Exploring the Mechanics Design of Casual Games

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Abstract. With the continuous expansion of the casual game market, the research on casual games in the game industry focuses more on the economic level, and no literature systematically summarizes the design methodology of casual games at the level of mechanics. The purpose of this paper is to review the existing casual game design ideas, and supplement and expand them, proposing that designers should pay attention to the four parts of core mechanic, quest mechanic, progression of mechanics, and interaction of mechanics at the mechanic aspect. Finally, based on the case study, this paper will analyze the design idea of the game *TOEM*, and discuss how the mechanics should be connected, which is committed to providing new methods and perspectives on the aspect of mechanics.

Keywords: casual game, game design, game mechanic, game loops, TOEM

1 Introduction

In 2005, the Casual Games Association was founded and held annual conferences in several cities called Casual Connect, the first casual games organization in the gaming industry. John Welch, CEO of PlayFirst, said at Casual Games Summit 2008, “Casual games are really, really big.” Trefry, on the other hand, called casual games “opens up the audience and reach of games”[1].

Behind these phenomena is the expanding market for casual games, which was introduced as a new category in the Entertainment Software Association’s (ESA) annual report on the video game industry in 2011[2]. Casual games accounted for 63% of the most popular games in ESA’s 2021 Essential Facts About the Video Game Industry report[3]. Sensor Tower further has broken down the “casual games” category into “hyper-casual games” and “hybrid-casual games”. In the Mobile Gaming Market in 2023 report, it has been shown that although most games are declining in downloads in 2022, hybrid-casual games are growing at a rate of 13% and have achieved four consecutive years of growth[4].

The broad prospect of casual games has also made more and more scholars pay attention to them. However, the research on casual games focuses more on economic aspects[2]. Consalvo noted this in the study[5], “The industry and popular press have focused on the business of casual games.” In 2011, the University of Washington conducted a series of large-scale A/B tests on online casual games and found that this gameplay modification affected play time three times as much as the largest aesthetic variation[6]. In this context, the purpose of this study is to return to the exploration of casual game mechanic design, to analyze what should

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be concerned in casual game mechanics using a case study, and to hopefully provide new ideas for more casual game designers.

2 Casual Game Design

2.1 What is the casual game

Before discussing design ideas for casual games, our research must first determine what a casual game is. This question also informs the study of casual games. The concept of casual games was born back in 1998 when Scott Kim spoke at the Game Developers Conference (GDC). He argued that *Monopoly* represented a category of games that had a wider audience, were often easy to play using simple technology, and called them "games for the rest of us". This was the precursor to the current concept of casual games.

Since then, there has been a series of discussions in the video game industry about the concept of "casual games", starting with a 2007 study by Tampere University, which stated[7]: "It appears that there is no consensus as to what 'casual' exactly means when people are talking about games that are labeled as somehow 'casual'." Kuittinen articulated the concept more conservatively: "Certain properties of games are called casual, e.g. game has generally appealing content, simple controls, easy-to-learn gameplay, fast rewards, or support for short play sessions." Welch also said that one of the biggest problems is that it's hard to define exactly what casual games are, and loosely defined them as that are friendly to occasional users and are intuitive and accessible. Juul published the book *A Casual Revolution: Reinventing Video Games and Their Players* in 2010, which put forward the five elements of casual game design and analyzed the concept of casual games with case studies. The book is a landmark in casual game studies[2]. Wohn defined it more simply, "casual games as games that are distributed by companies that label themselves as casual game distributors[8]." On the other hand, Di Loreto and Gouaïch defined it in terms of the type of player, considering casual game players as "who do not see themselves as gamers"[9]. In addition, some terms are often associated when talking about the concept of casual games. For example, "a short learning curve and simple game mechanics with simple interrelations" [10], "simple, require low commitment, and have short play sessions" [11], "cheap or free, are easy to learn" [12] and so on.

Hence one can see that although the concept of "casual games" is still controversial, there is still a consensus on certain aspects. Therefore, this paper defines casual games as games with properties such as "friendly and easy" and "accessible".

