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THE ROLE(S) OF GAMIFICATION IN KNOWLEDGE MANAGEMENT

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Title: The Role(s) of Gamification in Knowledge Management

Abstract: Gamification is a new, but an increasingly popular approach, which proved to be powerful in many areas, such as education and marketing, and has entered the area of internal corporate applications. This exploratory study is focused on a particular part of corporate environment – gamification being a medium of interactions of knowledge workers with each other. By providing a literature review of gamification and combining it with the exploratory case-study of an online retailer, Zappos, we demonstrate the ways in which gamification helps to identify various types of knowledge workers and influence their dynamics, as well as we open a wide range of areas for further research.

Keywords: knowledge management, gamification, innovation, knowledge management systems.

Introduction

Since its recent entrance into the arena of both practice and scholarship of management, ‘gamification’ is rapidly gaining ground as a tool of practicing managers, often specialised consultants, and also as a promising research area of management and organisation scholars. By today it has acquired sufficient legitimacy to claim that it is more than just another management fad. In this paper we explore the possibility of making use of gamification for supporting knowledge workers in general, with particular focus on innovation-oriented organisations – which is a natural context, as adopting gamification of work today qualifies as innovative.

Games are usually associated with fun and leisure time, but given how much time both children and adults spend playing games (‘Collectively, the planet is now spending more than 3 billion hours a week gaming’ (McGonigal, 2011, p. 6)), which is perceived by many as a waste of time, some practitioners have suggested that instead of shaming the gamers and fighting their addiction we should learn from the games, understand what is so engaging about them and try to replicate it in real life, for example, at work, and more specifically in the work of knowledge workers. In this paper we take a closer look at this area.

The early experiments with introducing game elements at work can be traced back to the early Soviet Union in a form of competition between different factories ([Nelson, 2012](#)), but embedding game elements in the non-gaming environment really took off with the development of information technologies, and this process was then given the name ‘gamification’ (Pelling, 2011). Gamification is already relatively widely researched and applied in the areas of education (Gee, 2008; [Lee & Hammer, 2011](#)) and marketing ([Huotari & Hamari, 2012](#); [Zuckerman & Gal-Oz, 2014](#)), and is considered the next major innovation in education in particular ([Baker, Bujak, & Demillo, 2012](#)). One can already find early

experiments of introducing gamification in corporate environment as well, and one of the major developers of corporate software solutions – SAP – introduced a beta version of a gamification module last year (2015), therefore acknowledging that gamification should be taken seriously. However, this area of application is still at an early stage of development, and it lacks adequate conceptualisation of research problems and agendas. In this study we are interested in how to frame research and what are the possibilities of application of gamification in the broadly defined area of knowledge management; in order to do this we use the below conceptualisation as our departure point.

One of the distinguishing features of work in this century is an increased proportion of knowledge workers in the companies, and some of the most prominent management thinkers around the turn of the century believed that knowledge workers could constitute as much as 50% of the amount of workers in the near future (Drucker, 1969). In this paper we observe the ways in which gamification is embedded in the knowledge management (KM) practices of the knowledge workers at the example of one company, and thus argue that gamification can improve KM practices substantially. It could become an innovation in KM in a way, in which gamification enables to explore different roles of knowledge workers, explore their behavioural patterns and bring various communities forward that have emerged within a company and were invisible before. These observations could in turn help to adjust KM practices and even help to make an informed decision about the types of supporting knowledge management systems (KMS) that would suit better the needs of the company.

Prusak argued that KM has experienced three waves (Lambe, 2008). After the appearance of the inspirational work of Argyris and Schön (1978), the first wave started with an attempt to articulate and codify all the knowledge in an organisation. During this wave researchers tried to classify the knowing processes (Marquardt, 1996; Ruggles, 1997; Van der Spek & Spijkervet, 1997) and present knowledge as a mechanistic entity that follows the cycle of

