Popularity of Pokémon Video Games

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Arttu Nättinen
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Abstract

Pokémon is one of the most successful media franchises ever and is known all over the world. The idea of Pokémon was created by Satoshi Tajiri in the 1990s. Pokémon started its worldwide journey from Japan in 1996 as two video games on Nintendo's Game Boy gaming system.

Pokémon and its popularity has been researched a lot over the last 27 years as have been video games. More recently multiple researchers have focused on the more recent video game trend, Pokémon GO. However, research focusing on Pokémon video games instead of Pokémon as a whole or just Pokémon GO are scarcer. This research tries to answer what makes Pokémon video games so popular and how the video games have stayed relevant for so long. The research was conducted as a literacy review over existing literacy and research.

To work towards understanding the Pokémon games better, this research first takes a look at Pokémon games overall. The concept of Japanese definition of cuteness 'kawaii' and its relation to Pokémon is also discussed. The second chapter focuses on Pokémon GO: its rise to popularity and the problems it faced. The third chapter discusses the psychology of video games and how they affect the human brain.

A conclusion was drawn from the literacy found and used in this research. A clear reason for the popularity of the Pokémon video games could not be defined, but instead it is a result of multiple factors. Pokémon's number one selling point are the Pokémon characters themselves. Pokémon not having similar competing products at the time of release and Pokémon video games being solid video games were other notable factors that helped Pokémon video games to gain the popularity they have.

Keywords
Pokémon, Pokémon GO, video games, popularity, kawaii, psychology

Supervisor
PhD, University Lecturer Leena Arhippainen

Foreword

A special thank you to Professor Kenji Hasegawa at Yokohama National University for the guidance and invaluable feedback during me writing the initial study this research is based on. Your warmheartedness was a motivating force and made my brief stay at YNU even more unforgettable.

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Contents

1. Introduction

As an advocated video game fan and possibly a future video game developer, I have always found video games fascinating. Naturally, some video games are more enjoyable and memorable, while some make you feel like you spent your hard-earned money on a pile of trash. What makes a video game enjoyable and how to avoid player frustration? Researchers have tried to answer such questions since the dawn of video games with varying results.

This research focuses on the popularity of Pokémon video games and tries to find concrete evidence why Pokémon video games have remained relevant for almost 30 years. Video games and Pokémon both have been researched exhaustively, but the combination of the two has not been as popular of a research target. Except more recently, after the augmented reality video game Pokémon GO was released. Having grown up in the 1990s amidst the original Pokémon phenomenon, researching a combination of two personal interests seemed like a good research subject. The research was conducted as literacy review (Denney & Tewksbury, 2013), going over existing research and literacy, comparing, combining, and analyzing the information they provided.

The second chapter of this research describes the Pokémon franchise in general but mainly focuses on Pokémon video games. Even if Pokémon started as a video game, other Pokémon media had a significant impact on the growth of the franchise, so the full origin story of Pokémon was too important to be left out from this research (The Pokémon Company, 2023). However, as the main focus of this research is on the popularity of Pokémon video games and not Pokémon in general, the chapter mainly focuses on Pokémon video games and their main gameplay concepts (Game Freak, 1999). A subchapter elaborates the concept of ‘kawaii’ – a Japanese word for ‘cute’ – and its meaning and impact for the creation of Pokémon.

The third chapter focuses on Pokémon GO; a Pokémon themed augmented reality video game released in 2016 (Pokémon, n.d.a). Pokémon GO was a worldwide phenomenon that reignited the popularity of Pokémon to a whole new level. The impact of Pokémon GO on the world and the Pokémon franchise was too great to be ignored. The chapter goes over Pokémon GO’s success, failures, and difficulties it faced Rasche et al. (2017).

The fourth chapter takes a look at the psychological side of video games and how they can be broken down into science. Especially Hodent (2020) argues that there are certain developmental approaches that are more likely to aid a video game to be successful. The theory of how video games affect the human brain is then compared to Pokémon video games.

Finally, chapters 5 and 6 summarize the used literature. After a careful analysis, the learned knowledge is then reviewed if and how it applies to Pokémon video games. As a conclusion, the Pokémon characters themselves, their ‘kawaii’ nature, lack of similar products upon creation and fundamentally solid video game mechanics are deemed to be the core reasons for Pokémon games’ popularity.

2. Pokémon franchise

The Pokémon franchise was first introduced as two video games released in Japan in 1996. The two games called "Pocket Monsters: Red" and "Pocket Monsters: Green" were essentially the same game with minor alterations between the two, such as Pokémon available to catch. The games were an instant success so Game Freak and Nintendo, the two companies responsible for the games, saw a demand for a lot more than just one-off video games. Plans for other adaptations were made and soon Pokémon would have its own animated TV series, a trading card game, toys, other merchandise, and much more. (The Pokémon Company, 2023)

This chapter mainly focuses on the Pokémon video games and takes a deeper look at the game mechanics. However, to understand the popularity of the Pokémon video games, the Pokémon franchise should be considered as a whole, also. Lastly, this chapter goes over the timeline of the Pokémon franchise to give insight into how the popularity of the franchise may have fluctuated over time.

2.1 Pokémon video games

The original Pokémon games were released in 1996 in Japan with the names "Pokémon Red" and "Pokémon Green" for Nintendo's handheld gaming system called Game Boy. Later two more versions, "Pokémon Blue" (1996) and "Pokémon Pikachu" (1998) were released in Japan. The English counterparts of the 2 original games were released in 1998, under the names of "Pokémon Red" and "Pokémon Blue". A localized English version of "Pokémon Pikachu" was released in 1999 as "Pokémon Yellow: Special Pikachu Edition". All 3 versions (4 in Japan) of the games are essentially the same with minor variations to which Pokémon the player can encounter during their adventure within the game. The biggest difference is that in Pokémon Yellow the player has a Pokémon called Pikachu following them during the adventure. (Pokémon, n.d.b; Pokémon, n.d.c; Pokémon, n.d.d, Pokémon, n.d.e).

Since 1996, most of the Pokémon games have followed the same pattern. At the start of the game, the player is given their first Pokémon also known as "starter Pokémon". From there on, the game slowly introduces the player to the world of Pokémon through the various game mechanics such as different types of Pokémon, catching more Pokémon and having Pokémon versus Pokémon battles etc. Through battles the Pokémon can gain more experience allowing them to grow stronger and eventually even evolve (transform) into a stronger and different kinds of Pokémon. (Game Freak, 1999; Game Freak, 2009; Game Freak, 2011).