2.2 Discussion of casual game design

To better understand the design issues of casual games, the author has conducted a review of work on the subject. In 2007, Kuittinen proposed the Expanded Game Experience (EGE) model[7], which focuses on the discussion of casual game experience design. Later, Kultima proposed a framework of casual games design values that included Acceptability, Accessibility, Simplicity, and Flexibility[13]. Juul gave an overview of the history of the development of matching tile games[14] and categorized the design elements of casual games into five sections[15]: Fiction, Usability, Interruptibility, Difficulty and Punishment, and

Juiciness. In 2013, Chiapello used qualitative research to conduct semi-structured interviews with designers to provide a new perspective on the definition of casual games[2]. The study emphasized five important aspects of casual games:

- The golden ratio between challenge and skills: Challenge was the core feature of a good game. In a casual game, the ratio between challenge and player skill must always be perfectly balanced.
- Gameplay loops: A gameplay loop is a portion of a game containing an objective, a challenge, and a reward. Micro-loops allow a very tight control of the challenge.
- Revisiting progression and difficulty: Progression can be built on difficulty or on variation.
- Extrinsic values: It refers to players' experience before and after the game session.
- Fiction and graphics: game fiction creates the first impression of the game and is used to promote the game. Although the graphic style is not an essential criterion in the definition of casual games, it helps to "sell an interaction".

Within these, Extrinsic values and Fiction and graphics have described casual games more from an out-of-game perspective as well as narrative and graphics, while the other three dimensions have focused on the design of game mechanics. Chiapello's study introduced the theory of Flow [16] and argued that "In a casual game, the ratio between challenge and player skill must always be perfectly balanced, while this is not necessary in more hardcore games[2]." This requires casual game designers to be more meticulous in the balance of challenges and skills. At the same time, Chiapello referred to the concept of "gameplay loops" as consisting of an objective, a challenge, and a reward. It means that the player needs to set goals and challenges and use the core mechanic to complete the challenges and get positive feedback. Taking the classic casual game *Tetris* as an example, the objective in this game is to get a higher score, the challenge is to eliminate enough squares in a limited space, and the reward is to complete the elimination to increase the score. The goal here can be seen as the ultimate quest of the game, while the challenge is a milestone or consists of multiple mini-quests. Game designers can control the difficulty of the challenge by adjusting the design of the mini-quests to push the game's progression. Progression can be built on difficulty or on variation. In the first approach, the number of quests remains the same, but the difficulty of the quests is gradually increased. The second one, on the other hand, emphasizes the change in the number of quests and creates a balance between challenges and skills by gradually increasing the number of quests.

However, Chiapello ignored the player's interaction with the game and game controls, which means how the player gets and reaches challenges. Kultima added to this, "Minimal elements and user interfaces make it easier to get into the game [13]." Johnson held a similar view, "a lack of 'comfort' or 'ease of use' with the interface systems noncasual games might use [17]." These all emphasize that there should be a simplification in the player's interaction path with the game. In addition to this, although Chiapello mentioned that there should be a quick and concrete introduction to the game elements [2], the method of implementation is not outlined. Kultima said the games should "maintain the lower cognitive exertion" [13]. This points to intuitive design. In 2022, Thai proposed the term "Intuitive Game Mechanics" [18] and defined it as "game mechanics that a player can understand and complete without the use of

assistance or analytical processing". With intuitive game mechanics, players can rely on their intuition to process information quickly and thus reduce cognitive effort.

2.3 Mechanics design for casual games

Mechanics, Dynamics and Aesthetics (MDA) framework is one of the most widely accepted and practically employed approach to game design. It defined a game as a three-layer structure of Mechanics, Dynamics, and Aesthetics, the player and the designer standing on opposite sides. Mechanics "describes the particular components of the game, at the level of data representation and algorithms" [19]. MDA has offered a new perspective on game design, and it also showed that designers can only shape the player experience by tuning Mechanics. Therefore, my study's exploration of the mechanics of casual games is intended to give game designers more advice. Based on the previous discussion of casual game design ideas, I summarize four components that should be focused on when designing casual game mechanics:

- Core mechanic: It can be used in conjunction with the Quest mechanic to form a fast gameplay loop. The Core mechanic allows the player to achieve quest objectives and earn rewards. Core mechanic should be simple and accessible, like intuitive game mechanics, keeping cognitive consumption low. If the mechanics are more complex, they should be unlocked gradually as the game progresses, and the challenges of the mechanics should match the player's abilities.

