

# Pokémon GO: Collaboration and Information on the GO

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**Abstract.** Pokémon GO is one of the few location-based mobile games (LBMG) which gained popularity all over the world. It increases physical activity when players are walking around catching Pokémon. It also shapes the players' sense of place and increases their social interactions. This exploratory auto-ethnographic study seeks to provide a first glimpse at how players appropriate different tools to inform themselves, collaborate with other players to catch or trade Pokémon and fulfill tasks inside the game together with a worldwide community. Results indicate that young adults learn how to organize catching events, arrange raid sessions, and collaborate within the Pokémon GO world and outside in the real world. This implies that the observed skills resulting from the gamification design elements of Pokémon GO can be transformed into the work life of young adults. Our explorative paper tries to pave the way for other research.

## Introduction

Over the past decade smartphones have become ubiquitous, people use it all day long to inform themselves, to watch videos or play games. In addition, these devices have a huge number of sensors such as GPS, gyroscopes, and cameras which collect data about the usage of the smartphone and also about the users' surroundings. Based on these data, the smartphone can provide information about the environment such as restaurant recommendations or the shortest route to a location. These capabilities open many opportunities for developers to build

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applications using the sensors to provide an immersive experience compared to traditional playing (in front of a computer or console). This leads to the creation of location-based mobile games such as “Ingress” (Chess, 2014) or “Insectopia” (Peitz, Saarenpää, & Björk, 2007). These games use the GPS-sensor of the smartphone to map real-world movements into the game: Players have to go to certain places where they can interact with the surroundings on their smartphone, for example, capture an arena, collect items or fight against other players.

One of the most successful location-based mobile games is Pokémon GO with over 65 million monthly active users where the majority of the players (78%) are between the ages of 18-34 (‘93 Amazing Pokemon Go Statistics’, 2016). Pokémon GO follows the tradition of the Pokémon anime and games, where players catch animal-like beings, the so-called ‘Pokémon’, and train them to battle others in the game. Pokémon GO goes one step further and lets players catch these Pokémon in real life on their smartphone or tablet. They can team up with other players and walk around in the real world where Pokémon will appear from time to time. The combination of a well-known and powerful brand (Pokémon) and the augmented reality (AR) experience of the game lead to the success story, and made even players who hadn’t played any mobile game in the past, start to catch Pokémon (‘Analysis of Pokémon GO’, n.d.).

Most of the previous studies focus on different aspects such as movement (Andone, Blaszkiewicz, Böhmer, & Markowetz, 2017), physical activity (Althoff, White, & Horvitz, 2016), engagement (Pyae, Luimula, & Smed, 2017), game mechanics (Tong et al., 2017), and social interactions (Paasovaara, Jarusriboonchai, & Olsson, 2017). Here we follow the traditional Computer-Supported Cooperative Work (CSCW) approach and observe how players appropriate new tools to gather information, collaborate with other players and acquire new skills.

Our research question tries to provide exploratory impressions about the issue of collaboration in a massive single player game with geolocation and multiplayer elements, in terms of 1) how do players especially young adults interact with each other to achieve their goals and 2) how can these collaboration patterns and skills be used and transferred in the work-life. These questions are not covered in detail in this paper, but provide first glimpses for future research.

## Pokémon GO

In Pokémon GO players try to catch Pokémon, which will spawn when players start the smartphone app and walk in real-time through their neighborhoods or the outside world in general. One goal is to catch and collect a diversity of Pokémon. Based on the anime series, there are different fictional areas (e.g. Kanto, Hoenn, Johto) with different Pokémon. While walking through the real world, players will reach Pokéstops and visit Gyms in the Pokémon world. These locations are

virtual places where players can obtain items such as health potions, eggs, or Pokéballs about every five minutes or fight with other players or so-called raid bosses, i.e. a variety of Pokémon that control a Gym for a certain span of time. In addition, Players also have the opportunity to hatch eggs. These eggs are randomly collected at Pokéstops and hold rare or stronger Pokémon. They can be hatched by walking a fixed distance (2km, 5km, 7km, 10km).

