for their island.

4.3. Gameplay

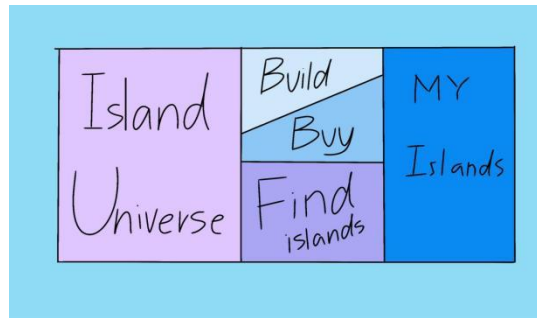


Figure 3: Different options for island gameplay

First, Island gameplay: Users have the ability to navigate across various islands and pay visits to islands owned by other users (Fig. 3). Within the island, players have the opportunity to encounter other personalities, investigate the surroundings, and engage in additional activities. Users have the ability to construct their own islands, extend invitations to other users for gameplay, and engage in island exchanges with other users.

Second, Story Gameplay: Players must gather information from various characters, travel to other islands to uncover evidence or riches, and ultimately utilize all the clues provided by the characters in the game to identify four interplanetary pirates and locate their concealed loot.

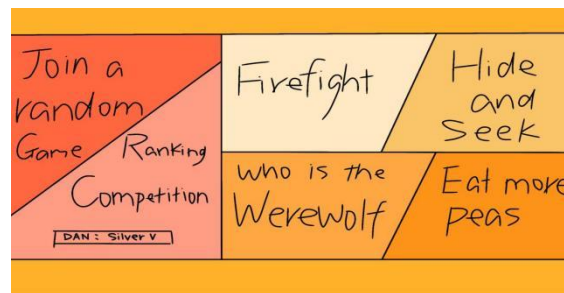


Figure 4: Different options for game mode

4.4. Different modes of gameplay

Ranking Competition: 20 players will be transported to the same island. Players need to cross obstacles on the island to reach the finish line. In the first round, 10 of the 20 players will be eliminated based on the length of the level. In the second round, only 5 of the 20 players will be retained. The third round is a showdown where five players enter either eat more peas or firefight and are ranked based on the results.

Eat more peas: 10 or 5 players will be teleported to the same island. There are many peas that represent points distributed across the island, and the number on the peas also represents the number of points it has. Pea disappears when touched by the player's avatar. Players have four minutes to score more points by looking for and touching peas. In the end, the player with the most points wins.

Who is the werewolf: 10 players are teleported to the same island. Players will be matched with different identities. The identities are good, bad, and neutral. The good ones include witches, prophets, warlords, wimps, observers, village chiefs, hunters, and guards. Villains include White Wolf, Fire Wolf, Invisible Wolf, and Wise Wolf. Neutral identities include the bride, the fool, and the body collector. Good identity requires weeding out the bad guys, and bad identity requires killing all the good guys. The witch has two vials of poison, which can be used to kill a specified person during the

discussion, limited to one poison per discussion. The prophet has a chance to "probe", the prophet needs to launch a probe within one meter of the target, and within five seconds of the target distance of no more than one meter to successfully obtain the result. After a successful probe, the prophet will immediately know the specific identity of the target. The Warrior has the same "knockout" ability as the werewolf, which refreshes every 15 seconds, but if the warrior knocks down a player in the good camp, he immediately falls to the ground and dies. The man who defeats the weakling immediately initiates a discussion. The observer has the skill "Observe", which refreshes every 30 seconds. After activating the skill, the observer switches the field of view of a random surviving player on the field for seven seconds, during which time the observer avatar stays in place. The village chief always has two votes on the ballot.

The Hunter has the "Mark" skill, which refreshes every 5 seconds. After the hunter dies, the last player to be tagged dies together. The guard has two "guard" opportunities, and the guarded player is immune to one knock down. With the exception of Fire Wolf, all villains have the ability "Knock Down", which refreshes every fifteen seconds. The player who is knocked down dies directly. The White Wolf also has the ability "Mark" in addition to "Knock down". The White Wolf's "tag" refreshes every thirty seconds, and when the white Wolf dies, the last player to be tagged dies together. Fire Wolf has the ability "Gunpowder", which refreshes every 20 seconds. Fire Wolf can pass gunpowder to other players, and the gunpowder will explode within 15 seconds, killing the last player to hold it. During this time, players with gunpowder can pass it to each other. In addition to the ability "Knockout", the Invisible Wolf also has the ability "Invisibility". This skill refreshes every 20 seconds, after stealth, other players cannot see the invisible Wolf, stealth effect lasts for 10 seconds. The Wolf can use the "underhand" ability during the discussion. After using the covert skill, the Wolf successfully guesses the identity of a player, the player dies, and the Wolf dies otherwise.

