

Towards Suitable Free-to-Play Games for Children

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Abstract. The Free-to-Play model has become popular in the gaming industry during the last decade. Games are offered for free, where additional content can be purchased. Different monetization features are used within Free-to-Play games to generate revenue. These features have been seen as problematic, especially when children are the players. A limited number of studies have highlighted the problem of these games, and little research has looked into the critical factors of Free-to-Play games and children. This research aims to identify the most critical factors towards creating suitable Free-to-Play games for children. We performed an exploratory study with 15 developers of Free-to-Play and/or children’s games and three domain experts. Data was gathered using semi-structured interviews. A thematic analysis was undertaken to analyze the transcribed interviews and discover themes and patterns across our data set to answer the research question adequately. We identified five crucial factors to consider when developing Free-to-Play games for children: 1) exploiting psychological behavior, 2) game play and user interface, 3) choosing features, 4) customize the development process to children, and 5) responsibility.

Keywords: Free-to-play · Freemium · Children

1 Introduction

Free-to-Play (F2P) games are offered for free to the public, and developers get revenue from advertisements or additional content that the player can purchase [13]. Examples of trendy F2P games for children are *Among Us!*, *Angry Birds*, *FIFA Football*, *Fortnite*, and *Pokémon Go*. The paradigms of game development have changed drastically with the advent of F2P. The focus is shifting away from developing the best possible game to games that motivate the users to purchase virtual content as often as possible while increasing the user base [9]. Various strategies are thought to increase the player’s commitment towards the game, increasing the risk of addiction and overspending [6]. Features that resemble gambling have been widely used in F2P games and have received much

attention over the years. With the advancement of technology, it is easier for anyone to create games. Besides, it is getting increasingly difficult to keep up with threats and vulnerabilities for all stakeholders, especially children [14]. Thus, the objective of this paper is *to understand better how suitable Free-to-Play is for children and what essential factors must be addressed to improve this relationship*. We present the findings from an exploratory study consisting of interviews with 15 developers and three domain experts. F2P developers need to design products to satisfy customer demands and attract more mobile device users to download and consume within the game [4]. In many cases, this leads to over-aggressive monetization strategies and exploitive behavior [8]. When creating games for children, they as a stakeholder should be included as much as possible in the development process [14]. We aim at exploring how children are addressed in F2P games, how they should be addressed, and what factors are crucial for developing F2P games for them. The main research question is: *What factors must be addressed to create suitable F2P games for children?*

2 Related work

2.1 Free-to-Play

F2P games use the business model *freemium* as a revenue model. Freemium refers to a product or pricing structure where the core service is free. The revenue is generated through sales of additional products and premium services [12]. The term comes from the combination of “*free*” and “*premium*” due to the strategy of providing a free version and having additional features that can be purchased [11]. A registration key could be purchased to gain access to all features. Over the past few years, freemium has gained popularity and seems to be the answer to earn money from content on the internet. Today, the freemium business is being used in various sectors such as music, social networks, data storage, virtual worlds, and most pertinently, the gaming industry [12].

F2P has been discovered to be a promising revenue model to compete with classic models, such as one-time payment and subscription-based models that require a financial investment before the user could play the game [17, 9]. F2P games are distributed and played free of charge. However, the games are typically restricted in some manner [2]. To bypass these restrictions, in-game purchases are required. One example is to restrict how long the player gets to play the game. Moreover, other ways to monetize are by offering in-game items that enhance the gaming experience or give advantages to the players; these are known as *virtual goods* [13]. Virtual goods have become the main monetization method in F2P games [9]. Paavilainen et al. [21] point out two significant advantages of the F2P model. Firstly, the game’s virtual goods allow for flexible price points for customers with different willingness to pay for additional content. Each microtransaction is usually so small that they fall within the *Pennies-a-day* theory of mental accounting [10]. The Pennies-a-day theory is when a more considerable expense is converted into a series of smaller amounts, which leads the customer to view a series of small expenses as less painful than a substantial one-time

payment. Secondly, it allows for a more comprehensive segmentation of players as the entry is free, and the virtual goods can be tailored to different audiences [21]. In addition to these advantages, the F2P model makes it possible to create positive network effects with a large user base even if they do not contribute to in-game purchases. More users exchanging information and experiences will subsequently lead to increased visibility and attract more users. Consequently, the greater the user base means potentially more players converting to paying players, leading to increased revenue and profit [9].

