

Pokémon GO: A Pervasive Game and Learning Community

Gunver Majgaard¹ and Lasse Juel Larsen²

¹Mærsk Mc-Kinney Møller Institute, Embodied System for Robotics and Learning,
University of Southern Denmark

²Department for the Study of Culture, University of Southern Denmark

gum@mmmi.sdu.dk

ljl@sdu.dk

Abstract; The present article argues that the mobile augmented reality game Pokémon GO demonstrates what we have chosen to coin a pervasive learning community. Normally, communities are centred on a specific game, associated real-world events, and online communities, but Pokémon is different since the digital game world runs parallel with game activities in physical reality. This mobile and pervasive structure changes communities from previous binary modes of being either in or out of community to a heterogeneous possibility space of being engaged in all kinds of places all the time while interacting with friends, acquaintances, and strangers thereby reshaping and expanding learning formations of communities. This study is built upon field observations, interviews, and online questionnaires of Pokémon GO players. We wanted to find out who played Pokémon GO, when they played, where they played, and with whom they played, for how long how learning took place, and how the Pokémon Go communities were shaped. In the course of our investigation we found that Pokémon GO makes players physically active while moving around discovering, interacting, and learning new aspects of the game while finding novel places in the cityscape. We found that players engage the game and each other both online (as expected) and in real life in new places at all hours of the day thereby placing players in a new form of gaming scenario and learning environment, which we have chosen to call a pervasive learning community.

Keywords: gamebased learning, augmented reality, Pokémon GO, communities of practice, pervasive games

1. Introduction

We got interested in Pokémon GO in the summer of 2016 because we saw a lot of children and adults playing this new pervasive augmented reality game. It was also one of the first augmented reality games that enjoyed broad acceptance and recognition even though Pokémon GO to a certain degree resembles Niantic's former and still running augmented reality game Ingress (2013), which also is a pervasive game played everywhere and not only with a game console or as a board game. Augmented reality games do not rely on location-aware technology e.g., GPS coordinates (Montola, 2011) - they are built on a mixture of the physical and virtual world (Dunleavy, 2014).

From a research perspective, we were generally interested in learning communities associated with emerging game technologies. In this specific case, we got interested in knowing more about the community of practice (Wenger, 1998) in Pokémon GO. Did it resemble other gaming communities or was it different and if so in what way. We focused especially on the community and how learning processes were supported.

During the autumn of 2016, we played the game ourselves in order to better understand the game, its design and structure, and the community debates. All to achieve and gain insight knowledge of the seminal communities and player patterns. Subsequently, we devised and conducted two surveys to outline the Pokémon GO communities. The first one was a semi-structured interview and the second one was an online survey. In total, we had about 100 respondents. We focused on adult players.

Organisation of the present paper: First, the concepts of pervasive augmented reality games are introduced and then the specifics about Pokémon GO. Second, the results from the surveys are presented. Surprisingly, many younger and middle-aged women without significant gaming experience were among our respondents. Third, we present player interaction and player motivation among Pokémon GO players. Fourth, we present findings from virtual communities around Pokémon GO. Additionally, we reflect on engaging in affinity groups and communities. Finally, we discuss and present our understanding of the concept of pervasive learning community.

2. About the pervasive augmented reality game: Pokémon GO

Pokémon GO is a pervasive augmented reality game for smartphones. A pervasive game is an umbrella concept that includes location-based and location-aware games such as Pokémon GO. Pervasive games are not a clear-

cut categorisation, but include location-aware, ubiquitous games played in the streets and everywhere amongst strangers (Montola, 2011).

Augmented reality is an emerging technology utilizing mobile and situated devices such as smartphones and tablets (Dunleavy, 2014; Gray, 2009; Klopfer, 2008; McGonigal, 2011; Majgaard, Larsen, Lyk, & Lyk, 2016; Majgaard, Lyk, 2015; Milgram, Takemura, Utsumi, Kishino, 1994). Augmented reality blends the physical and virtual environments into a mixed reality, see Figure 1 (b) (Klopfer, 2008; Milgram, Takemura, Utsumi, Kishino, 1994). Physical reality constitutes familiar surroundings, while the augmented version expands the physical reality by adding a digital layer on top, in this case a game.