articulation and integration back to the organisation ([Nonaka & Takeuchi, 1995](#)). But soon after many KM projects failed and many knowledge repositories turned into junk-yards ([McDermott, 1999](#)), both researchers and practitioners realised that KM projects cannot be driven primarily by IT ([Swan, Newell, & Robertson, 2000](#)), knowledge cannot be detached from the knower ([Tsoukas, 2003](#)) and that by far not everything can be articulated ([Alavi & Leidner, 2001](#); [Fahay & Prusak, 1998](#); [Nickols, 2000](#)), therefore going back to the origins of the nature of knowledge, conceptualised by [Polanyi \(1962, 1967\)](#). During the second wave the practitioners concentrated on the communication technologies, such as Lotus Notes, that aimed to help the knowledge workers to start a conversation and share their knowledge ([Davenport & Prusak, 1998](#)), and a lot of effort was dedicated to encourage the workers to contribute to the discussions ([Brown & Duguid, 2000](#)). The researchers continued trying to classify the knowing processes, but the focus shifted from capturing and transferring to sharing and applying knowledge ([Chinowsky, Molenaar, & Realph, 2007](#); [Davenport & Prusak, 1998](#); [Davenport, 2005](#)). Researchers also started engaging motivation, as it appeared that simply understanding and explaining the benefits of KM program is not enough to persuade the workers to change their everyday routines ([Ardichvili, Page, & Wentling, 2003](#); [Bordia, Irmer, & Abusah, 2006](#); [Hsu & Lin, 2008](#); [O'Dell & Grayson, 1998](#)). This approach did not revolutionise the work of knowledge workers either, and as a result, the third wave followed with KM shifting towards being a set of principles ([Lambe, 2008](#)). Approximately at the same time the practitioners started experimenting with integration of WEB 2.0 tools in the corporate environment, such as blogs ([Davison, Ou, & Martinsons, 2013](#); [Hsu & Lin, 2008](#)), wikis ([Wagner & Bolloju, 2005](#)), social networks ([O'Dell & Huber, 2011](#)) and forums ([Voelpel, Dous, & Davenport, 2005](#)). The latter was the earliest adopted tool and it was the earliest to have game elements embedded in it, before the term 'gamification' was widely accepted, for example rating and giving points to the contributors on an urgent requests

forum and recognising the major contributors as experts ([Voelpel et al., 2005](#)). This paper will also suggest various other ways to gamify WEB 2.0 tools.

The potential impact of gamification on KM has not been explored in the literature so far, and a few studies that touch this topic demonstrate a narrow understanding of KM as knowledge manipulation ([Agogu , Levillain, & Hooge, 2015](#)), assimilating knowledge with information, or as a set of HR trainings to enhance organisational learning (Rinc, 2014). As well as KM, gamification is widely researched through the prism of motivation and worker engagement ([Jung, Schneider, & Valacich, 2010](#); [Vassileva, 2012](#)), but this topic will be deliberately avoided in this paper, because it is believed that gamification can offer much more than that to an organisation.

The paper is structured as follows: it will start with the literature review of the field of gamification, and due to the relative novelty of this topic it will include a range of sources outside the academic literature, as some of the most interesting examples can be found only there. In particular, it will focus on conceptualising gamification, because despite its novelty, or maybe because of that, there is a significant degree of confusion around this term. The literature review will also cover the attempts to decompose gamification and understand better what it consists of. Then the paper will continue with the exploratory case study conducted in the company called Zappos, which, as it will be shown, demonstrated many examples of implementing elements of gaming in the work of its employees without even referring to it as gamification at any point. Subsequently, building on this empirical study and further examples from the literature we explore the work and practices of knowledge workers and possibilities of using gamification to support them. We conclude our paper speculating about further research direction and the limitations of our study.

Clarifying Gamification

Loyalty cards and frequent flyer programmes are one of the early examples of gamification. It was first introduced by American Airlines, and soon other airlines, hotel chains and car rentals started using the mechanics of collecting the points and redeeming them for other products and services or upgrading the status with all the sweeteners accompanying it, as a tool to increase the return rate of customers (O'Malley & Lisa, 1998). It became a very powerful marketing tool, at least for a while.

Though these experiments have been around for more than three decades, the term 'gamification' was introduced only in 2002 by Nick Pelling (2011), a game developer and business analyst, who started questioning whether one could embed game-like user interface in boring commercial electronic devices. The term was not discussed seriously and widely until around 2008, but meanwhile some interesting examples emerged. For example, the travel website TripAdvisor built its business around user rating and feedbacks to rank the travelling spots, activities, hotels and restaurants. It assigned statuses to more frequent contributors, allowed them to connect with their Facebook friends and visualised the places that a traveller visited on the map.

A more recent example would be Foursquare, a search service to find places for leisure activities. The whole service was built around the idea of gamification: apart from leaving a feedback and rating a place, the users can check-in every time they visit a place, and collect badges for their activities or gain a status of mayor if they are the most frequent visitor in that place, which can be lost as soon as someone else beats their score. And sometimes it leads to friendly fights (by a number of visits) between those who want to retain the status (McGonigal, 2011).