- Quest mechanic: Provides goals and challenges for the Core mechanic, which are divided into ultimate quests and mini quests. Mini quests are designed to provide the players with milestones and are used to adjust the difficulty of the challenges. Positive feedback should be provided quickly when the player completes the quest.

- Progression of mechanics: As the game progresses, the Core mechanic and Quest mechanic should be modified so that the challenges match the player's skills. This can be designed on two dimensions, difficulty, and variation. In the first case, the Core mechanic and quests are adjusted for difficulty. In the other case, add more content to the Core mechanic or raise the number of quests.

- Interaction of mechanics: Players need more accessible and efficient ways to interact with the various mechanics.

3 Case Study Analysis

TOEM is a photography puzzle game that puts the player in the role of a photographer who uses a camera to solve puzzles until finally reaches the top of a mountain and photographs TOEM, a natural meteorological phenomenon that resembles a haze of light. 99% of the 2,904 reviews on its Steam page are "Overwhelmingly Positive" at the time of writing. In Steam's popular user-defined tags for this product, players have applied tags such as "Cozy", "Wholesome", "Relaxing", and "Casual" to describe it. The famous media Eurogamer gave it an "ESSENTIAL" rating, calling it "playful challenges and a warm sense of place and character converge in this cheerful modern classic" [20]. According to what players and the media have commented on it, the author thinks it can be called a "casual game" here.

3.1 Core mechanic-oriented fast loops

The core mechanic of *TOEM* is to use the camera to take pictures to solve puzzles, with its main functions of snapshotting, focusing, filtering, and flipping the lens. This gameplay is abstracted from real-life photo-taking activities. However, the camera does not feel like a simulation of the functionality of a professional camera in *TOEM*, but rather a simulation of a familiar cell phone camera function. This allows a larger portion of players to have a realistic experience base of the function, which reduces the learning cost for players and keeps cognitive consumption low.

At the same time, *TOEM* has created a complete gameplay loop oriented to the core mechanic (**Figure 1**) and linked the core mechanic and quest mechanic through additional mechanics. This loop needs to include three parts: objectives, challenges, and rewards. The player triggers a quest through the dialogue mechanic and is given an objective and challenges in the quest mechanic, then uses the core mechanic to take pictures to solve puzzles and uses the gathering mechanic to save photos. Finally, the player again delivers the quest through the dialogue mechanic and receives positive feedback (you could also say rewards) for completing it.

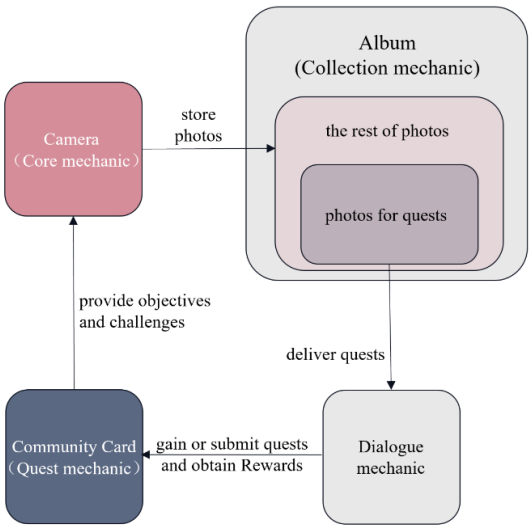

Fig. 1. The gameplay loop of *TOEM*.