One of the few multiplayer functions is the opportunity to fight other players at Gyms. Players can conquer these places and leave Pokémon inside the Gym. These Pokémon will defend the Gym against other players and the owner receives experience points and other rewards.

The latest updates added some new features to the game like trading Pokémon, battling other players in different leagues, or taking pictures of Pokémon and sharing them. The long-awaited feature to exchange Pokémon with others enables players to first become “friends” with other players. There is also a level-up system between this concept of friends. After the players accept the invitation to be friends, they can enter a virtual room to exchange Pokémon. To do so, they need to be in close distance to each other. Trading is also costly, and some trades can only be effected once per day.



Figure 1: (Left) Game environment, (Middle) Pokéstop, (Right) Gym with a Raid Boss Pokémon

Another important update was the Raid System. The Raid System extends the current Gyms by spawning very strong (and sometimes rare) Pokémon, called Raid Bosses, at these Gyms some of which can only be defeated when several players collaborate. The winners are awarded with the opportunity to catch the defeated Pokémon. A special version of these Raids is an EX-Raid. Players having attended several raids on one gym, have the chance to receive an invitation to an EX-Raid at a specific time and date. Only these players can fight against a very rare Pokémon and perhaps catch it after a victory. Raiding in groups is rather

weakly organized within the game as every player belongs to one of three teams (called Valor, Mystique, and Instinct, or Red, Blue, and Yellow). For raiding efficiently players can join “private groups” in order to increase their chances for catching the raid boss. Successful high-level raids inevitably require three or more players to be at the real-world place of the Gym. Although players are in fact informed about raid times and places in their vicinity, there is no guarantee that other players will be around and join in.

Niantic, the software development company of this game, also introduced so-called ‘Community Days’ (CD) to the Pokémon GO world. On a special day, the appearance of a special Pokémon increases. This event usually attracts very many players, who then walk through the city together and try to catch the special Pokémon (see Figure 2). Apart from CD the game also has ‘special raid weeks’, ‘lunch break events’ or ‘Pokémon GO Fests’. Those fests attract more than 100.000 players per weekend and take place in cities like Yokusuka (Japan), Chicago (USA) or Dortmund (Germany). For 2019 an Earth Day Event will be organized to engage players in removing garbage from their real environment.

Successful raids or attacks at gyms require strategic thinking about what others, including the manufacturer, are thinking or will be doing. So metagame is an integral part of Pokémon GO and has important implications for the interactions between players.



Figure 2: Players during a Community Day.

## State of the Art

In this study, we look at how (young) adults collect information and communicate with each other in communities; as another aspect, collaboration is generally relevant in games (such as online games, but also location based mobile games) and in particular in the game studied here, Pokémon GO.

### (Young) Adults and Communication

Nowadays young adults regularly use a broad variety of mainstream communication tools – including social networking sites (Boyd, 2014), text, and instant messaging (Anandarajan, Zaman, Dai, & Arinze, 2010; Bouhnik & Deshen, 2014), cell phones (Alison Bryant, Sanders-Jackson, & Smallwood, 2006) and video calling (Buhler, Neustaedter, & Hillman, 2013) – in their everyday routines. Choi et al. found out that convenience plays a big role in the introduction of new instruments and technologies, convenience means above all availability at home, on the road and at work (David Choi, Chen, Wu, Lauterbach, & Balakrishnan, 2015). The study by Bouhnik et al. observed the challenges of integrating WhatsApp into classrooms. In particular, not all students could afford smartphones, the unpleasant interaction between students and the use of informal language were identified (Bouhnik & Deshen, 2014).

There is a long tradition in the CSCW research community to investigate how technology can be used to support collaboration in the workplace. Previous research has looked at the factors, that make the introduction of groupware unsuccessful, have discovered that the tools often do not fail due to technical problems, but due to a lack of understanding of the work environments that should support them (Grudin, 1994). Previous studies have shown that individual awareness and group activities are crucial for successful collaboration (Dourish & Bellotti, 1992). Bødker et al. took a closer look on an urban organic food community and examined the different artifacts that this community used to support their practice form; the authors describe it as ‘community artifact ecology’. This concept is helpful and important for CSCW, since it ‘enables framing of the between communities and technologies beyond the single artifact’ (Bødker, Korsgaard, & Saad-Sulonen, 2016).