Figure 1 (a) On the left side, the Pokémon Rattata in map view next to a Pokéstop. **(b)** On the right side, a virtual Rattata shown in augmented reality next to a crocheted Rattata

Augmented reality is normally divided into two different types of architecture. One being position-based while the other is image-based. These can of course be combined. The position-based architecture uses GPS to include the user's physical location. Virtual content is presented depending on GPS coordinates and/or compass measurements (Dunleavy, 2014; Majgaard, Larsen, Lyk, & Lyk, 2016). The image-based architecture uses the smartphone camera to scan QR codes or 'read' 2D images to enable virtual content (Dunleavy, 2014). Pokémon GO is a location-based augmented reality that includes the player's position. This is especially noticeable in map view where the player can see his/her avatar move when walking through the cityscape.

The game was published by Niantic in the summer of 2016 and quickly became popular. About 500 million users (Wiki Pokémon GO, n.d) downloaded it. Niantic is a spinout from Google and in partnership with Nintendo and The Pokémon Company. Niantic also developed the location-based augmented reality game Ingress (2014). Here Niantic used sculptures as hotspots for players. A design idea reused in Pokémon GO as Poké Stops.

The Japanese game designer Satoshi Tajiri created the Pokémon Universe and the first game for Game Boy was released in the late 1980s (Wiki Satoshi Tajiri, 2016). Satoshi Tajiri grew up in the suburbs of Tokyo in the 1960-70s and his favourite pastime was collecting insects (Howard and Larimer, 1999). Beetles', caterpillars', moths' and crabs' life cycles inspired him in the creation of the Pokémon Universe. The name Pokémon is comprised of pocket and monsters. Monsters you can nurture and carry around in your pocket.

Pokémon GO is about capturing Pokémons and letting the strongest battle each other. Currently, there are about 247 Pokémons released (two generations). They are small cartoon-like avatars both cute and scary at the same time (Howard and Larimer, 1999).

Pokémons are often found in close proximity of Poké Stops, see Figure 1 left. Poké Stops are located near churches, libraries, schools, universities, post offices, sculptures, and other cultural locations. International malls and fast food chains (Mere Mobil 2016; Fortune 2016) sponsor additional Poké Stops to be placed in their businesses. This obviously affects the cultural connection to the game.

3. About the players: Many young younger and middle-aged women

In order to understand the Pokémon GO community we had to learn more about its players. We made two surveys. First, we conducted a semi-structured interview varying in length between 5-30 minutes in the Library Garden (a highly visited place for Pokémon GO players see Figure 2) in Copenhagen in the early autumn of 2016. We interviewed adults in our target age group i.e. between 20 and 60 years of age – we received 20 responses. We have chosen the target age group since we did not want to research schoolchildren playing Pokémon GO. The interviews gave us insights into the players’ understanding of themselves and their behaviour, and it helped to inform the second survey, an online questionnaire conducted in the same target group in the Facebook Group: Pokémon GO: Denmark. The questionnaire yielded 80 responses.



Figure 2: Shows two pictures of players of all ages in the Library Garden. Almost everybody in the pictures play Pokémon GO. Before Pokémon GO almost nobody visited the place.

The average age in the online questionnaire was 37 distributed between 70% women and 30% men. Their average game level was 28 so they were all to be considered seasoned players. We found that 72% bought items in the Pokémon GO shop to propel there game progress, get more space to Pokémons or just to make it easier to catch Pokémons. We found that most players played more than one hour per day (see Table 1) even though, as some stated in their interviews, that they did not necessarily play every day. Some days they did not play at all while on other days they played for several hours. The 1-hour-a-day playtime should be seen in that light.