All over the game world there are computer-controlled Pokémon trainers the player can battle against, mainly to help their own Pokémon to gain more battle experience and therefore grow stronger. However, the main goal is to beat the eight "gym leaders" placed around the game world. Gyms are buildings designated for Pokémon battles with powerful trainers in them, one of them being said gym leader. The gym leader is usually the most powerful Pokémon trainer the player has faced so far, marking a kind of a milestone for the player's adventure. Upon beating the gym leader, the player is rewarded with a gym badge. A total of 8 badges is required to progress into the final challenge of the game: the Elite Four. As the name suggests, the Elite Four is a series of four elite

trainers – a true challenge before the player can finally beat the game. Once the player beats all four of them, they are crowned as the Champion – the best there ever was. Becoming a Champion is not an easy task though. To be able to defeat the final trainers in each game, the player must have a comprehensive understanding of Pokémon, their strengths, their weaknesses, and the flow of Pokémon battles. (Game Freak, 2010)

Pokémon battles have a lot of depth to them. While most of the player base might be happy to know just the basic rules of the Pokémon battles, there are also people who take Pokémon battling very seriously. Like with anything else that can be competed at, Pokémon too has its official tournaments for players to compete with Pokémon they have caught and trained within the games. (Pokémon World Championships, 2023) One could say that Pokémon battles are nothing but a different version of the game Rock, Paper, Scissors (Fire Pokémon beats Grass Pokémon, Grass Pokémon beats Water Pokémon and Water Pokémon beats Fire Pokémon). On the other hand, one could argue that Pokémon battles are more complex than chess since:

1) There are 18 different Pokémon types (Bug, Dark, Dragon, Electric, Fairy, Fighting, Fire, Flying, Ghost, Grass, Ground, Ice, Normal, Poison, Psychic, Rock, Steel and Water) (Game Freak, 2013)
2) Each Pokémon can have 1-2 types making 171 different combinations (Pokémon cannot have the same type twice, giving 18+17+16…+1 typings) (Game Freak, 2013)
3) Each Pokémon has unique statics in 6 categories (Hit points, Speed, Defense, Attack, Special Attack and Special Defense) (Game Freak, 2013)
4) There are 1021 different species of Pokémon (List of Pokémon by national Pokédex number, 2023)
5) There are 915 different kinds of Pokémon moves (Move, 2023)
6) Each Pokémon can learn dozens of moves (although maximum of 4 at once), even outside their own typing (Game Freak, 2013)

Considering all the variables mentioned above, the number of different kinds of Pokémon battles is basically unlimited. That said, one must memorize an incredible amount of information if they want to compete against other players. Naturally playing against another person adds yet another layer of difficulty to the game – besides memorizing all the information and variables, you also need to be able to read your opponent. Just like in chess, the player needs to anticipate their opponent's actions while the opponent is doing the same.

The games have been designed so that the player does not have to remember every single variable to be able to play and enjoy the games. Then again, the game design leaves a lot of room for a competitive player to polish their battling skills and enjoy the game in their own way. Though much of this must have happened by accident, as not even the creators of the original games were able to predict the popularity their games would gain, not to even mention people playing the games over 20 years later. Of course, some of the game mechanics have been improved and balanced over the years, but to this day the basic mechanics have remained the same. (Game Freak, 2010)

The core idea of the games may seem repetitive (Pokémon battle after Pokémon battle) and therefore unappealing to many, but the popularity of the games clearly states differently. The way the game progresses uses a familiar pattern many of its peers have used too: progression at the beginning of game is fast but slows down tremendously as

the player progresses in the game. Such designs have even been compared to the effects gambling has on the human brain (King et al., 2010). The psychology of video games is discussed further in Chapter 4.

2.2 Sales Numbers

Pokémon video games are generally divided into two categories: Main Series Games and spinoff games. Roughly defined, a game is considered a main series game if it follows the original pattern of the player adventuring around the world, defeating 8 different gym leaders and finally challenging the final "elite" Pokémon trainers. The amounts of video game units sold have been listed for each main series game title in Table 1. First generation games (Red, Blue, Green, and Yellow) and second generation games (Gold, Silver, and Crystal) have been grouped together because individual sales data cannot be determined reliably.

As can be seen from the sales numbers, the amounts of units sold for new Pokémon game releases kept decreasing until 2006, the release of 4th generation Pokémon games – Diamond, Pearl, and Platinum. In this sense Tobin (2004, p. 3-9) stating that Pokémon had fallen and was about to fade had some base and truth to it. Yet over 23 million game units sold (Table 1, Ruby / Sapphire / Emerald) is far from a failure.

Game title	**Year**	**Units sold in millions of units**
Red / Blue / Green / Yellow / Gold / Silver / Crystal	1996-2000	77.31 [2]
Ruby / Sapphire / Emerald	2002	23.28 [2]
FireRed / LeafGreen	2004	12.00 [2]
Diamond / Pearl / Platinum	2006	25,27 [1 & 2]
HeartGold / SoulSilver	2009	12.72 [1]
Black / White	2010	15.64 [1]
Black 2 / White 2	2012	8.52 [2]
X / Y	2013	16.68 [1]
Omega Ruby / Alpha Sapphire	2014	14.57 [1]
Sun / Moon	2016	16.30 [1]
Ultra Sun / Ultra Moon	2017	9.15 [1]
Let's Go, Pikachu! / Let's Go, Eevee!	2018	14.53 [2]
Sword / Shield	2019	25.92 [1]
Brilliant Diamond / Shining Pearl	2021	14.65 [2]
Scarlet / Violet	2022	22.66 [1]
Total		**309,20**

TABLE 1. Sales of Pokémon games ([1] Nintendo, 2023; [2] CESA, 2021, as cited in Video Game Sales Wiki, 2023)

As can be seen from Table 1, since 2004 most Pokémon games have sold around 15 million copies with a few exceptions. Ruby / Sapphire / Emerald were the first Pokémon games to be released for the handheld gaming system Game Boy Advance and Diamond / Pearl / Platinum were the first Pokémon games that were released for the handheld

system Nintendo DS, which likely explain why the Game Boy Advance games sold over 23 million units and the Nintendo DS titles over 25 million copies. However, neither the first games released for Nintendo 3DS (X / Y) nor the first games released for Nintendo Switch (Let's Go, Pikachu! / Let's Go, Eevee!) saw a similar kind of spike in unit sales. The Switch's second (Sword / Shield) and fourth games (Scarlet / Violet) did see increased sales volumes both reaching over 20 million copies sold. (Pokémon, n.d.e)

Regional sale percentages vary from source to source but according to some estimates, 35% of the Pokémon franchise's revenues are made domestically within Japan and the remaining revenue is from overseas (Pokémon Company, 2017. as cited in Video Game Sales Wiki, 2023). The distribution of the sales is very skewed towards Japan, considering Japan's population of 125 million people (The World Bank, 2022), and the rest of the world having 8 billion people (United Nations, n.d.), yet 35% of the revenue being made domestically within Japan. The statistics show that Pokémon is most popular in Japan, but it does not mean Pokémon would be unpopular elsewhere in the world. Also, it is important to note that the revenue percentages are reported for the Pokémon franchise overall, not just the Pokémon video games.