### Collaboration in Games

From the very beginning of video games, researchers were fascinated by the psychological and behavioral results of games and sought to understand the design characteristics responsible for the rich and varied motivational experiences and behavioral effects of games (Dongseong Choi & Kim, 2004; Yee, 2006). The first generation of LBMGs was mainly focused on serious applications, with a

focus on educational outcomes. The following generations have shifted the emphasis to playful attitudes and the social side of gaming (Hjorth & Richardson, 2014). This can be observed in particular in the context of online games that use the Internet to bring players together. In these cases, the collaboration seems to develop effortlessly between people who may not even have had previous connections (Cole & Griffiths, 2007; Yee, 2006). Here studies could show that the players especially enjoy the social interaction and cooperation in such games greatly (Yee, 2006). The study by Marker and Staiano (2015) showed that cooperative game aspects lead to higher engagement with the games or game systems than competitive approaches and lead to weight loss in overweight adolescents, but they also highlight that the aspects of cooperation and competition has to be examined in future gaming interventions (Marker & Staiano, 2015). In addition, work by Taylor (2008) highlight that users of online games are ‘pushing back against simplistic notions of gaming as a form of passive media consumption’ (Taylor, 2007, p. 122).

This brief insight should show that active cooperation and collaboration add value to games and that companies have a strong focus on providing players with a good gaming experience, including contact with other players.

## Pokémon GO

The majority of literature dealing with Pokémon GO focuses on the influence of the game in terms of physical activity (Althoff et al., 2016), engagement (Pyae et al., 2017), game mechanics (Tong et al., 2017), and social interactions (Paasovaara et al., 2017). Recent literature also observed the sociability Pokémon GO and contrasted their results with another location based mobile game (LBMG) and emphasize “the importance of socialization’s impact on making games a part of everyday life practices of the players.” (Tokgöz & Polat, 2018, p. 9)

The study by Comunello and Mulargia tried to understand inter-generational interaction in the game and see Pokémon GO as “an environment that can potentially host meaningful interactions.” (Comunello & Mulargia, 2017, p. 238) In a different study, the researchers analyzed data from mobile networks and present the effects of Pokémon GO on the “pulse of the city”, which lead to more people being outside at different times and in people who were adapting their daily routines to the game play (Graells-Garrido, Ferres, Caro, & Bravo, 2017).

Pokémon GO affects the lives of many LBMG players on multiple levels. The social aspects are especially important, leading to more contact between players (which other games like Ingress have done as well) and beyond age limits. But so far only few studies have looked at the communication behavior and collaboration potential of the players and of the game itself. In particular the surrounding ecosystem of different tools (e.g. Blogs, Chat-groups, YouTube channels, maps,

discussion boards, messenger apps etc.) has not yet been investigated in any study.

## Research Gap

We situate this explorative study between the communication behavior of young adults in their everyday life and collaborations in games and how these insights could be transformed into work life. Many studies have already addressed the collaboration aspect in online and offline gaming, but with the appearance of Pokémon GO, for the first time there is a LBMG which has reached a critical number of players (more than 5 million active players a day) and, in addition, has developed an ecosystem of tools used by the community (community artifact ecology).

## Methods

For our exploratory study we used different methods to understand the research setting, the players (ourselves and other players) and the in-game collaboration patterns in-between players. An auto-ethnographic approach combined with qualitative methods should hence be appropriate to come to some first observations and insights into the relationships between gaming practices and its possible effects and implications on work life.

### Auto-ethnographic Research

Auto-ethnography includes a reflexive and analytic account of personal experience and tries to connect this experience to wider social and cultural groups (Ellis & Bochner, 2000; Holman Jones, 2007). This method can be applied more rapidly to gain insights faster – the investigator inherits two roles: the informant ‘insider’ and the analyst ‘outsider’ (Cunningham & Jones, 2005).