In the neutral camp, the identities are independent and have different winning conditions. The bride has the skill "marriage", which can only be used once and can only be used when the bride is within one meter of the target. When the bride marries any player, the player becomes the groom and immediately breaks away from the original camp and becomes the husband-and-wife camp. However, the skills they possess in their original status can be used as usual. If the bride dies, the groom dies; if the groom dies, the bride will not be affected. Of the last three people alive, if there's one in the husband-and-wife camp, the husband-and-wife camp will win. The fool who gets voted out wins. The Body Collector serves as a guide for players who have been incapacitated, leading them to the location of their fallen body. Once the body is located, the Body Collector have the ability to employ the skill "Body Collector" in order to retrieve the body. The cooldown for this skill is 20 seconds. The collector emerges victorious upon gathering all three bodies. Upon discovering a deceased body, the player has the option to tap the "alert" button on the corpse in order to initiate a discussion. Players have the option to activate an alarm at the island's pull bell in order to join the discussion. Each player is granted a single opportunity to tug on the bell. During the debate session, players are able to observe the identities of deceased players. Each player is allotted a duration of one minute to speak individually, while the meeting as a whole is given a total of two minutes to speak collectively. Following the speech, the player who receives the greatest number of votes will perish, whereas others who have an equal number of votes will remain alive.

Firefight: A group of ten players is instantaneously transported to a shared island. Players have the ability to conceal themselves based on the topography of the island and engage in long-range attacks on other players using firearms. Treasure may be found in some spots on Midway Island, including advanced firearms, protective shields, medical supplies, and other stuff. Players commence the game with their health fully restored. Gunshot wounds result in a decrease in blood volume. The gun's level of advancement directly correlates with the amount of damage it inflicts. The shield possesses the ability to withstand a single strike without being affected. Additionally, the ammunition provides the

player with a health boost. The ultimate victor of the game is the final participant who manages to remain alive.

Hide and seek: 10 players are teleported to the same island. Players are assigned at random to either a hiding camp with 8 participants or a seeking camp with 2 participants. The island will feature numerous concealed terrains and things, including burrows, dwellings, closets, and more. Upon seeing these objects, a "Enter" button materializes, allowing the player to opt for entry. During the initial thirty seconds of the game, the hider uses this time to conceal themselves, while the seeker remains in the vault. Immediately after, the searchers took their turn. At this very moment Additionally, the Seeker possesses the ability to "Enter," which renews itself every 15 seconds. Upon the seeker's discovery of the concealed item, the hider is promptly eliminated. Following this moment, the seeker will experience a temporary deprivation of both auditory and visual perception for a duration of 20 seconds. Meanwhile, the one who is hiding has the option to either relocate to a different position for concealment or remain stationary. Once 20 seconds have elapsed, the seeker must locate all the hiders or face defeat. However, the cooldown period for their "entry" ability is shortened to 10 seconds, and they are granted two additional chances to use the "probe" talent to search for hiders within a two-meter radius.

4.5. Art, Sound and music

The game's visual effects predominantly exhibit a straightforward and endearing aesthetic. Each island will have a distinct combination of colors, for instance, the primary island is characterized by prominent dark green mountains, whilst Neverland features extensive regions of pink. Players have the ability to dye not just their outfits, but also the terrain on the island and the dwellings. In general, the players' clothes and the scenery on the island will be the most significant visual effects.

Every island will include distinct background music, characterized by exquisite and unadulterated melodies. Players have the option to choose the background music on their island, choosing from various genres like rock and electronic music. The vocalizations of the characters will be deliberately crafted to be highly pleasing to the ear.

5. Conclusion

From the standpoint of female teenagers' game preference, it is evident that all six elements of games mentioned above are essential. However, the visual impact of games is particularly prized by female teenagers in comparison to other elements, indicating their significant emphasis on the game's appearance. Furthermore, the questionnaire additionally furnishes crucial information regarding the preferences of adolescent females for each component, so enabling our game to adeptly cater to the requirements of this particular demographic. Nevertheless, there are still certain flawed aspects in this study. For instance, all the individuals surveyed in the questionnaire have the same nationality, which may not accurately reflect the gaming tastes of teenage girls on a global scale. In subsequent instances, the author intends to disseminate the identical questionnaire on various social platforms in different countries and analyze any notable disparities in the outcomes. Furthermore, the game proposed in this work has not undergone development and implementation, thus necessitating further investigation into the associated game impacts. Furthermore, aside from analyzing the gaming preferences of particular demographics, there are other concepts that are worth investigating within the realm of gaming. This paper centers on games that have the ability to effectively captivate players, but it is also possible to explore the other approach of creating games that are not prone to causing addiction. Although anti-addiction games may not have widespread popularity in the market, they provide players with the opportunity to enhance their concentration on the real world.

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