2.2 Free-to-Play and Children

Over the years, there have been multiple news stories related to children making accidental purchases with their parent’s credit cards [15, 19]. In 2013, the US Federal Trade Commission (FTC) filed a class-action lawsuit against Apple Inc. due to allowing children to make in-app purchases without the parent’s consent. This resulted in a settlement requiring Apple to refund \$32.5 million to the consumers that were affected [18]. Apple has improved its security for in-app purchases since, but such cases still occur. In 2020 was Apple filed another lawsuit for having games that use gambling mechanisms to target children and addicted gamblers [22]. This resulted in Apple having to change its policy and force the game developers to disclose the odds of each item.

There is a growing amount of F2P games that are accessible for children today. Most F2P games are accessible to children on various platforms such as Apple’s App Store and Google Play Store. Many games are explicitly developed for children, but the majority of them are not. With the advancement of technology, it is easier for anyone to create games, and it is getting increasingly difficult to keep up with threats and vulnerabilities for all stakeholders, especially children [14]. F2P games that try to publish their games on these platforms get controlled before they get published. Most inappropriate games are removed, but still, many games bypass the platform’s quality checks.

A recent systematic literature review on F2P and children found various perspectives and results [3]. Many of the primary studies related to revenue maximization and influential factors to make in-game purchases. Several of the studies expressed concern regarding how games target children. Furthermore, many researchers concluded a need for restrictions, more precise guidelines, and further research in the area.

2.3 Ethics and Dark Design

It has been stated that developers have an ethical responsibility when creating software [25]. Moreover, technical competence should not be used to behave dishonestly. Zagal et al. [26] substantiates Sommerville [25] and states that game designers typically are regarded as the player’s advocates. However, the authors point out that the game creator does not necessarily have the same interest in the games as the players. Furthermore, it has been observed that not all developers may have the user’s best interest in mind [13]. Additionally, developers can have

different perceptions of what they consider ethical game development. Features of games can be regarded as hindrances or psychological traps used to motivate them to spend money. A former CEO of the American game developer company Zynga has stated, “*I did every horrible thing in the book, just to get revenues right away*” [13]. Ethical dilemmas may arise when people have different views of a situation or the way things are done. In today’s gaming market, anyone can create a game and upload it to the App Store or Google Play Store independent of their background, leading to games that exploit the user, as the CEO from Zynga admitted.

Another ethical aspect that has been observed is *dark game design patterns*. Zagal et al. defines a dark game design pattern as a pattern intentionally designed by a game creator to cause negative experiences for players, which are against the player’s best interest and likely to happen without the player’s consent [26]. An example of a dark design pattern is the *loot-box*, a virtual element the player can buy to get a randomized selection of in-game advantages or cosmetics [16]. For example, users of *FIFA Football* can buy a loot-box to get a football player. Kristiansen and Severin seeing a significant positive correlation between loot-box engagement and problem gambling severity [16]. Zagal, Björk, and Lewis [26] state that if the player is aware of the design pattern’s effect and can give their consent, the pattern is no longer dark. However, Zagal et al. [26] does not address dark patterns targeted at children in particular.

3 Research Method

We ran semi-structured interviews to focus on the pre-defined questions to answer the research question and let the participants express themselves freely and allow for follow-up questions. 83 participants were contacted, and 18 participated.

3.1 Subject selection

For the interviews, guidelines produced by Runeson and Höst [23] were used to define selection criteria for subject selection. We primarily focused on participants that produce F2P games for children, mainly developers and game designers. Participants with other roles were also considered relevant if they were included in the process of creating games. Creators of F2P games for an older audience were also considered relevant to get more insight into the field of F2P. To better answer the research question, participants who had insight or experience creating games for children were also considered relevant for this study. Additionally, domain experts on children and games were considered relevant. This resulted in the following criteria:

1. The person had experience creating games for children.
2. The person had experience creating F2P-games.
3. The person had the knowledge and experience regarding the relationship between F2P games and children.

A person was considered a relevant interview candidate if they met at least one of the criteria. Participants that develop F2P games are denoted *developer* (D). Specialists or domain experts are denoted *experts* (E). An overview of the participants is presented in Table 1.