The examples above had game elements at their core, but sometimes integrating one element into the existing service could make a difference. For example, when LinkedIn added a profile completion bar and suggestion of actions to progress further, the average rate of profile completion increased 20% (Gossen, 2013).

What Is Gamification Then?

The original definition of Pelling (2011) was narrowly focused on adding game experience to the electronic transactions, but the examples provided above illustrate a much broader range of applications. Later he revisited his own definition and interpreted it as systems that call for social action, such as Kickstarter and Alibaba (Pelling, 2015), but this definition leaves out a range of personal applications, such as Nike Plus: a running app, that tracks user's progress and provides instant feedback in various forms, for example, in a form of an animated avatar that changes the mood and the shape depending on the progress ([McGonigal, 2011](#)). Therefore it would be more appropriate to say that gamified systems can generate a call for social actions, but do not exclusively lead to that.

Other definitions (Table 1) emphasise the use of game elements (Burke, 2012; [Deterding, Dixon, Khaled, & Nacke, 2011](#); [Werbach & Hunter, 2012](#); Zicherman & Cunningham, 2011) in order to engage users (Burke, 2012; [Huotari & Hamari, 2012](#); Zicherman & Cunningham, 2011) in a non-gaming environment (Burke, 2012; [Deterding et al., 2011](#); [Werbach & Hunter, 2012](#)), and the last aspect is very important, because it draws a line between games and gamified systems. But these definitions are incomplete, too restrained, or misleading for the following reasons.

Table 1. Definitions of Gamification.

In particular, Zicherman and Cunningham (2011) did not explain what they understand by game-thinking and did not distinguish between gamified systems and serious games (such as

business simulators), which are a completely different category. Burke (2012) defined well the purpose of the application of gamification (e.g. behavioural change), but gamification can serve other purposes, such as triggering organisational change (Rimon, 2015), therefore this definition is too restraining. Huotari and Hamari (2014) developed their definition for marketing applications, therefore it cannot be used for a broader range of applications either.

Werbach (2014) revisited his earlier definition and, as well as Huotari and Hamari, shifted the focus from the use of game elements to the nature of gamification being a process, but at the same time he removed ‘non-game contest’ from the definition and even suggested that games can be gamified too, repeating the mistake of Zicherman and Cunningham. Therefore the final definition, which will also serve as a working definition for this paper, is a combination of the two definitions of Werbach.

‘Gamification - the process of making activities in non-game contexts more game-like.’

Decomposing Gamification

In this subsection we try to further our understanding of gamification by identifying and classifying its components. Game elements have been mentioned a number of times up to this point, and even were included into the definition of gamification, therefore it is essential to review them in more details. However if the reader does not want to go into great depth of technical details, they can move to the next part of this paper – the Zappos case study.

Several researchers have tried to classify the game elements based on their practical experience or the work of others, but there is no agreement on the categories of elements as well as on assigning different elements to the certain categories. This section aims to provide an overview of different classifications that were found in the literature (Table 2) and attempts to align them.

A number of researchers have also tried to characterise each element and define the ways in which these elements will influence the system (e.g. trigger a behavioural change), and others tried to contribute to the ongoing discussion by examining elements separately and testing the changes that they bring to the system (e.g. introducing the points in a university course), but testing elements one by one using statistical methods can be ambiguous and even sometimes misleading, because the combination of elements might influence the system in a very different manner than a sum of impacts of each element alone. And in fact, each element alone might have no impact at all, while when combined, they generate a substantial result. For example, if a study examines the effect of points on the participants, but the collection of points is pointless and is not aligned with any rewards and recognition, it is no surprise that the study demonstrates very modest results ([De-Marcos, Domínguez, Saenz-De-Navarrete, & Pagés, 2014](#); [Zuckerman & Gal-Oz, 2014](#)). But reviewing each element in more details stays outside the scope of this paper.

Most of the scholars classify the game elements by their level of abstraction, but there is a disagreement in the levels (varying from two to five) as well as in the terminology in the literature (Table 2). The authors of two most widely cited books, Zicherman & Cunningham (2011) and [Werbach & Hunter \(2012\)](#), define three levels, but in a different way. For example, what the former call mechanics (e.g. points and badges), the latter name components. Zicherman and Cunningham refer to MDA (mechanics, dynamics and aesthetics) framework of game design ([Hunicke, LeBlanc, & Zubek, 2004](#)), which is cited by a number of other scholars, but they do not elaborate on the third aspect of it as well as misinterpret the meaning of the first two levels assigned to them the original authors. In particular, Hunicke et al. (2004) refer to mechanics as actions and control mechanisms, not simple interface elements, and dynamics as an the underlying behaviour. On the other hand, [Werbach and Hunter \(2012\)](#) share the understanding of Hunicke et al., but instead of adopting

and adapting it to the gamification needs, they concentrate on the components that comprise the interface and are visible to us, and leave the aesthetics aside.