2.3 Other adaptations

After the huge success in sales of the Pokémon games, the Pokémon franchise was soon released in other formats too such as trading cards, animated TV series (anime), comic books (manga) and toys. Not everyone could afford the expensive gaming consoles and game cartridges you needed to play the games so other media adaptations were a natural choice for the involvement if even more potential consumers. The Pokémon comics did not gain a very significant popularity in the West, but the animation and trading cards certainly did. (The Pokémon Company, n.d.a)

In Japan, the Pokémon Trading Card Game launched the same year as the original video games. Pokémon trading cards came in mystery cards packs, the similar kind of packs sports cards had already been released in – packs where you could not see the contents before purchasing and opening the pack. The cards featured pictures of all the 151 first Pokémon which meant that to obtain them all, you needed to buy multiple packs in hopes you get lucky and get the ones you do not own yet. The Pokémon slogan "Gotta catch 'em all" literally encouraged a collector mindset, of which the cards are a perfect example of. (The Pokémon Company, 2023)

The Pokémon animation featured Ash Ketchum as the main protagonist, who travels around the Pokémon world with his friends learning about Pokémon, capturing them, and battling with them, with the intent of becoming the best Pokémon trainer there ever was. The original TV series first aired in April of 1997 and had 82 episodes. Since then, multiple more seasons have been released with a total episode count of over 1,000, making Pokémon one of the longest running animation series ever, keeping fans involved with Pokémon for a prolonged time. (The Pokémon Company, n.d.a; The Pokémon Company,n.d.b)

Yet, as time went on, the Pokémon boom seemed to gradually subsize despite the never-ending amount of Pokémon merchandise like figures, stuffed animals, other toys, clothes, stickers, stationary items, and pretty much any kind of products one can think of. So far, the merchandise had allowed kids to dive even deeper into the Pokémon world, but things

were about to change. As kids (especially boys) who previously liked Pokémon grew older, the appeal of Pokémon started to fade. Boys who had outgrown Pokémon considered it to be too childish and girlish, therefore not cool and something they could not like anymore. Because of the social pressure even if some kids still liked Pokémon, they could not show it for the fear of getting bullied for liking such a 'childish' thing. (Tobin, 2004, p. 240-244)

The timeline of The Pokémon Company shows that despite Pokémon's quiet presence in the West, the company was still doing well financially, and that the franchise was still alive in Japan. New main series Pokémon games were released in 1999, 2002, 2006, 2010, 2013, and 2016. The games did have official English releases too, but the later games never saw the same kind of hype around them as the original games of 1996 and 1999 had. (The Pokémon Company, 2023)

New Pokémon Centers (Official physical stores selling only Pokémon merchandise) were opened in 1998 (Tokyo and Osaka), 2003 (Fukuoka), 2005 (Yokohama), 2009 (Sapporo), 2011 (Sendai), 2013 (Funabashi), 2014 (Ikebukuro), 2015 (Kamiyacho), 2016 (Shijo and Oshiage), 2018 (Nihonbashi) and 2019 (Singapore, Shinsaibashi and Shibuya). The official Pokémon World Championships were first organized in 2009 featuring competitions in the Pokémon card game and Pokémon video games. The Championships then became an annual event. In 2014 the Pokémon Company organized a real-life event called "The Pikachu Outbreak" which featured people dressed in massive Pikachu outfits marching through the streets of Yokohama. The Pikachu Outbreak became an annual event as well. (The Pokémon Company, 2023)

Surely, if a company was not doing well financially and their products were not in demand, they would not be expanding and opening new store locations around the country and even internationally. The reason why Pokémon remained relevant and afloat so well in Japan but not in the West might remain a mystery. Part of it is likely related to the cultural differences between the somewhat isolated Japan and constantly shaping West. The differences are discussed further in Chapter 2.4: Concept of Kawaii.

The reason Pokémon resurfaced and regained popularity in the West around 2016-2019 is very likely due to the release of Pokémon GO in 2016. Pokémon GO and its impacts are discussed in Chapter 3: Pokémon GO.

2.4 Concept of Kawaii

In the West, around the 1980s and 1990s, "cool" was the word to describe the prevalent trend of children's, especially boys', consumption. For kids to enjoy something, it had to be as cool as possible, at least so the market and media creators thought. There were humanoid sharks fighting against crime (Street Sharks), mice from outer space riding motorcycles and defending the Earth (Biker Mice from Mars) or the most powerful man in the universe fighting against the forces of an evil skeleton villain (He-Man and the Masters of the Universe). What would be cooler than dinosaurs or laser weapons? Riding dinosaurs armed with laser weapons, of course (Dino-Riders). Such were the shows and toys offered to kids in the West. There might have been a one-off cute toy that was not marketed very extensively so it quickly disappeared and was forgotten. For girls cool was not exactly the marketing strategy but neither was cute. The focus seemed to be on dolls

like Barbie, that mainly contributed to beauty standards and girls' dreams of becoming princesses one day.