3.2 Two dimensions to control difficulty

As I have mentioned earlier, the challenges can be customized to fit the skills by building the progression in terms of difficulty and variation, and there are 65 quests in *TOEM*, of which the initial quest “experience TOEM” is the ultimate quest, which runs through the entire story of the game. The remaining 64 mini quests are spread across six levels and can be divided into three types of difficulty (**Figure 2**):

- Single quest: Simple quests that can be completed without prerequisites or crossing levels.

- Single-level quest: Medium difficulty quests that require prerequisites (completion of other quests as a prerequisite) and can be completed without crossing levels.
- Multi-level quest: Difficult quests that require crossing multiple levels to complete.

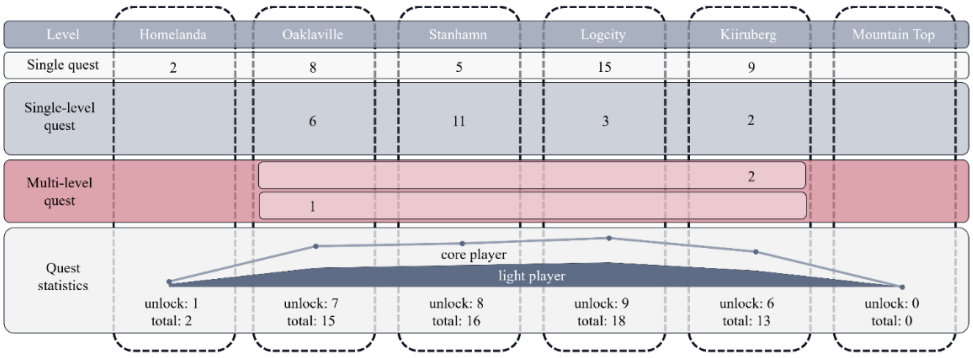

Fig. 2. Quest statistics.

From the overall quest statistics, single quest accounts for about 61% of the total number of quests, single-level quest accounts for about 34%, and multi-level quest accounts for about 5%. The designers have arranged the quests in such a way that the number of easy quests is the largest, and the proportion of difficult ones is the smallest, which is only 1/12 of the number of easy ones. At the meanwhile, the game has introduced the concept of the number of unlocked quests, so that players only need to complete part of the quests to unlock the next level. This not only ensures the experience of light players but also creates an effective space for core players to play. To better understand this design, I have counted the number of unlocked tasks and the total number of tasks and found that they both maintained nearly 50% of the total number of quests in all levels. In the previous calculations, I have found that single quests accounted for 61% of the total quests, which is greater than the 50% of quests that the player needs to complete to pass the levels, which means that the player only needs to complete some of the simple quests to complete the game successfully.

In addition to this, the game's quests have been designed from the dimension of change. Through the line graph statistics (**Figure 2**), it can be noticed that the number of quests in the game increases as it progresses and reaches its peak in the fourth level, while the number of quests gradually decreases in the last two levels that wrap up the game, allowing the player to experience more of the narrative.

The core mechanic of the game has been designed primarily using a variation approach. By disassembling the game's seven major mechanics (**Figure 3**), changes are mainly made based on the core mechanic. As Kultima said, "If the game has more complex features, these can be gradually introduced [13]." With the gradual introduction of various functions in the core mechanic, the player could reach a certain balance in challenges and skills. In the fourth level, as all the functions are unlocked, the designers have matched this change in the number of quests, making the number of quests peak to balance the end of the change in mechanics.

As a result, to balance challenges and skills, not only should game designers design separately from the core mechanic and quest mechanic but also should combine multiple mechanics to explore ways to achieve the golden ratio.

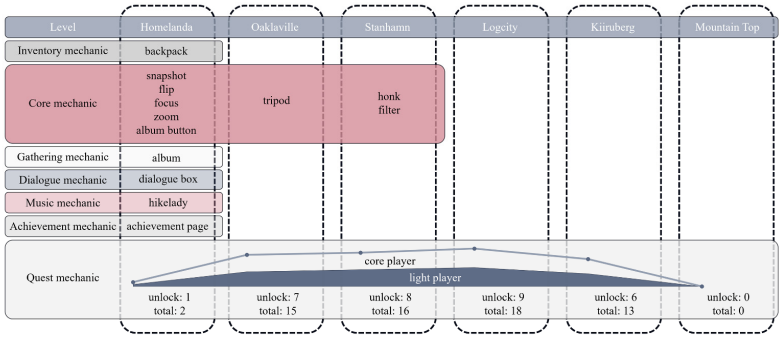

Fig. 3. Processes of the game's mechanics.