Subject	Role	Gender	Duration
E1	Advisor for games and apps	M	37 minutes
E2	Senior Legal Assistant	M	36 minutes
E3	Creative Director & Psychologist	M	43 minutes
D1	Game Designer	F	28 minutes
D2	Game Designer	M	27 minutes
D3	Game Designer	F	25 minutes
D4	Game Designer	M	34 minutes
D5	Game Developer	M	34 minutes
D6	Game Designer	M	40 minutes
D7	Game Artist / Art Director	F	22 minutes
D8	Game Designer	F	32 minutes
D9	Game Producer	M	22 minutes
D10	Game Designer	M	37 minutes
D11	Game Economy & Monetization Manager	F	38 minutes
D12	CEO	M	32 minutes
D13	CEO	M	34 minutes
D14	CEO	F	27 minutes
D15	Game Developer	F	28 minutes

Table 1: An overview of subjects.

The interview subjects were localized using several approaches, including snowball sampling. Four different channels were used to contact interview subjects: 1) the social career network LinkedIn¹; 2) the professional network of our supervisor; 3) a co-worker space for game developers in Norway (Work-Work²); 4) the professional network of the interview subjects.

65 persons were contacted through LinkedIn. Other approaches consisted of contacting persons through email. Everyone was asked if they knew anyone suitable we could interview. People that met the criteria were contacted. One interview subject was observed at a seminar regarding F2P and children for parents. Another interview subject was localized by a documentary regarding how technology affects children. In total, 83 persons were contacted.

3.2 Data Collection Procedure

The interviews were semi-structured since this is a flexible approach when the interview subjects have different backgrounds and roles in the game development of F2P games. By having semi-structured interviews, all the interviews revolved around the same themes (advantages/disadvantages, monetization features, factors, game development process, and improvements), but it could be adjusted to fit each subject better through follow-up questions and prepared domain questions. In addition, it is easier for the interviewee to talk more freely. The researchers were in direct contact with the subjects. This allowed the interviewers to control all the data that was collected and to ensure the pre-defined

¹ www.linkedin.com

² work-work.no

research question was answered adequately. It also allowed us to ask follow-up questions.

All interviews were conducted digitally on the video communication software program Zoom³ due to various reasons. Firstly, the ongoing COVID-19 pandemic limited the option to conduct physical interviews with the interview subjects localized in the same city as the researchers. Secondly, international subjects were located worldwide, which made digital interviews the most suitable. The interviews were either conducted in the subject’s preferred language (English or Norwegian). All the interviews with Norwegian participants were undertaken in Norwegian as this allowed them to express themselves more freely, concisely and give more in-depth explanations. For the transcription phase, this resulted in having to translate the parts of the interview.

3.3 Analysis Procedure

We applied a thematic analysis [5]. Our thematic analysis aims to identify and understand the most critical factors needed to create F2P-games for children and answer our research question.

The coding process was a mix of both inductive and deductive approaches, known as an integrated approach [24]. The qualitative data analysis program NVivo⁴ was used to do the thematic analysis efficiently and organized. Coding with NVivo resulted in 201 codes with 419 references from the 154 pages of transcribed interviews. After reviewing, merging, and deleting duplicated codes, we ended up with 69 codes coded into 16 themes and three higher order themes.

4 Results and Discussion

The thematic synthesis process revealed five themes or factors that must be addressed when creating F2P games for children, illustrated in Figure 1. These five factors are: 1) exploiting psychological behavior, 2) game play and user interface, 3) choosing features, 4) customize the development process to children, and 5) responsibility.

4.1 Exploiting Psychological Behavior

The thematic analysis revealed exploiting psychological behavior as an essential theme. One of the problems with F2P games relates to the game being offered to the players for free, forcing game development companies to generate revenue in other ways. F2P has caused challenges due to over-aggressive monetization techniques using dark patterns to exploit the psychological behavior of the players to increase spending [26, 8]. Moreover, the different monetization features currently being used in the F2P gaming industry allow for exploitation easily, making it possible for children or other vulnerable players to spend significant amounts in the game [1]. Addiction due to F2P was claimed by E3 to be one of the most

³ zoom.us

⁴ www.qsrinternational.com/nvivo-qualitative-data-analysis-software/about/nvivo

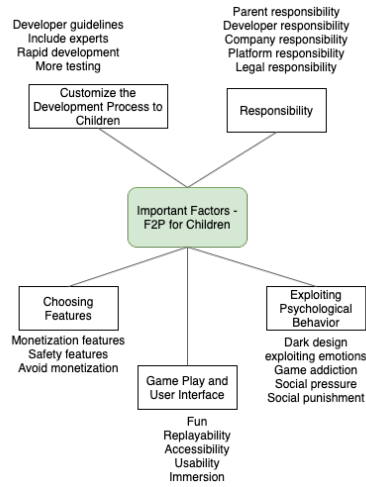


Fig. 1: Model of the higher-order theme of important factors. The squares represent sub-themes, and the texts represent the codes for each theme.

usual cases of addiction. The reason being the low threshold to enter the game and how accessible it is.