Meanwhile in Japan the concept of "kawaii", has been present at least since the early 1980s for example, in the form of the character called Hello Kitty. "Kawaii" is a Japanese word for "cute" but it also has multiple other connotations, such as "adorable", "loveable" and "precious". Japan did have the concept of cool ("kakkoii"), too as things like Transformers (mecha robots transforming to vehicles and back) and Power Rangers. However, Japanese marketing strategies did not focus on a single concept like 'cool' but had also realized the demand for kawaii. (Pellitteri, 2018)

According to an interview with Ken Sugimori, Atsuko Nishida and Koji Nishino (the original creators of Pokémon), the concept of kawaii was their original goal as they thought it would be the most appealing for the widest range of people – boys, girls, kids and adults alike. They did have some more "cool" designs too, some of which even ended up in the final product. The more they worked on the project though, the more they leaned towards kawaii being a key factor for the appeal of the monster creatures they were creating. (Yomiuri, 2023)

The concepts of 'monsters' and 'battling' are not considered cute or kawaii by themselves and are almost the opposite of cute. The original 151 Pokémon pose a variety of different designs – some unanimously cute, some less so with dinosaur-like habitus. Like Pellitteri (2018) stated, kawaii does not only stand for cute outlooks, but also for the likeability and relatability of the subject. Instead of Pokémon being cold and soulless monsters that exist solely to battle each other, they were introduced as sentient and compassionate creatures. As part of their story the Pokémon games emphasize the importance of the player understanding Pokémon and their needs and feelings if the player desires to be a true Pokémon master. Later the Pokémon animation further humanized Pokémon giving them almost humanlike intelligence. Upcoming Pokémon games followed the same pattern introducing a friendship level the player had with their Pokémon. Some Pokémon even required a high enough friendship level for them to evolve into their next form. (Game Freak, 1999; Game Freak, 2001; The Pokémon Company, n.d.b)

After the successful release of the 1996 Pokémon games in Japan, Nintendo of Japan began working with their North American branch to localize the games for the western players. Despite the concept of kawaii working in Japan, Nintendo of America was not convinced the games would succeed in the West without alterations. Kawaii was not a prevalent theme among Western consumers after all. Therefore, Nintendo of America began their localization process of completely overhauling the games, even the Pokémon designs, to better suit the demands they thought their local consumers had. (Hoffer, 2020)

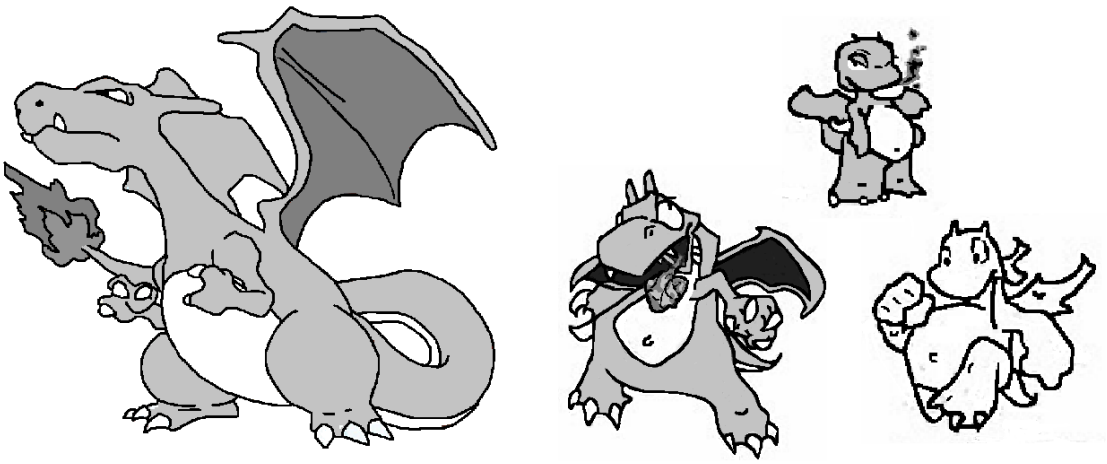

FIGURE 1. Illustrations of the Pokémon Charizard based on original concept art (character on the left) and redesigned mock-ups (3 characters on the right). (Hoffer, 2020; Nintendo UK, 2023)

People in charge of Nintendo of America believed that graffiti style artwork, that was gaining popularity especially in the US, would be more appealing to their audience of video game consumers. To start the localization process, Nintendo of America contacted local artists to draw them mock-ups of potential designs and potentially work from there for further redesigns. Figure 1 portrays the Pokémon known as 'Charizard'. The character on the left is based on the original concept art from Nintendo of Japan and the other 3 characters are based on mock-ups Nintendo of America received from various artists they had contacted. Charizard was not the only Pokémon Nintendo of America wanted to redesign, as some of the staff members were advocating for redesigning all 151 Pokémon. The redesign process is part of the reason why the Western versions of the original Pokémon games took so long to be released. While Nintendo of America was still negotiating about the potential changes they wanted to make, the Pokémon animation had already started airing in Japan. Eventually, Nintendo of America concluded that they would leave the Pokémon designs unchanged as altering the animation also would have required too much effort and resources. (Hoffer, 2020)

Osenton (2006) raises concerns about companies including objectionable ideologies, such as xenophobia and chauvinism, in children's kawaii media. Osenton mentions characters like Doraemon and Anpanman, that are famous in Japan and especially popular among small children – consumers who lack the ability to question the concealed ideologies in the media they consume. Pokémon has occasionally been criticized for similar actions as it allegedly promotes animal cruelty in the form of "capturing innocent creatures and using them as unfeeling objects for human entertainment" (Evalt, 2012; Horvath, 2016). Laato & Rauti (2021) point out that such statements are distorted and have very little ground to back them up. Laato & Rauti argue that Pokémon specifically promotes the idea of people and Pokémon living in harmony and mutual understanding while emphasizing topics around human greed destroying the nature and the world.

3. Pokémon GO

Pokémon GO is an augmented reality game published by Niantic Inc. in 2016. Augmented reality is a term broadly used for technology that somehow combines the real world with the virtual world by adding digital elements over the real-world view, usually with limited interaction. (Microsoft Dynamics 365, 2023) In Pokémon GO, the player can travel in the real world to make their game character move on the game map, that corresponds to the map of the real world by getting the user's geolocation and pulling map data from online services (Figure 2, Left). On the game map screen there are points of interest called PokéStops. PokéStops too correlate with sights that exist in real life – they can represent statues, fountains, historic buildings, parks or pretty much any other public sights and otherwise interesting manmade structures (Figure 2, Center). The player can also use the camera on their mobile device to display 3D models of Pokémon on the game screen, as if the Pokémon was in the same space with the player (Figure 2, Right). (Pokémon, n.d.a)

FIGURE 2. Left) In-game view of the overworld that uses real-life map data. **Center)** In-game Point of Interest for a local library. **Right)** View of the Pokémon catch screen featuring the augmented reality camera function. (Niantic Inc, 2016)

Pokémon GO was a real oddity when the game was first launched. The popularity of the game exploded overnight and suddenly all around the world people playing the game were flooding public areas. To a person not knowing what was happening, it must have been a rather confusing experience – suddenly people were gathering in random seeming spots, just standing there, and staring down at their phones. During the first weeks of the launch of the game, when you saw people walking around with their phones in their hands it was probably more likely for them to be playing the game than not be playing it. The popularity of the game has even been reported to have changed how people behave and

socialize in public e.g., lowering the social barrier of talking to strangers (Kari et al., 2017)