The auto-ethnographic approach is justified since both authors are active players since the release of the game in July 2016, utilize different tools, and apply metagame strategies. The first author is an active member of several WhatsApp-Groups (three in total, with each of them for different purpose: Raids in two different cities and Pokémon GO task group), a Telegram channel (with general information about current developments in the game), follows Twitter users and also YouTube channels. The second author is also playing on a daily basis, but not active in any group or following someone on Twitter or YouTube.

## Qualitative Methods

Besides observing how we interacted with other players, we also participated in chat groups and conducted informal conversations when attending raids or community days, therefore we adapted the Participatory Action Research (PAR) approach (Kemmis & McTaggart, 2005). Our results are based on empirical data collected from observations and informal conversations with actors participating in raids or other Pokémon GO events. Here, we were talking to and observing more than 30 players, with the age ranging from 14 to 69 years. About ten (age 18 to 28) of these players were tracked over a longer period of time online (WhatsApp) and offline, during community days and raid activities. All of them were aware that we use the provided information for research purposes. These empirical findings helped us better understand how the other players acted and appropriated different tools.

## Data Analysis

Over the last six months we critically observed how we as players interacted with other players in the online and offline world. Therefore, we played on a daily basis, where the duration of the playing session differed each day depending on the given time, the group activities and special events. The majority of the time we were playing alone to catch and hatch Pokémon, but the first author was also monitoring the different WhatsApp-Groups to attend raid activities.

Field notes were written about these experiences every few days to capture the most important insights and screenshots of messenger chats as well as information channels to help us understand how information flowed from one channel to another. We then applied a thematic analysis to identify patterns of collaboration between Pokémon GO players. To achieve this, we first identified the different ways and tools, how players gather information and share with each other.

Afterwards, we tried to understand how these tools and the behavior of the players are intertwined with each other. We continue to monitor the group chats as well as blogs, Twitter, YouTube and social network postings of the individuals we encountered.

The collection of additional data (observations and informal conversations) confirmed the autoethnographic observations. It can be stated that autoethnography is a practical first step for understanding the activities and behaviors of users, enriched with additional empirical data these findings can provide a first glimpse into a new setting. The authors don't consider themselves as 'young adults', but use the same methods and tools as the younger players of Pokémon GO. Especially since the research focus of the authors circles around CSCW, this helps grind up the results correctly.



# Findings

The following chapters describe first the different collaboration and information tools available to and used by players. Not all players use these tools, yet they obtain the same information in different ways.

## Collaboration and Information Tools

*WhatsApp.* The first author was invited to participate in different WhatsApp-groups for his hometown. Pokémon GO players utilized the groups to inform each other about current developments of the game itself, about current or up-coming events such as Pokémon GO Community Days or strategies for raiding. Many players don't post much in the chats, but still use this opportunity to attend raid fights and get to know other players. While waiting for raid fights to start players usually discuss strategic or tactical aspects of how to approach the raid boss or they trade Pokémon.

*Telegram.* The chat app Telegram allows users to create channels, messages can only be spread across such channels. The Pokémon channel was used to receive the latest information about e.g. future events, updates and Pokémon sightings. The latter was particularly important for users who don't use Twitter or are not members of WhatsApp groups, since Telegram channels work without any invitation. Apart from that Telegram has features for polls and also access to Google maps for locating Gyms and Pokéstops.

*Twitter.* Players follow the official Twitter account of Niantic and many high-level players inform their followers about their daily activities or on how they achieved their high-level scores and on strategies for fighting in raids. In addition, Niantic's twitter account tweeted about the game and in-game developments and achievements (e.g. how many specific tasks, called 'research quests' were successfully finished).

*YouTube.* In the last two years, many Pokémon Go players started their own channels to broadcast their daily activities: hatching eggs, catching rare Pokémon, attending events or soloing high-level raid bosses. These players also speculate about future developments like subsequent Pokémon generations or the meta relevance of defense and attack Pokémon.