Table 1: Number of hours played per day by the respondents from the Facebook group

Number of hours of playing per day	0-1	1-2	2-3	3 and more
Distribution in percent	33%	38%	12%	12%

We also found that most players had previous gaming knowledge. Especially from ‘traditional’ mobile games meaning that Pokémon GO was their first experience with augmented reality game (see Table 2). Translated into numbers it means that close to 100% (except one player) never had played any augmented reality game and that 58% did not play games on computers or consoles, yet they played on their mobile phones. Around 16% of the players’ did not play any digital games, yet they still considered themselves players, but exclusively of board games. One interesting find was that Pokémon GO had attracted new players without any prior gaming experience in neither digital nor analogue games. In our interviews, the pool of new players was about 27%. The number is not credible since the number of interviews is too small to yield certainty yet it points in the direction that augmented reality game architecture and community affordances in itself attract a different kind of players. In our online questionnaire, the percentage of new players is lower. Here the number is 10% and properly closer to a broader trend in the Pokémon GO’s attraction of new players. What is noticeable in terms of the new players is that they predominantly consist of educated women over the age of 40. What is even more interesting is that about 50% did not have any prior knowledge of Pokémons. Not only are they new to Pokémon GO they, are also new to the Pokémon universe. This blurs the picture of whether it is Pokémons or the augmented reality game or the combination that attract players without any background in gaming whatsoever.

Table 2: Gaming experience from other platforms

Categories of gaming experience from other platforms	Number of answers	Percentage
Other (no experience from the platforms below)	8	10%
Board games	5	6%
Computer	7	9%

Categories of gaming experience from other platforms	Number of answers	Percentage
Computer and board games	5	6%
Computer and game console	1	1%
Mobile	19	24%
Mobile and board games	14	18%
Mobile and computer	5	6%
Computer, game console, mobile and board games	14	18%
Game console	1	1%
Total	78	100%

4. Player motivation and interaction with strangers

Of interest to our study were the issues of when, how, and with whom did players play Pokémon GO - in order to filter out the shape of the gaming community. One could expect that players played with and for themselves leaving little room for interaction while playing. We found that 33% of the players often or always talked to players they did not know beforehand while playing. The remaining respondents confirmed our expectations stating they seldom spoke to others while playing. Diving into the numbers, we found that 56% players were motivated by the opportunity to be physically active while playing. They even mentioned physical activity as a goal for playing Pokémon GO in the first place (see Table 3). Yet most players described collecting Pokémon as their primary goal and motivation for playing the game pointing both to collecting as an activity of value in itself (Majgaard, 2016) and the power of the transmedial (Klastrup and Tosca, 2004; Schell, 2008; Jenkins, 2006) character of the Pokémon universe.

Table 3: Player motivations for playing Pokémon GO (respondents were allowed to give more than one answer).

Physical movement	56%
Collecting Pokémons and develop Pokedex	77%
Doing stuff together with friends, girlfriend, boyfriend, spouse or children	33%
Develop strong Pokémons to fight in Gyms	44%
Additionally, respondents mentioned: Having fun, seeing art and reaching game-level 40	

In both the first and second survey, we found that the majority of Pokémon GO players were female with an average age of 37. We expected to find young men to constitute the core player base, but surprisingly we found a majority of younger, middle-aged women. We never expected them to play more than an hour a day, but surprisingly they played more than 60% more than 1 hour per day.

5. Virtual communities around Pokémon GO

When Pokémon GO was released, Niantic left out a rich game manual or virtual gamer forum. The idea was that players were supposed to learn how the game worked while playing. This approach opened for creation of virtual support pages ranging from crowd sensing apps (Wang, 2017) informing players where Pokémons spawned (Pokémon Go map, 2016), battle advisor apps advising on to how to battle other players in gyms (Battle Advisor, 2016), and evolution guides about how to evolve Pokémons and what they turn into when they are evolved (Pokemon Go Evolution, 2016) to highly visited social media platforms such as Facebook, Youtube and Snap Chat where we found that players discussed and shared news about specific Pokémons, gyms and other game experiences.

We found that we needed to expand our investigation of Pokémon GO players beyond our qualitative interviews and quantitative online questionnaires. Mainly to get a better grasp of how they played, what they focused on, what they discussed and finally how it all came together in shaping a community. To achieve this end, we found a Danish Pokémon GO Facebook group. In the following, we present examples of what players share in the Facebook group Pokémon GO: Denmark. The group has more than 11,000 participants and is quite active.