[Deterding et al. \(2011\)](#) define five levels, but their understanding is quite different from the previously discussed classifications. Some of the examples provided by the authors are included in different levels by other authors, and the explanation of these examples is not sufficient to understand the logic of the authors behind this classification. For example, challenges that are presented as a game model are included in game mechanics by [Werbach and Hunter \(2012\)](#), and the whole MDA framework is included in the game models. Apart from that, some levels seem to stand above and be applicable to all the games. They include game principles and game design methods and are essential to take into account, but do not refer to a specific game.

Other researchers distinguish between two levels of the game elements: game mechanics and game dynamics ([Blohm & Leimeister, 2013](#); [Pedreira, García, Brisaboa, & Piattini, 2015](#)), and their definitions supported by examples partially overlap with all three levels listed at the beginning, as well as misinterpret the original meaning of each level of [Hunicke et al. \(2004\)](#).

Table 2. Classifications of gamification elements.

All the authors mentioned such elements as points, badges and leaderboards, giving them different names, and these elements constitute the basic building blocks, the objects, that users will see and will be interacting with. Logically the next level should link different building blocks with each other and describe various actions that can be performed with them. And finally the top level binds the elements of the previous levels together. Of all the classifications, the one suggested by [Werbach and Hunter \(2012\)](#) correspond the most to this logic, namely: components, mechanics and dynamics. But the selection of elements for each

level should be discussed further in detail, in order to be aligned with the logic described above.

The most listed elements of the gamification **components** are the badges, levels, leaderboards and points ([Blohm & Leimeister, 2013](#); [Deterding et al., 2011](#); [Werbach & Hunter, 2012](#); [Zicherman & Cunningham, 2011](#)). They make up the basic elements and have a visual representation, and there is no debate about whether they should be assigned to a different category, therefore they do not require further discussion. Among other elements that correspond ideally to these requirements are avatars ([Blohm & Leimeister, 2013](#); [Werbach & Hunter, 2012](#)) and virtual goods ([Werbach & Hunter, 2012](#)). The latter is presented by [Blohm and Leimeister \(2013\)](#) in a variation of trophies and virtual trade, but trophies can be classified as a type of virtual goods and virtual trade is an abstract category, which consists of the virtual goods and transactions. Transactions are mechanics by nature and are suggested by [Werbach and Hunter \(2012\)](#) as an example of the second level.

Among other elements [Werbach and Hunter \(2012\)](#) suggest collections, social graphs and teams. Each of these elements can be visually represented; they are not overlapping with other elements and can potentially promote different types of mechanics in the system. [Blohm and Leimeister \(2013\)](#) suggested ranks, which represent the status and could be visualised through badges, but could be an element of its own as well.

Other elements, suggested by the authors, were excluded from the list, for the following reasons. Gifting was listed in different levels by [Werbach & Hunter \(2012\)](#) and [Zicherman & Cunningham \(2011\)](#), and as it implies an action, it would be correct to assign it to the game mechanics. Similarly, content unlocking ([Werbach & Hunter, 2012](#)) is an action and therefore is included in mechanics, and could be seen as a form of gaining access to something. Boss fights and combat ([Werbach & Hunter, 2012](#)) are a form of competition and imply action as

well. Competition in turn has two meanings: it can be a contest as a form of a game as well as a form of behaviour of the users, desirable or not. Therefore this element of mechanics needs clarification. Achievements (Werbach & Hunter, 2012) are an abstract term, which might be represented in a form of levels, badges, ranks or virtual goods, and therefore are not included. Similarly, a virtual world (Blohm & Leimeister, 2013) is an abstract category and very difficult to categorise, therefore it is excluded. Scoring system (Blohm & Leimeister, 2013) is a form of rules, and the latter is an aspect many scholars discuss, but it is not included in any classification. The rules are not an action on their own, but they encourage and regulate actions, therefore they should be included in the mechanics category. Time pressure (Blohm & Leimeister, 2013) and limited resources (Deterding et al., 2011) being a form of constraints have been listed on all three levels by different scholars, but constraints are a form of rules that generate a corresponding action in the system, therefore will not be listed separately. Documentation of behaviour (Blohm & Leimeister, 2013) is a very specific type of action and it was not explained by the authors and not mentioned anywhere else, therefore it will be left aside. And finally, groups tasks (Blohm & Leimeister, 2013) and quests (Blohm & Leimeister, 2013; Werbach & Hunter, 2012) are a type of a challenge. Challenge in turn was listed as game mechanics or as dynamics, and though it could be interpreted as a game dynamics of its own, completing the challenge is more likely to be seen as a part of a broader game, therefore should be classified as game mechanics.