It is no surprise that the sudden influx of people caused a lot of problems and worries around the world. Despite the game warning players about surrounding hazards upon starting, players walking around in public areas focusing intensively on their phones caused numerous accidents and even more close calls. Around the world there were reports of people trespassing on private properties because they were looking for Pokémon that the game indicated would be somewhere nearby. Even if people did not trespass, it would certainly make anyone feel uneasy when they are used to living in a quiet and peaceful neighborhood and suddenly you get dozens of people hanging out in front of your lawn because there happens to be a PokéStop across the road. The worst problem of them all was probably the people playing the game while driving – the game mainly focused on you moving around after all. (Wagner-Greene et al., 2017)

3.1 Reasons for playing and quitting

A survey conducted by Rasche et al. (2017) shows that the 4 most popular reasons for playing Pokémon GO were curiosity (55%), being a Pokémon fan (32%), media reports (23%) and reports from friends (22%). Paavilainen et al. (2017) reported that main reasons for playing Pokémon GO were hunting and collecting Pokémon (52%), moving around in the real world (41%), sociability (35%) and nostalgia (13%). Similar themes arise from both surveys: respondents found the exploration of local areas and moving around in the real world the most appealing factor to play, the existing players and media attention attracted more people to try the game, and the game being tied to a well-known franchise made it more appealing.

The initial craze over the game quickly calmed down during the following months after its release. Tens of millions of people were still playing the game though. It was not as apparent but if you knew where to look, you could still see people playing the game regularly. The same goes for today, over 7 years after the game's release. Although multiple similar kinds of augmented reality games have surfaced after Pokémon GO's release, it is hard to know if people are playing Pokémon GO or some other AR game. Pokémon GO still has its fair share of players though. In 2022 the game generated around 700 million US dollars of revenue, more than it did in the first 3 years of the game's lifespan (Clement, 2023).

Alha et al. (2019) studied the reasons for people still playing Pokémon GO. Progression (52%; personal goals, advancement, collecting Pokémon, etc.) was dominantly the number 1 answer, followed by situation (19%; habit, commitment, something to do, etc.), positivity (17%; exploration, exercise, outdoors, etc.), mechanics (15%, searching, hatching, evolving, fighting, etc.), social features (14%; helping, competition, sociability, etc.) and social influence (13%; friends, family, etc.). Unsurprisingly the core mechanics of collecting different kinds of Pokémon and exploring your surrounding areas remained as some of the most popular answers for reasons to keep playing. Sociability as a reason for playing had gone down notably though, when comparing the findings with numbers from 2017 (Rasche et al., 2017; Paavilainen et al., 2017).

For reasons to quit playing, based on their questionnaire, Alha et al. (2019) list factors like situation (54%; time, health, boredom, reaching personal goal, etc.), progression

(30%; slow progress, grinding, repetition, etc.), problems (27%; technical problems, battery issues, incomplete game, lack of content, etc.), shortcoming (21%; lack of additional content, no endgame, missing features, etc.) and mechanics (21%; battle system, constant demand for movement while not being rewarding enough, inability to play with a bike, etc.). Most listed categories seem to reflect the players' dissatisfaction with the game offering too few positive experiences and the game developer either not releasing enough game content or being unable to fix existing bugs in the game making the overall playing experience negative.

3.2 Problems of being an online game

The first weeks of Pokémon GO's release were anything but smooth. At the time Niantic was still a fairly small company so they were genuinely unprepared for the problems the popularity of the game could cause. Pokémon GO being an online game, it required players to be connected to the game servers every time they wanted to play. The server capacity Niantic has reserved for the game was far from sufficient to support all the simultaneous players causing lag login problems, unresponsive servers and lag spikes occasionally made the game unplayable. Server problems were not the only issues the game suffered from either. Game crashes, GPS inaccuracies and other problems were a common occurrence. (Paavilainen et al., 2017)

Niantic did try to solve the server issues by gradually releasing the game in new countries, but it had little effect. Even if the game was not available on the app store of a certain country, the user could download the game files from online sites regardless of where in the world they were at. A common trend between newer downloadable video games is that the games can be released in an unfinished stage; possible bugs and other issues will be fixed in the future with patches, which explains why Pokémon GO too might have seemed like an unfinished product upon release.

The survey by Paavilainen et al. (2017) revealed that besides the buggy and laggy gameplay, unequal playing opportunities and the push towards microtransactions were common causes for player dissatisfaction. Online games often take away some of the autonomy the player has. Lack of autonomy goes against the self-determination theory (explained in Chapter 4) as explained by Hodent (2020). Instead of the player being able to define when, where and how they want to play the game, the developer largely defines it instead. Lack of autonomy is very likely to make players feel anxious and frustrated, which are two major negative feelings a video game developer should try to avoid making their players feel (Hodent, 2020).

During its history Pokémon GO has seen multiple updates to which Pokémon are available for the player to catch. The game has always had certain Pokémon that are available only in certain parts of the world (e.g., Mr. Mime in Europe, Tauros in North America, Farfetch'd in Eastmost Asia, and Kangaskhan in Australia). As more Pokémon got released in Pokémon GO, more Pokémon were made into regional exclusives which strongly goes against the "Gotta catch 'em all" mentality as very few people can afford to travel around the world because they want to complete a video game. In more recent updates, the game developers introduced in-game seasons. The season are roughly 3-month long periods during which players can only catch a very limited amount of different Pokémon, determined by the game developers. This means that the player may have to wait up to a year to even have a chance of most Pokémon. To make matters even

worse, Pokémon GO has occasional in-game events that feature themed Pokémon. The events last for a limited time and there is no guarantee when the featured Pokémon will be available again if they ever will be. A commonly used term to refer to this kind of marketing tactic from game developers is FOMO – Fear of Missing Out. During the short events there usually is a push to get players to spend real money on in-game items to ensure achieving their goals and therefore not missing out on anything. (Niantic Inc., 2016)

3.2.1 Microtransactions

Microtransaction is an umbrella term that is used for all kinds of small purchases a user can make within a video game. The transactions can be pretty much anything e.g., purely cosmetic items (that only change the game visually), items that speed up the gameplay (e.g., reward more experience points that allow faster progression), or loot boxes. Loot boxes are container items that contain a randomized prize the player can receive. The prizes vary game by game, but are often cosmetic items, in-game currency, or usable in-game items. (McCaffrey, 2019)

The contents of loot boxes may or may not have real-life value attached to them. E.g., the game Counter Strike has a loot box system where players can receive cosmetic items that can be traded with other players and therefore be sold for real money even on the gaming platform Steam, that is required to play Counter Strike. Pokémon GO has a loot box system too in the form of Pokémon eggs that yield the player a random Pokémon from a predetermined pool of options. However, the collectible Pokémon in Pokémon GO cannot be efficiently traded for real-life money. A common factor between the two games (and many other games with loot boxes) is that the loot boxes can be opened for real-life money. The player usually has the opportunity to open the loot boxes without using real money, but the process is much slower and requires the player to play the game more to achieve the same result.