The following examples are collected from about 12 hours of posts and comments. We organised the posts under the following themes all of which point to player knowledge exchanges, learning, and community aspects:

- *Personal Pokémon milestones* e.g. 10,000 gym battles where your Pokémon fights with other people's Pokémons or reaching the goal of collecting 230 different Pokémons.

- *Personal Exercise milestones* e.g. walking 1670 km in eight months. Another player walks about 15-20 km pr. day and has lost 18 kg.
- *Evolving Game Rules* (Fullerton, 2008; Schell, 2008; Salen & Zimmerman, 2004) and Reward Structure (Hopson, 2001). The game rules and reward systems changes along with game updates e.g. instituted Niantic a 7-day streak system where players have to catch a Pokémon every day for 7 days to collect a bigger reward. The same system applies for Pokéstops. When a player collects from a Pokéstop 7 days in a row, the 7th day award is a bigger. This reward system supports different player goals. Some use it to fight in gyms others to catch and evolve Pokémon or a combination.
- *Announcement of Pokémon Events* e.g. an event arranged by the trade association in the Danish town of Skive. They guarantee “lures” (that attract Pokémons to Poké Stops) on all ten Pokéstops in the shopping area. In the hope of elevating sales in that period.
- *New Pokéstops*. Discussion about appearances of new Pokéstops. Of special interest was a debate on the introduction of 12 new Pokéstops in a large shopping centre, Fisketorvet in Copenhagen. The debate was about fairness of the distribution of Pokéstops in the big cities compared to the countryside. Especially since the introduction of 12 new Pokéstops in Fisketorvet created a very dense area of Pokéstops that makes it possible to sit in a sofa and reach 10 Pokéstops without moving around thereby, violating one of the key ideas of GPS-driven augmented reality game.
- *Pokémon and sightseeing*. Some in the Facebook group were interested in the Pokémon situation in Legoland. Was there any interesting Pokémons to catch, what about Pokéstops and Gyms? In other words, would it be suitable to play Pokémon GO while visiting Legoland. A similar and reoccurring debate is about where to go in Copenhagen for Pokémon tourists (e.g. finding rare Pokémons, best areas for Pokéstops and which gyms or teams are dominant in that area).
- *Bugs in Pokémon* e.g., the graphic shows a reward of five candies for catching a normal Pokémon like Ratata, but the player receives six candies.
- *Surprising catches*. People upload surprising catches of rare Pokémons. Rare Pokémons that suddenly appeared in places least expected.
- *Small talk* about level and Pokémons e.g. a player’s question: “What level are you and what are your best Pokémon?” Received 69 comments, where other players list their levels and rare and hard achieved Pokémons often with screenshots of their accomplishments. Others use the forum to congratulate participants on their progress and Pokémon catches.
- *Defeats in field*. Pictures of found, but absconded Pokémons.
- *AR pictures*. Funning or telling pictures that combine the physical and virtual (Figure 1b).
- *About Cheating*. There is an ongoing discussion in the community whether it is cheating to use apps, research websites for particular Pokémon nests, even buying items from the game shop such as egg incubators. It is a discussion centred on whether you can buy your way to progress as opposed to play strictly free.

The majority of the posts were supported by screenshots from the game. These often serve as proves of what you say - is it true or not.

6. Engaging in affinity groups and a community of practice

The Facebook group exhibits what Gee have coined “affinity groups” (Gee, 2003) or “affinity space” (Gee, 2004). An affinity group is centred on a semiotic domain of situated meanings understood as people coming together around a shared interest, which in this case is the game Pokémon GO. Gee uses the phrase semiotic domain, which suits the Facebook group well since players use different semiotic expressions such as pictures, statements, video-clips about Pokémons in a particular space. An “affinity space” is pretty much the same as affinity group except it highlights the importance of space understood as a combination of shared content and interactions. The last part is about how people interact with content, which in this case is Pokémon GO and the Facebook group, and how they interact with each other over that content. In such an affinity group, players find informal debates about game bugs, new game developments, surprising catches, and defeats and talk about the rare Pokémon that got away. The engaged debate in an affinity group about Pokémon GO gives players a sense of belonging to a community. The unfolding of the community is informal and evolves organically based on the players’ posts and comments. The affinity group or space can be compared to what Wenger have coined a

community of practice (Wenger, 2008). It is defined through engagement in a practice that is mainly informal. Players who speak derogatorily about the game or use bad language are expelled from the group. Thereby establishing player norms by policing (Steinkuehler, 2006). Falling short of the norm lead to exclusion from the community. Players are encouraged to help and support each other (McGonigal, 2011; Jakobsson & Taylor, 2003).