The second level of the gamification elements classification – the **mechanics** - defines the interactions between the basic building blocks (Werbach & Hunter, 2012) and their effects on the users (Blohm & Leimeister, 2013), and, as derived from the name, it is connected to an action in one way or another. Some of the elements of mechanics were already discussed above; below is the revision of the remaining elements.

Some of the elements are easy to recognise as a form of action, including collecting, flirtation, fame, hero being, gaining status (Zicherman & Cunningham, 2011), creating order or organizing, growing or developing (Blohm & Leimeister, 2013; Zicherman & Cunningham, 2011), collaboration or cooperation (Blohm & Leimeister, 2013; Werbach & Hunter, 2012), rewarding and feedback (Werbach & Hunter, 2012).

Surprise (Zicherman & Cunningham, 2011) or chance (Werbach & Hunter, 2012) is not an action, but rather an intervention in the system, therefore it should also be included. Recognition of achievements can be in the form of rewarding or fame / social endorsement, but does not bring added value on its own, therefore is not included. Exploration (Blohm & Leimeister, 2013) is similar to discovery ([Hunicke et al., 2004](#)) or curiosity ([Deterding et al., 2011](#)), both of which were included in the third level for being too abstract to be immediately linked to mechanics elements, therefore it should be moved to the third level. Leading others in the way is interpreted by Zicherman and Cunningham (2011) as a cooperative challenge, and can be decomposed into cooperation and challenge, therefore can be excluded. The turns ([Deterding et al., 2011](#); Werbach & Hunter, 2012) and win states (Werbach & Hunter, 2012) are another form of rules, therefore they can be incorporated in this element.

Apart from that other researchers have suggested elements of gamification that were not mentioned in any framework, but are worth considering. In particular, [Vassileva \(2012\)](#) discussed the effects of *interventions* on the users, which are used in persuasive applications, by which she means such events as reminders. Petersen and Ryu (2015) suggested *betting* as one of the way to predict the most innovative ideas. Both elements can influence the dynamics of the system as well; therefore can be added to the second level.

The top level of gamification elements – the **dynamics** - is the most difficult to review due to the variations in the interpretations of this level. For Werbach and Hunter (2012) they are the

aspects of the game that cannot be implemented and managed directly, for others they are the emotional responses of the users ([Hunicke et al., 2004](#); Zicherman & Cunningham, 2011), while for others they are conceptual models or patterns of game components and game experiences (Brathwaite & Schreiber, 2009; [Deterding et al., 2011](#)). It is important to note that the second and partially the third interpretation come from a pure game design industry, while in the gamified systems that exist in a non-gaming contest it is as important to look at the models of behaviour and engagement that the creators are trying to encourage. Therefore it would be more appropriate to characterise this level as *conceptual models of game components and user engagement that cannot be managed directly*.

The types of engagement that were listed by the authors on the third level are expression ([Hunicke et al., 2004](#)), relationship / fellowship ([Hunicke et al., 2004](#); Werbach & Hunter, 2012) and discovery / curiosity ([Deterding et al., 2011](#); [Hunicke et al., 2004](#)). These types resemble the types of social engagement of Kim (2012): express, collaborate and explore, in a framework that was developed to demonstrate a diversity of experiences that users might be willing to obtain in a gamified system. The fourth type, that was mentioned but not included in the classification of [Hunicke et al. \(2004\)](#) is competition, which is the number one of the desired behaviours many companies want to cultivate in their employees. Both competition and collaboration were already included as elements of dynamics, but in a narrower interpretation. Competition could be substituted with contest and collaboration with teaming as more precise terms.