Loot boxes have become an increasingly common part of video games which has brought up a lot of discussion regarding their legality and morality, especially because games that are aimed for younger players and even kids (e.g., Fortnite) might have loot box mechanics included too. The user paying money to receive a randomized prize is not much different from regular gambling. The odds loot boxes have for their different prizes are often concealed. The player might be shown different rarities of possible item prizes, but the actual chance of landing on a different rarity remains a mystery. Aside from Belgium and China, few countries have been able to form legislative regulations regarding loot boxes. Game companies often get away with their actions by claiming that the contents of the loot boxes have no value, and the player always gets something from the loot box, hence opening loot boxes is not gambling. Nevertheless, loot boxes may encourage addictive behavior regardless of whether the player wins or loses – the thrill of a win and the frustration of a loss both encourage the player to open more loot boxes. However, no empirical research has been done to confirm the assumption. (McCaffrey, 2019)

3.2.2 Cheating in online video games

Since the dawn of video games people have been trying to cheat in them: to somehow gain an edge over how the video game was meant to be played. In single-player games cheating has not really been an issue as the player can only impact their own gameplay. Some video game developers even included cheat codes in their games for the players to use. To activate the cheats, the player was usually required to input a secret series of button / key presses that would enable the cheat. A classic example would be immortality: granting the player's character infinite health so they can play through the game without minding about enemies and the damage they normally inflict – a whole new way to enjoy a game. Though, the act of cheating is not only limited to single-player games.

In online video games the players can interact with each other, meaning that a player's actions can have an impact on another player and their gaming experience. Therefore, cheating in online video games is not as straightforward and lighthearted action as it is in single-player video games. For example, the aforementioned cheat of immortality would clearly be unfair in a player versus player situation negatively impacting the non-cheating player's experience. Online games usually have measures to prevent players from cheating, but players often find ways circumvent those measures. While the design of Pokémon GO does not allow excessive and blatant cheating, it has not prevented dishonest players from cheating and trying to gain an advantage over normal players. In Pokémon GO one of the few ways to interact with other players are through gym battles and player vs. player Pokémon battles. Neither of the battle features are required for a player to play the game, so the impact of cheating is usually minimal in Pokémon GO. A cheating player could still demotivate an honest player who must work harder for the same achievements.

Paay et al. (2018) studied cheating in Pokémon GO with the goal to understand reasons and means of players cheating. Because the game was one of the first in its category (augmented reality game with the focus on moving in the real world), the ways of cheating were unique at the time too. The study found out that the following acts were deemed as cheating by the study participants: 1) botting, 2) buying and selling accounts, 3) exploiting (e.g., taking advantage of inaccurate GPS, 4) external assistance to increase travelled distance (e.g., a ceiling fan, tying the mobile device to a dog or other animal), 5) measuring IV (using an external application to gain additional information about individual Pokémon), 6) using maps and scanners (the help of online sites that gathered information about nearby Pokémon with the help of bots), 7) GPS spoofing (manipulating the GPS location allowing to play without moving / completely other location), 8) multiple accounts, 9) sharing accounts, and 10) transport (using transportation methods like bike or car to move faster in the game).

The players who participated in the study had differing views of what constitutes cheating and what does not. The consensus was that acts like botting and GPS spoofing are clearly cheating, but the use of online maps and IV measuring software is acceptable. The reasons participants listed for reason were 1) Inequality of game elements in different locations, 2) A desire to participate without moving, 3) Efficient collection of location-based game elements, 4) Making the game advance faster, and 5) Exploring the limits of emerging location-based technologies. Some key implications from the study were that players in different locations had unequal playing grounds (rural vs. urban) and that the game did not progress fast enough and therefore was not rewarding enough compared to the effort the game required. Unappealing development decisions were the reason why so many players decided to try cheating in Pokémon GO. (Paay et al., 2018)

4. Psychology Behind Video Games

Humans have always had a desire to understand themselves and the cause for their own actions. With the increasing popularity of video games, psychologists have become more interested in answering the question “Why exactly are video games so popular?". According to Hodent (2020), the reason for humans and other animals to commit any action is motivation. Motivation can be either explicit or intrinsic. Explicit motivation includes an external reward (e.g., getting a salary for working) or punishment (e.g., the feeling of pain). Intrinsic motivation doesn’t include external rewards or punishments and is a term used for actions that are done for the pleasure of doing it (e.g., singing).

By default, playing video games is caused by intrinsic motivation. The action is therefore autotelic, meaning that the game’s purpose is contained in the game itself. Intrinsic motivation has also been explained through self-determination theory (SDT). SDT proposes that humans are more motivated in completing an intrinsic activity when the activity includes the needs of competence (feeling of control and sense of progression), autonomy (freedom of self-expression and having meaningful choices), and relatedness (affiliation with others, the feeling of belonging). (Hodent, 2020)

Imagine a game where the player can see different shapes (spheres, triangles, rectangles, etc.) on the computer screen and the only objective of the game is to move around the shapes aimlessly without a specific goal. Probably no one would find such game entertaining as it lacks the needs of competence, autonomy, and relatedness as defined by SDT. When the sandbox game called Minecraft released its alpha version, the game wasn’t too different form “just moving objects around”. The basic idea of the game was that the player could move around the game world mining, chopping, and digging different kinds of blocks (dirt, sand, gravel, wood, etc.) and then placing the blocks in a different place to build structures like houses or castles. Despite lacking a clear end goal in its early days, Minecraft still managed to attract tens of thousands of players as its features and game mechanics, although very lacking, were enough to satisfy the players’ needs of competence and autonomy as defined by Hodent (2020). In addition to the normal single player mode Minecraft has an option to play online with other people, which fulfils the third and final need of SDT, the feeling of relatedness.