7. Community for learning

Learning takes place through participation in a social practice (Lave & Wenger, 2003). Learning is a dynamic movement from peripheral participation to full participation in a community of practice. An example of full participation is a participant who understands subtleties and challenges of the game. A participant is announcing a milestone of reaching level 30. She is congratulated in the community on both knowledge about the game, engagement and time invested. This participant illustrates the ideal player and centre of the community if he or she exhibits expected behaviour as gatekeeper of access to the community. In the periphery of the community are newbies or people who make fun of other players' commitment. Newbies might start by reading and liking posts. Then they might ask questions about the basic rules and e.g. ways to develop the Eevee Pokémon. The committed high-level Pokémon GO players discuss changes in balancing of Gyms, bugs and so on. Participants' roles in the community changes as they progress in the game and their roles changes imperceptibly from peripheral to full participation in the community depending upon the level of responsibility.

8. Reflection on playing the game

Often the game is played solo so it is natural to want to share experiences amongst peers or experts. When the player returns home he or she needs to clean up in the Pokémon bag in order to give room for new catches later on. The clean-up reveals which Pokémons are ready to be evolved. If the player has 30 or more Pokémons ready, he or she might throw a magic egg to double the number of experience points given while evolving. During the clean-up the player might reflect on catches, what is missing in the Pokédex, what went well, what went wrong and what to focus on in the near future. Those reflections have to do with optimising the playing of the game, an instrumental approach to playing which subjugate or perhaps even enhance play with gaming (Silverman & Simon, 2009; Golumbia, 2009). It does, however, open for the reflection-in-action (Schön, 2000) problem-solving activity the player does while still playing the game (Illeris, 2006). When exemplified, the problem-solving and optimising activity is something like combining the right Pokéball and raspberry-bait when catching Pokémons. Another example is picking the right Pokémons for fighting in gyms, which is far from always the Pokémon with the highest combat power (CP) that fares best in gyms against other Pokémons.

The virtual community on the other hand is often used as forum for a retrospective reflection on experiences obtained in the game field where thoughts on optimisation can be shared, exchanged, and discussed. Participants might produce screenshots, while playing, of highlights from their practice, rare events, milestones or puzzling situations. Reflection is here understood as a kind of afterthought shared in the virtual community (Illeris, 2006; Juel Larsen, 2015). Schön (2000) would describe this kind of afterthought as reflection-on-action.

9. A pervasive learning community

Our investigation has found that the Pokémon GO community can be described as a merger or mixture of Gee's (2003, 2004) notion of affinity groups and space together with Wenger's (2006) understanding of situated learning. This description does not take into account the workings of the location-based augmented game architecture where players are placed in changing physical conditions in which they have to both navigate the real and the game world. Pokémon GO is not disjointed as standard mobile games since it relies on a connection between the virtual and real world. This connection results in players meeting up and running into each other while playing, the same game often leading to social exchanges regarding game content and reflections on play situations. Still, such scenarios are different from standard game scenarios where players often do not know, see, or hear whom they are playing with or against. This means that real-world social exchanges concerning game content or play situations along with mobile phones' possibility to access forums such as Facebook require an expanded understanding of gaming communities, i.e. one that takes the augmented game architecture into consideration, in which social exchanges while moving around the real world playing the augmented game while accessing forums simultaneously. This adds up to a reformation of player communities. They are transforming from being sequential to being simultaneous, from stationary to moving around, from happening in a fixed place to take place everywhere. These aspects reshape the formation of player communities. It no longer takes place at specific times and places. Now it takes place all the time and everywhere. This is of course tied to the