E3 - *“There is a low threshold to enter. It’s easy to spend too much money on them if you become addicted, such as buying lots and lots of jewels in Clash of Clans or other similar games where the player can get benefits.”*

Moreover, mechanics such as loot-boxes were seen as unfavorable due to the resemblance with gambling and addiction as presented by Kristiansen and Severin [16]. Mechanics that create peer pressure and punishing the player for not purchasing were mentioned as some of the worst manipulation techniques used in a game for children. According to the systematic literature review [3], such mechanics would be particularly inappropriate for younger users given their ongoing cognitive and social development that could easily be exploited. This is supported by Fitton and Read [8].

4.2 Game Play and User Interface

Regarding the game play and user interfaces, *fun*, *accessibility*, *usability*, and *immersion* were the most important elements when designing F2P games for children. *Fun* was an obvious factor for creating games, but the reasoning varied across the interviewees. The majority of the developers wanted the players to enjoy themselves, and several mentioned fun as an important factor to achieve a successful game. Additionally, some of the interviewees that had games based on subscription had to make the game fun to prove themselves to children and their parents that would eventually pay for the game.

D8 - *“When making games for younger children, it is important to give the child space to play and have fun. The game has to prove it is fun before the parent is asked to spend more on it.”*

Immersion was also important for the game experience and made the game fun and exciting for the players. Advertisements were seen as the major key for breaking immersion in a game and something that should be avoided. Moreover, *usability* and *accessibility* are essential when creating games for children. Children are pretty diverse, and it is crucial to make the game easy to understand and play by everyone.

D14 - *“We figured that children as a target group are very diverse. As a result, we implemented different difficulties that the children could choose from. In this way, the children would always see progression in the game and reach a higher level.”*

Additionally, many developers implemented voice-overs, confetti, and well-designed UX elements to make it easy for children to interact with the game.

4.3 Choosing Features

None of the monetization features mentioned in the interviews were seen as suitable for children, but some features were seen as worse than others. One example is the loot-box, as it resembles with gambling [16].

E3 - *“The worst thing is gambling elements, where players do not know what they will get, such as loot-boxes.”*

Battle-Passes and cosmetics were mentioned as more positive features because they do not impact the gameplay but give the player optional content to extend the gaming experience. However, the psychologist highlighted the battle-pass as one of the worst features as it could create purchase pressure and social pressure for children. In a study by Zendle et al. [27], players saw cosmetics as more acceptable than items that offered an advantage. Still, as mentioned above, it may strengthen peer pressure in a game to have certain cosmetics. The in-game currency can be considered one of the core elements of F2P as it is easily combined with other features. However, it was considered unsuitable for children because it may act as a psychological barrier between real currency spent and virtual currency. Thus, the player, especially children, can lose an overview of how much they spend.

D12 - *“Using in-game currency is a psychological trick that makes you not see the actual value you spend, especially for children who, in a way, only look at it as in-game currency and do not see the real value that they put into the game.”*

To avoid children playing games that are not meant for them, and interacting directly with the monetization features in a game, many of the interviewees had implemented age gates and parental control.

D6 - *“On some past projects, we’ve had to implement age gates. To access certain parts of the app, you need to make sure that you’re above a certain age.”*

The use of age gates is a familiar mechanic to use in a game, but the standard version does not hinder or stop a child from bypassing this mechanic, for example, by entering another age. Some companies had used a different age gate where the child was given a mathematical question or other types of questions to prevent children from bypassing the age gates. The goal was to exclude the young children who could not read. However, this also limits elder children with reading disabilities and other disabilities from entering the game, which may be problematic and not optimal. Moreover, many of the interviewees mentioned that they have no way to control once the age gate is bypassed to see if the player is an adult or a child. This can be problematic, especially when F2P games are highly accessible. Additionally, parent control was seen as an excellent way to separate the monetization mechanics from the children and give the parents more control of what features the child is interacting with inside the game. Many of the interviewees had used such parental control. Such safety features can potentially make the game more secure to interact with from a child’s perspective and make the parents feel safer knowing they are in control.