3.3 Simple mechanic interaction paths

To simplify the interaction between the player and the mechanics, *TOEM* has added a shortcut path design. By combing through the interaction paths ((**Figure 4**), I find that in the common interaction paths, quest mechanic, music mechanic, gathering mechanic, and tripod of core mechanic need to enter the inventory mechanic first, before selecting the corresponding mechanic for interaction. Although in logic, the character's community card, hikelady, album and tripod should be placed in the backpack, so players need to open the backpack before using them, while the camera hanging around the character's neck can be opened directly. However, from a game design point of view, the interaction paths of these four mechanics are too complicated. Therefore, *TOEM* has added shortcuts to allow the player to access the above four mechanics directly through the shortcut menu.

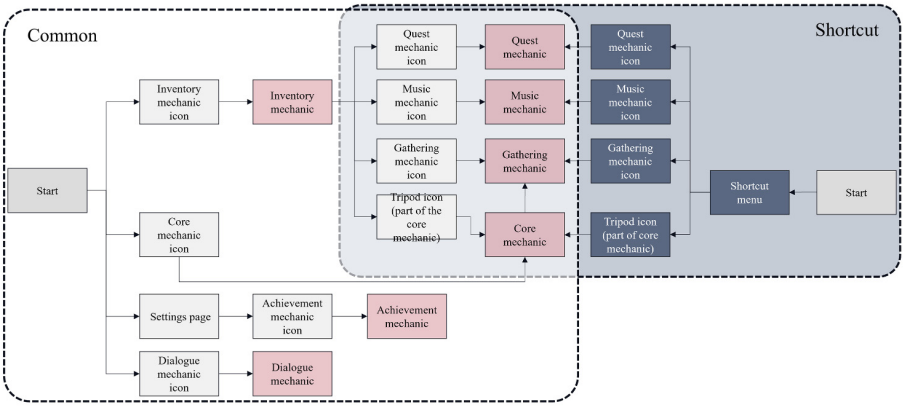

Fig. 4. Interaction path of *TOEM*.

4 Conclusion

The expanding global market for casual games has inevitably been accompanied by a deepening of the study of casual games. Meanwhile, the emergence and integration of various media have also continuously updated and improved the definition of casual games. In these discussions, the characteristics of casual games as “friendly and easy” and “accessible” have been consistent throughout. In addition, the player’s knowledge of casual games is also deepening, which puts forward higher requirements for the design of casual games. In this context, this paper summarizes the concerns of casual game design in terms of Core mechanic, Quest mechanic, Progression of mechanics and Interaction of mechanics.

In the end, the author has dismantled the mechanics of the popular casual game *TOEM* using a case study and has discovered some patterns and points in the design:

- Core mechanic-oriented fast loops: The core mechanics should be intuitive game mechanics, and the other mechanics should be designed to create a fast and simple gameplay loop around the core mechanic.
- Two dimensions to control difficulty: To balance the challenges and skills, the design of the challenge should be evaluated in two dimensions, difficulty, and variation, and by combining the core mechanic and the quest mechanic.
- Simple mechanic interaction paths: Simplifying the path of interaction between the player and various mechanics can even break the logic of reality.

This adopts the idea of theoretical research from practice and has also been tested by players and the market, which will provide more casual game designers with perspectives on mechanic design and game iteration. However, the design method mentioned in this paper only discusses the design of PC-based games from *TOEM*. It has certain limitations in today’s increasingly diverse gaming devices. Therefore, future discussions on casual game design will inevitably focus on new interaction platforms and new interaction devices.

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