augmented reality game architecture. Putting these aspects together makes location-based augmented reality games communities pervasive. In these pervasive communities, learning is situated or situational in a different way than normally since players simultaneously navigate a dyad – the real world and the game world. Now players interact physically and virtually simultaneously while they exchange all from social recognition of fellow players or give hints and tips, discuss gym locations or which team is dominating the area, which Pokémons spawn where, when and which balls or fruits to use when catching different Pokémons. Interacting and learning with strangers while playing add to an enhanced understanding of Pokémon GO and as such brings social exchanges and learning to the forefront of the communities which all adds to not only a pervasive, but also social learning environment. This particular merger makes it more or less straightforward to coin such communities - pervasive learning communities.

10. Summary

We certainly got a lot of personal experience by playing Pokémon GO ourselves (Aarseth, 2003). This gave us a deeper understanding of what was at stake when players celebrated rare achievements, enjoyed gym wins or got tired of catching the same Pokémons over and over again. It also gave us insight into the Pokémon universe and acquainted us with all the Pokémons with often odd-sounding names. Overall, it made it easier to communicate with the players in the semi-structured interviews because we understood the content matter and the structure in which it was presented.

We were surprised to learn that many younger and middle-aged women without a lot of gaming experience were among our respondents. We believe that it might be due to the combination of physical exercise and pervasive game structure. One third of the players interacted with strangers while playing which is also a greater number than in normal mobile games.

We were also impressed of the size of virtual communities surrounding the game. The sharing of experiences in Facebook and other media constituted a community of practice for learning also during play sessions. Especially intriguing was the mixture of physical and virtual communities associated with Pokémon GO and its location-based augmented reality game architecture which we came to regard and following coin a pervasive learning community.

References

- Aarseth, E. (2003) Playing Research: Methodological Approaches to Game Analysis. *Proceedings of DAC 2003*. Melbourne: RMIT University. Online: <http://hypertext.rmit.edu.au/dac/papers/Aarseth.pdf> (retrieved 02-05-17)
- Battle advisor, 2016. <http://www.pokebattleadvisor.com/> Retrieved 10 October 2016
- DMR 2016. Pokémon GO Statistics
- Dunleavy, M., 2014. Design principles for augmented reality learning. *TechTrends*, 58(1), 28-34. Fortune 2016. Poke Stops sponsorship <http://fortune.com/2016/08/03/pokemon-go-mcdonalds-sponsorships/> Retrieved 04-10-2017
- Facebook – Pokémon GO: Denmark <https://www.facebook.com/groups/pokemongodk/?fref=ts> 10 October 2016
- Fullerton, T. (2008) *Game Design Workshop*. Elsevier, Morgan Kaufmann Publishers.
- Gee, J. P. (2003) *What Video Games Have to Teach Us About Learning and Literacy*. Palgrave MacMillan.
- Gee, J. P. (2004). *Situated Language and Learning – A critique of Traditional Schooling*. Published by Routledge, Taylor & Francis Group.
- Golumbia, D. (2009). Games Without Play in *New Literary History*, Volume 40, Number 1 (pp. 179-204). Published by Johns Hopkins University Press. DOI: 10.1353/nlh.0.0077
- Gray, P., 2009. Play as a Foundation for Hunter-Gatherer Social Existence. Board of Trustee of the University of Illinois.
- Hopson, J. (2001) Behavioral Game Design in *Gamasutra*. Retrieved 26-04-2017
http://www.gamasutra.com/view/feature/131494/behavioral_game_design.php
- Howard C. and Larimer T., (14 November 1999). "Beware of the Pokemania". *Time*. New York City: Time Inc. Retrieved 10 October 2016.
- Illeris K. (2006) *Læring [Ed. Learning]*. Roskilde Universitetsforlag
- Jakobsson, M. & Taylor, T. L. (2003). The Sopranos Meets EverQuest – Social Networking in Massively Multiplayer Online Games. *MelbourneDAC, the 5th International Digital Arts and Culture Conference*. Melbourne, Australia
- Jarusriboonchai P., Paasovaara S. and Olsson T. (2016). Interactions between Nearby Strangers in Pokémon GO. Workshop of Interaction Between Nearby Strangers, in conjunction with NordiCHI'16, Oct 23–27, 2016, Gothenburg, Sweden.
- Jenkins, H. (2006) *Convergence Culture – Where Old and New Media Collide*. New York university Press.
- Juel Larsen, L. (2015). Computerspil og læring in *Læring og Medier*. Retrieved 26-04-2017
<http://ojs.statsbiblioteket.dk/index.php/lom/article/view/16998/0>
- Klastrup, L & Tosca, S. (2004) Transmedial worlds – rethinking cyberworld design in Proceedings International Conference on Cyberworlds 2004. IEEE Computer Society, Los Alamitos, California, 2004.