D8 - *“Devices should not be set to allow purchases without inputting a password or biometric when children can play on them.”*

Additionally, parental guides provided by the game company could enable parents to create a safer environment for the children. Parents find it hard to manage the tension between keeping the children safe, allowing children to learn, developing media skills, and having fun [20]. Moreover, data analytics have made it increasingly difficult for parents to understand how the platforms their child use operates in terms of in-game mechanics, personal data gathering, and in-app purchases [20]. Such parental guidelines could help parents to create a safer environment for their children.

4.4 Customize the Development Process to Children

The expert subjects pointed out the importance of guidelines when creating F2P for children, especially for developers. Additionally, including child experts in the development process was highlighted as necessary by E3.

E3 - *“I would have used child experts to create a game that has meaning and something that kids love.”*

However, only a few subjects mentioned that they consulted with experts or teachers/professors in the development process. Many of the developers based their designs on intuition and experience. This was also revealed in the study by Ekambaranathan et al. [7]. As claimed by E3; this would be helpful to develop valuable games. One of the problems is that many of these F2P games are not necessarily created for children, but children constitute a large part of the user base in many cases. Furthermore, agile methodologies, such as Scrum, were used

by most companies as this allowed for a faster software development life cycle. However, findings from the interviews reveal high pressure for releasing games. Developers usually do not spend much time on a specific game before moving on to the next.

D7 - *“I think there’s also something about the quality of the games because everything has to be made super fast and you don’t have time to finish anything so you start out making a game, but you can only spend a month on it, and if the game fails it’s on to the next one.”*

Rapid development reduces the quality of the games, according to the interviewees. Many of the companies did tests with the target group during development. However, the developers did not always have time to address all the feedback before the game went into production. In many cases, testing was done late in the development process. Earlier and more frequent testing can make up for the tight deadlines that developers face and improve the game quality [25].

4.5 Responsibility

Our study revealed a disagreement between the experts and the developers regarding who is responsible for the ethical aspects concerning children. Some developers claimed that the main responsibility lies in the hand of the child’s parents. In contrast, the experts claimed that the authorities, developers, and the platforms such as App Store and Google Play should have the most responsibility.

E3 - *“I think the ones that can do something about it today are the developers, but they will not because it’s about competition and survival.”*

Some developers wanted to be ethical and create child-friendly apps, but it was hard to prioritize features that would not contribute to higher incomes due to tight deadlines and budgets. Similarly, Ekambaranathan et al. [7] noticed that a lack of ethical monetization options might lead to a perception that trade-offs must be made between the commercial success of the game and the best interest of users. Platforms already have rules, but there might be a need to introduce more or stricter rules to reduce the trade-off that has to be done between being ethical and generating revenue. More legal or platform regulations could solve the different challenges to address whether or not developers or parents should have the most significant responsibility. However, Sommerville [25] and Zagal et al. [26] states that developers have an ethical responsibility when creating software, as presented in section 2.3.

5 Conclusion and future work

This research aimed to identify the most critical factors towards creating suitable F2P games for children. We conducted an exploratory study investigating F2P developers and individuals who work with or know the effects of F2P for children.

In total, 18 subjects were interviewed, three domain experts and 15 developers. Our findings indicate that the F2P industry is a competitive market where only the most popular games make solid revenue. With F2P games being initially free, the companies need to create incentives for the player to make in-game purchases. This has, in many cases, led to over-aggressive monetization strategies and the use of dark design to exploit the player's behavior. However many companies try to be ethical, but there seems to be a perceived trade-off between being ethical and competitiveness in the market. The thematic analysis revealed five crucial factors that need to be addressed to create suitable F2P games for children: 1) exploiting psychological behavior, 2) game play and user interface, 3) choosing features, 4) customize the development process to children, and 5) responsibility. Further work could build on the findings to make a framework the developers can follow to work towards suitable F2P games for children. The findings could also be used to create regulation, technical solutions, and marketing strategies to increase the number of ethical games. Increasing the data collection by investigating several F2P companies, and experts may improve the reliability of the results. In addition, further research could interview children who are the target audience for these specific F2P games to get a different point of view focused on the main players. Another interesting group of interview subjects is the parents paying for the in-game purchases.

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