*Forums and Blogs.* Several forums and blogs focused on collecting and providing information around Pokémon Go. Many of these websites create infographics about raid fights (e.g. which Pokémon has the best attacks against certain raid Pokémon) and also rely on the players to gather information about the appearing spots of specific Pokémon (especially of rare Pokémon). Websites like 'pokemongohub.net' or 'pokemongo.gamepress' provide databases, wikis and tools for calculating internal values of Pokémon, their combat power or catch rate. These blogs focus on a broad variety of topics such as commercial interests of

Niantic, dissimilarities between rural and urban areas in terms of catching rates, availability of gyms, Pokéstops and other players. In some cases, these forums also present results from analyzing the code of every update of the game.

## Collaboration Patterns

*Existing Friends and In-game Socialization.* The majority of players, but especially young adults, caught Pokémon with their real-world friends who were also playing the game. They used their usual chat application to organize their walks and meetings. This changed with the introduction of raids: players have to fight in larger groups against Raid Bosses. The line between offline and online friends blurred. Players knew more about their chat partners in the group chats (e.g. a father posted a picture of his newborn, others posted about power outages in the city) and met for the first time during the raid fights in real life. For community days, players made a walking plan to reach out to as many Pokéstops and gyms as possible in order to catch Pokémon.

*Raid vs. EX-Raid.* The introduction of raids increased the social element of Pokémon GO. Players had to cooperate in groups now to win against the Raid Boss. For this reason, many new chat groups were established by young adults for raid organization purposes only and invited the older players to these groups. Players posted pictures of Raid Bosses and asked for help, others asked for joining in the event and meeting at the raid location. EX-raids however needed a little bit more planning in advance. Players had to be active for a full week in several raids to receive an EX-raid invitation for some specific date, time and place. The exclusive participants of such EX-raid groups chat about and post screenshots of their EX-raid passes and organize meetings around the gym where the EX-raid will happen. As players receive invitations to different EX-raid locations, chat communication was sometimes quite confusing and produced meta-communication for clarification.

*Gym Fights.* Gym fights can be mastered solo, but as more in-game coins can be earned by taking and holding a gym for a longer time, the players started to coordinate. Players posted in group chats which gyms they had taken and asked other players not to fight them. However, you must be kicked out of a gym to receive the bonus coins. That's why the gyms were released later by the other players.

*Trading Pokémon and Gifts.* Another important update that strengthened the bond between the players was the ability to trade captured Pokémon with each other. Players first added their real-world friends as in-game friends. But through the activity in the group chats, lists of player IDs were created to make it easier to make new friends in-game. It is also important to maintain these in-game friendships so that you can get different bonuses. In-game friendship also led to forms of organizing when to open or send gifts to each other. These presents

contain items and the more often they are exchanged the higher the level of friendship gets which in turn leads to increased chances of catching Raid bosses.

*Exchange of Information.* Participants who subscribed to YouTube channels shared their knowledge of how to best catch Pokémon. Twitter users, who were usually below 25 years old in our study group, shared screenshots of the official Pokémon Twitter account. Infographics shared on Telegram were also uploaded to the WhatsApp groups. WhatsApp was the central organizational tool where all information was collected. Due to the large size of the groups, there was always someone who could answer questions quickly. Also, tips were exchanged about tools that help catch Pokémon (although a few are not officially allowed). Here especially the young adults were using all of these tools and other social networking sites besides WhatsApp.

*Going beyond Pokémon.* Younger adults, who are more experienced using a smartphone helped older players in troubleshooting with their smartphone during raid fights or community days, even without knowing each other for a long time. Connecting with new people was an important aspect for many players.

## Discussion

The discussion aims to highlight two aspects that might be relevant for work life: Collaboration and transferability of IN-game skills to the working environment. These are just some first tiny aspects which need further investigation, but might play a major role for young adults who just transferred into work life.

### Pokémon GO and Collaboration

Collaboration was an important aspect in the game to successfully catch all Pokémon, as well as reach higher levels. It could be observed how experienced players took the new players under their wing and invited them into the groups. This is about the dissemination of information and also about forming effective strategies for advancing in the game. At the beginning these new players were mostly quiet and not very active in the chats. Through the social aspect (Tokgöz & Polat, 2018) of Pokémon GO, there was a lot of real-life exchange during the individual raid fights at the gym. Here the players were supposed to talk to each other so that there was no confusion and everyone had the chance to participate in the raid. Less experienced players are often given advice when it comes to selecting the optimal set of Pokémon for a fight or when investments of resources into the capabilities of certain Pokémon are at stake. At the same time, the group chats were also used to keep players who weren't there yet up to date, this collaborative behavior was already apparent in early online games (Yee, 2006).