Just like Minecraft, Pokémon games too have been able to fulfil the needs defined by SDT although the two games are completely different. Minecraft has an open game world where the player can go wherever and whenever, plus the game world is different every time the player starts a new game while the game world in Pokémon games is always the same and has very limited options where the player is allowed to go, meaning that the player must follow a set path to progress in the game. Despite the limitations, the ability to choose which Pokémon the player wants to have with them during their adventure is enough to satisfy their need for autonomy. After each Pokémon versus Pokémon battle the player’s Pokémon are awarded more experience which makes the Pokémon’s level go up visually, allowing the player to defeat stronger opponents therefore making the player feel more competent. Although Pokémon games are usually single-player games, they do have some mechanics enticing interaction between other players. No matter how good the player was, some Pokémon still could not be obtained by playing alone but required the player to trade the Pokémon with another player for the Pokémon to evolve. Especially in the late 1990s during the initial Pokémon boom children could easily further their

feeling of relatedness by talking about Pokémon and Pokémon games with other kids who very likely adored Pokémon too.

Video games are a relatively new phenomenon, and they were even more so in 1996 when the first Pokémon games were released. Despite the lack of studies and literature on video games at the time, Game Freak and many other video game developers were able to design and make successful games that are played multiple decades later. Even if video games can be broken down to be analyzed with science, game developers don't necessarily need to have a deep understanding of human psychology. Instead, the psychologically appealing factors get taken care of through natural development decisions. Hodent (2020) says that the most important decisions are to decide who the game is for and what kind of experience it should be. Later decisions include factors like minimizing player frustration and avoiding tedious game mechanics.

King et al. (2009) partially share their views with Hodent (2020) and state that better understanding and recognizing the structural and psychological factors of video games is something future research can aim for. However, King et al. (2009) do raise concerns that psychological knowledge can be used for better and worse – with proper understanding of how video games affect the human brain, game developers can avoid factors that promote unhealthy playing habits. On the contrary, a less ethical developer can use the same knowledge to specifically create features that endorse addictive behavior.

Fisher (1994) identified that adolescents and younger children who played excessively on arcade video game machines shared a lot of characteristics with people addicted to gambling. According to the study, both, the gamblers, and players, might become more preoccupied with the activity, need to spend increasing amounts of money to achieve excitement, neglect normal needs like food to save money, and even commit illegal activities (e.g., stealing money) to fund the activity. It is important to note that Fisher analyzed the usage of arcade video game machines specifically – a type of media that is almost nonexistent today. To play modern video games, the user typically pays a larger single time fee or a smaller subscription-based monthly fee.

More recent studies have shown that online video games particularly could be the most problematic to the user's mental health, to the extent a term 'internet gaming disorder (IGD)' has been formed. (Ko, 2014). King et al. (2013) propose that IGD follows classical symptoms associated with other kinds of addictions which are 1) preoccupation, 2) withdrawal symptoms, 3) increased use required to achieve tolerance, 4) unsuccessful attempts to control the use, 5) continued excessive use despite knowing of the negative effects, 6) loss of interest (towards other matters than video games), 7) escapism (avoiding reality), 8) deception (lying about the amount of use) and 9) loss of social contacts due to excessive use. A study authored by Andreassen et al. (2016) demonstrates that there is a clear connection between the addictive use of video games and psychiatric disorders (e.g., anxiety and depression).

Despite the evidence Bean et al. (2017) question if video game addiction should have a diagnosis of its own due to unclarity in diagnostic criteria and appropriate symptoms. An online survey by Entwistle et al. (2020) suggests that different video game categories show no significant difference between them in problematic amounts of use. The study therefore challenges the idea that video games are intrinsically addictive.

5. Findings and Discussion

There is no denying that Pokémon is a very unique product of imagination. Or is it? If you actually think about it, many of Pokémon's core concepts had been tried before in children's media. Dungeons and Dragons offered a never-ending amount of customizable epic adventures with battles. Transformers were cool, fought against their own kind and could even change their forms. The Care Bears were cute and could easily be sold as collectible soft toys. So how was Pokémon different?

Children's consumption habits have been notoriously difficult to meet because children's interests vary so much depending on their age and gender. Generally, boys would reject anything too girly or cute while girls were less interested in products considered to be for boys, like video games. Therefore, companies would use strategies that targeted products for very specific demographic groups, because even a couple year difference in age could mean completely different direction of interests. Instead of choosing one specific group of children to target their product to, Pokémon combined all of the common appeal factors to appeal for a much wider audience. (Buckingham & Sefton-Green, 2003)

The balance of cute, cool, masculinity, and femininity was not the only reason so many kids took an interest in Pokémon. The multiple forms of Pokémon media (toys, cartoons, video games, etc.) allowed children of different age to be involved on different levels, and each media supported the other, e.g., the information gained from watching the Pokémon cartoon could be applied while playing the Pokémon Game Boy games. From the start, Pokémon's consumeristic slogan "Gotta catch 'em all" encouraged children to be more involved with the franchise. Still, the collection aspect seemed to be especially appealing to children. Pokémon was not just something for children to consume, Pokémon was something they did and lived. (Buckingham & Sefton-Green, 2003)

Pokémon started as a video game, so none of the other forms of Pokémon media would ever have happened if the Pokémon games themselves were not successful and fun to play. Nintendo had already had success in creating video games selling millions of copies before (Clement, 2022) so they had the expertise of turning a great idea into a fascinating video game. As discussed in chapter 4, Pokémon games perfectly fulfill the requirements of SDT, described by Hodent (2020). The increasingly difficult opponents give the player a sense of progression, while having full autonomy by choosing which Pokémon they want to use and how. Especially in the 1990s during the original Pokémon phenomenon, kids playing the game could share their experiences with another Pokémon fan. Even if kids had not played the games specifically, other Pokémon media like the cartoon helped kids to share their love for Pokémon with each other inevitably boosting the game sales too.

Nintendo and Game Freak were probably in the right place at the right time. With Pokémon they dared to try something new no other company had seemingly succeeded at: get children involved in a product regardless of age or gender. Especially introducing the concept of kawaii, a mixture of cool and cute, to Western children likely helped Pokémon to stand out from the media franchises children of the time were offered. Multiple studies on the concept of kawaii and its meaning to Pokémon exist and for a good reason. It is impossible to know for sure where the Pokémon franchise would have ended up in if Nintendo of America had fulfilled their plans of altering Pokémon designs.

Maybe Pokémon would have continued thriving in Japan but would never have become a hit in the West, ending up as a video game among others – enjoyable but not spectacular. One can only speculate. The success of Pokémon does show that the leading marketing professionals do not always know what their consumers actually want. Sometimes it is better to diverge from the mainstream and try making your own paths, because Pokémon certainly did.