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- Klopfer, E. 2008. *Augmented Learning: Research and Design of Mobile Educational Games*. London: The MIT Press.
- Majgaard, Gunver (2016). *Informal Communities for Hunter-Gatherers of Pokémons*. Interactions Between Nearby Strangers: Serendipity and Playfulness – Workshop at NordiCHI'16. Gothenburg, Sweden
- Majgaard G., Larsen L. J., Lyk P., & Lyk M, 2016. At se det usete - Rumlig visualisering af solsystemet med fysiske prototyper og Augmented Reality. *Mona*, 2016(3).
- Majgaard G., & Lyk P. 2015. På rejse med Virtual Reality i billedkunst: Erfaringslæring gennem kombineret fysisk og virtuel modelbygning. *Læring og Medier (LOM)*, 8(14).
- McGonigal, J. (2011) *Reality is Broken – Why Games Makes Us Better and How They Can Change the World*. Jonathan Cape, London.
- Mere Mobil 2016. Poke Stops in Malls. <http://meremobil.dk/2017/01/fisketorvet-inviterer-pokemon-go-jagt/> 04-10-2017
- Milgram P., Takemura H., Utsumi A., & Kishino F., 1994. Augmented reality: a class of displays on the reality–virtuality continuum. *Proceedings the SPIE: Telemanipulator and Telepresence Technologies*, 2351, 282–292.
- Montola, M., 2011. A ludological view on the pervasive mixed-reality game research paradigm. *Pers Ubiquit Comput* (2011) 15: 3. doi:10.1007/s00779-010-0307-7
- Pokemon Go map, 2016. <http://www.polygon.com/2016/7/20/12236574/pokemon-go-map-of-pokemon> Retrieved 10 October 2016
- Pokemon Go Evolution, 2016. Calculator <http://pokemongohub.net/pokemon-go-evolution-calculator/> 10 October 2016
- Salen, K. & Zimmerman, E. (2004) *Rules of Play – Game Design fundamentals*. The MIT Press, Cambridge, Massachusetts.
- Schell, J. (2008) *The Art of Game Design – A Book of Lenses*. Morgan Kaufmann.
- Silverman, M., & Simon, B. (2009) Discipline and Dragon Kill Points in the Online Power Game in *Games and Culture* Volume 4, Number 4 (pp. 353-378) Published by Sage Publications.
- Steinkuehler, C. (2006) The Mangle of Play in *Games and Culture*. Volume 1, Number 3 (pp. 199-213). Published by Sage Publications.
- Wang, M. (2017) FollowMe if You Can: A study of Mobile Crowd Sensing with Pokémon Go. *Proceedings ACSW '17 Geelong, Australia*. DOI [10.1145/3014812.3014853](https://doi.org/10.1145/3014812.3014853), retrieved 26-04-2017.
- Wenger E., 1998. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press. ISBN 978-0-521-66363-2.
- Wiki Pokémon GO 2016. Retrieved Octobr 11, 2016 from https://en.wikipedia.org/wiki/Pok%C3%A9mon_Go Retrieved August 22, 2016 from <http://expandedramblings.com/index.php/pokemon-go-statistics/>
- Wiki Satoshi Tajiri https://en.wikipedia.org/wiki/Satoshi_Tajiri#cite_note-Top-4 Retrieved 10 October 2016.