Other collaboration opportunities were seen during the capture of gyms. Players formed smaller groups to occupy and defend multiple gyms in order to receive the bonus. These were mainly groups of players who already knew each other from the real world, who were then spontaneously enlarged by other players, who were also active in the chat groups.

## Pokémon GO and Work Life

Many of the skills acquired during the game play of Pokémon GO can be transferred into the work life such as *gathering information, strategic capabilities, social aspects, communication and flexibility*.

Information plays a major role in the working world, but also in the Pokémon GO world. Players use several ways to collect information (such as the location of a rare Pokémon, which tools are available and which Pokémon helps against certain opponents) and then bundle and process it. By providing this processed information to other players, they could strengthen the whole team. The information is quite complex in nature here: there are hundreds of different Pokémon, each belongs to one or two types out of 18 different types. Each Pokémon has internal values (attack, defense, stamina), two different types of attacks out of more than one hundred attacks in total etc. Attacks take different spans of time for loading and unloading etc. The properties of the Pokémon are interrelated and partly even dynamic (random attack boosts, influence of the real-world weather etc.). So, some of the Pokémon's behavior can be predicted from knowledge about its properties and some cannot because of randomness. And in between determinacy and randomness there are some behavioral aspects of Pokémon which are probabilistic. Experienced players know about the probability distribution of such behavior and instruct younger players about how to increase e.g. the probability of catching certain Pokémon. In a nutshell, information in Pokémon GO is quite dense, partially certain, highly interconnected and transfers apparently best when being demonstrated in situ (e.g. there is a catching trick one can read about on websites or watch on YouTube, yet a real-life demonstration seems to be more effective for learning it).

Another aspect is social skills: integrating into an existing team, making new friends and contributing to the overall goal. This could be seen at community days and raid fights, when several players, that had never seen each other before, formed groups. Pokémon GO players form a highly diverse set of people, with different lifestyles, differences in age, gender, occupation or life-worlds ("Lebenswelten") so-to-speak. So communicative skills are needed for addressing shared goals or getting information for one's own goals. This includes the ability to quickly form a team to perform certain tasks successfully, which is also relevant to both areas, Pokémon GO and the world of work, where an event often requires a quick response. This aspect is especially important in today's

increasingly complex and flexible work environment: employees need to be reachable through multiple communication channels (e.g. email, but also messenger and social media). By being part of a community artifact ecology (Bødker et al., 2016) players experience the overlapping ecologies of using different tools, discussing topics in related communities and observing the evolution of these communities.

## Limitations and Future Work

This auto-ethnographic should provide a first glimpse at how collaboration between players and especially young adults in the realm of Pokémon GO happens. Since only the findings and experiences of two players and their observations of the real-world activities and chats are analyzed, this study is neither representative nor systematic for all players and for all their different goals and motives.

Future research should include more players with differences in age, educational, social and economic background. Especially young adults who just started their work life and are Pokémon players as well. In particular, qualitative methods such as semi-structured interviews and participatory observations should be used to gather meaningful insights. While we tried to focus on young adults, the majority of the results are based on the observations and talks with all player.

## Conclusion

Our study wanted to show how Pokémon GO established ways of collaboration between players which can be transformed into work place contexts. Especially, reacting to time critical events (e.g. raid fights) or planned events (e.g. EX-Raids), where players gather rather quickly for fighting a Pokémon which would be too strong to be defeated alone. In addition, the players are building private groups during the raid process according to the team memberships and are helping each other afterwards to catch the raid boss.

Young adults' appropriate different tools and platforms to gather information, distribute them to other players and organize events to catch rare Pokémon. Especially older users are not familiar with many of these tools and platforms and profited from the skills of the younger ones. These skills are essential in a fast moving and flexible work environment and therefore helpful for the company if they could be integrated in the company's communication and organization infrastructure.

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