Personally, I think that if the Pokémon designs had been altered, the Western adaptation of Pokémon would never have gained notable popularity. Even if the gameplay is fundamentally solid, the games would not stand out so clearly without the Pokémon characters themselves. Pokémon without 'kawaii' with more 'cool' would simply have blended in with all the 'cool' the West was already overflowing with. Therefore, it would have been unlikely for the West to see the later generations of Pokémon.

However, as Tobin (2004) mentioned, despite the right marketing strategies, Pokémon's success did not last forever, which is to be expected. Buckingham & Sefton-Green (2003) said, children grow up fast and so change their savors. While Pokémon had kept children interested far longer than many other franchises could, there came a time when those children had grown up enough to leave Pokémon behind. Of course, some of the fans stayed and kept up with Pokémon, but many people can likely assimilate to the fact that as a kid it is much easier to like something if other kids like it too. As more and more kids outgrew Pokémon, they took more kids away from Pokémon too (Tobin, 2004).

The sales numbers (Table 1) available certainly show that in the early 2000s there was a drop in the popularity of Pokémon games. Still, Pokémon was far from being forgotten or unsuccessful. Yes, the original craze calmed down eventually, but Pokémon had already solidified its status as franchise and still had more to offer. While the majority of original fans may have grown older and moved on, Pokémon still had the same appeal as it had before and therefore kept attracting new fans, likely children who were too young to enjoy Pokémon before. The statistics (Table 1) would imply that as many new fans kept coming as old fans left, because different Pokémon games sold roughly as many copies from 2004 to 2018.

Although unnoticeable, Pokémon kept thriving for two decades. In 2016 things changed dramatically when Pokémon GO was released. Pokémon took over the world almost overnight like it was the 1990s again. This time it was not kids getting excited but young adults, the same ones the grew up with Pokémon in the 1990s and early 2000s. (Paavilainen et al., 2017)

As a video game, Pokémon GO was okay but not great – far from the standards people were used to seeing from Game Freak. Niantic, the company that created Pokémon GO, had had previous experience with AR games having created the AR game called Ingress (nowadays known as Ingress Prime). However, none of the other AR games Niantic has created (Ingress Prime, Harry Potter: Wizards Unite, Pikmin Bloom, Monster Hunter Now) have gained popularity even close to Pokémon GO's, despite Harry Potter being a widely known and recognized franchise. Ludia's Jurassic World Alive is another AR game title with a very recognizable franchise behind it but without Pokémon GO's success (Ludia Inc, 2023; Niantic, 2023).

Considering that Pokémon GO was not the first AR game to be released, neither is it the only AR game built around a known and recognizable franchise. The game had plenty of problems (both technical and functional) that caused player frustration and dissatisfaction, but players were ready to look past the negative aspects of the game and focus on the positivity it brought. Therefore, it is safe to assume that Pokémon GO became popular because it was a Pokémon game. This assumption is backed up by the findings of multiple quantitative research, like the ones from Paavilainen et al. (2017), Hamari et al. (2018) and Rasche et al. (2017). All three studies found that players associating Pokémon GO with a franchise they already knew was a notable factor for them to try the game. While Pokémon GO's difficulties in satisfying its players may have led to the game losing a significant number of its players soon after release (Rasche et al., 2017), it may have increased the overall popularity of other Pokémon games too. Instead of selling the usual 15 million copies, the 2018 and 2022 Pokémon games have sold around 25 million copies (Table 1).

In conclusion, no single reason can be determined as the cause for the popularity of Pokémon games. The popularity is rather a sum of multiple known and unknown factors. Meeting the requirements of SDT was the games' first step towards success. Kawaii is the most notable factor that made, and still makes, Pokémon stand out from other competing products. Also, instead of overusing the same product over and over again, Game Freak has managed to create multiple Pokémon games that feel new (new Pokémon, new storytelling) while staying true to the original product.

If there was a way to solidly explain the popularity of Pokémon games, multiple companies would already have done so and created a competing product. The implications of this research are that for a game to be successful, it has to fulfill the user's needs of competence, autonomy, and relatedness first of all. The rest comes to the originality and ability to stand out from competing products.

The limitations of this research were that it was based fully on existing information and research. An interesting way to proceed would be cross-disciplinary research focusing more on video games' actual effects on brain activity and if there are notable differences between different video games.

6. Conclusion

This research focuses on the popularity of Pokémon video games and tries to find evidence why Pokémon video games have remained relevant for almost 30 years. Video games and Pokémon both have been researched exhaustively, but the combination of the two has not been as popular of a research target.

Over the years, Pokémon, that started as two video games, has become the highest-grossing media franchise ever. Today only a fraction of its profits comes from video games and the majority from other forms of media. The Pokémon video games and other Pokémon media support each other, but none of the other Pokémon media would have been born if the original video games had failed.

After the initial Pokémon phenomenon in the late 1990s Pokémon slowly faded to the background while still managing a stable fanbase. In 2016 Pokémon's popularity exploded again after the release of augmented reality game Pokémon GO. The spontaneous popularity of Pokémon GO inspired a lot of researchers to study the game and its players, which in turn has given important knowledge about Pokémon and its meaning to people.

Based on the literature acquired, Pokémon's popularity has always been mostly based on the Pokémon characters themselves. Pokémon characters have been designed around the Japanese concept of "kawaii" – a mixture of cute, cool, and lovableness. Instead of trying to capture a very specific target audience, Pokémon tried to offer something for kids of different ages and genders: out of the 151 original Pokémon some were cooler and fiercer, while some were cuter and more endearing.

At the time of release, no competing products were available, making Pokémon stand out from its competitors. Game Freak and Nintendo, the two companies responsible for the original Pokémon games, already had previous experience from making successful video games so they knew how to make the Pokémon games appealing too. A great video game manages to fulfill its player's needs of competence, autonomy, and relatedness, which Pokémon video games have always done. The design of the original Pokémon video games was so liked that Pokémon video games released over the 27 following years have had the same core gameplay mechanics in them.

Instead of overusing the same product over and over, the Pokémon Company has renewed the Pokémon franchise multiple times. While the Pokémon video games have remained true to their original ideas, the different kinds of Pokémon the player can obtain in Pokémon video games has changed frequently as more Pokémon designs have been created. This keeps old fans interested but also offers room for new fans to come in. Pokémon video games give the player a chance to "catch 'em all" if they want to try to become a true Pokémon master, but by no means require it for the player to be able to enjoy the games.

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