The four types could be interpreted as both conceptual models of the elements and types of user engagement. Other elements mentioned by the scholars are on the conceptual models of components side. They include the progression (Werbach & Hunter, 2012), the narrative ([Hunicke et al., 2004](#); Werbach & Hunter, 2012) and the fantasy ([Deterding et al., 2011](#); [Hunicke et al., 2004](#)). The last two elements, though different, are more difficult to

distinguish between each other in a non-game contest; therefore they will be merged under the term “narrative”.

The sensation and submission type games (Hunicke et al., 2004) are of a pleasure or hobby nature, and though they are important to consider for the classification of the video games, they might be irrelevant for a non-game contest, especially in a corporate use, therefore they are excluded from the list. The emotions refer to the feelings that the system intends to cause, such as competitiveness or curiosity (Werbach & Hunter, 2012), but these categories have already been covered by the types of engagement, therefore this element is redundant. And finally, game design atoms (Deterding et al., 2011) were not provided with any explanation, and it is assumed that they refer to the gamification elements in general, therefore they can be excluded.

The resulting list of elements is provided in Table 3, followed by the description of each element.

Table 3. Gamification elements.

The list of elements provided above is not exhaustive and is based on the examples found in the literature. There might as well be other examples that could be added to this list. But creating an exhaustive list was not the purpose of this section. The reader was rather invited to take a look at various classifications and was offered an interpretation of this variety, developed by the authors of this paper. The following section of this paper will present the ways in which some of these elements are successfully used in a corporate environment of a company that is featured in the Fortune magazine every year as one of the best companies to work with.

Case study: Zappos

Zappos is an online shoes and accessories shop operating in the U.S., established in 1999 and acquired by Amazon in 2009. The company is famous for its customer-oriented service, for example, special return shipping assistance, surprise free upgrades to overnight shipping and “Ask Zappos” service that promises to find a pair of shoes matching the photo that was sent by the customer, and to do it within 24 hours. But what this company is mostly famous for is its fun-oriented corporate culture. In 2009 Zappos featured in Fortune’s Top 100 companies to work for and never left the list ever since. This fact made it an interesting case for the purpose of this research, as this company seems to be the right place to search for meaningful examples of implementing game elements in the corporate environment and potentially in KM in particular.

The research framework is designed as a qualitative exploratory case study research based on the analysis of primary data collected in the form of semi-structured interviews, and secondary data from the blog ZapposInsight (ZapposInsights, 2015) that intends to give examples and provide insights from the employees of Zappos about their everyday work. The analysis is drawn from 5 semi-structured interviews and 80 blog posts and is based on Gioia (2004) method of drawing “first order” themes based on the interviewee’s perspective and interpreting them through the “second order” themes from the author’s perspective, emerging from the conversation, and generating new insights ([Gioia, 2004](#); [Langley & Abdallah, 2011](#)).

Zappos does not use the term ‘gamification’ to describe various work practices, but throughout the interviews it was possible to find quite a lot of examples of game elements that are integrated in the work. The summary of the results is presented in Table 4, supported by some of the quotes from the interviews. Some of the most used elements are badges, points and the mechanics of rewarding. Among others the company uses gifting, surprises,

contests and quests, teams (groups), interventions and visualisations. This section will describe the use of each of these elements in the company in more details.

Table 4. The summary of results.

The *badges* can take four forms: experience, skills, fun and Krunky (core values) badges. Experience badges are the most difficult to obtain and represent a set of skills and competences that give a person a status of expert in a particular area of work. This system is not fully implemented yet, and after it is, each badge will be linked to the compensation of an employee. Skill badges can be obtained after completing a training and passing a test, and are more likely to represent a set of theoretical knowledge that an employee learnt. Fun badges can be created by anyone and granted to anyone, and are mainly used for fun or to acknowledge someone for something in an unusual way. And finally. Krunky badges are avatars that visualise which of the ten core values an employee represents the most based on the yearly peer-evaluation.

Points consist of power points, that demonstrate the performance of each member of the customer loyalty team, e.g. they accumulate faster during the busy times, encouraging employees to help their colleagues during that period; people points, that represent time that can be distributed among different departments and projects, and are equivalent to percentage; and finally, Zollars which, being an internal currency, are mainly earned for education related activities, but can be given to anyone for anything, and can be spent in an internal shop or donated to a charity.

Rewarding is given a very high importance in Zappos and exists in a variety of forms. The most widespread reward is a co-worker \$50 bonus, which can be given to anyone by anyone once a month, as long as the reason is linked to one of the core values. All the bonus awards enter a competition for a Hero Award, which is selected by a committee for the most

outstanding contribution. Employees can be also nominated by their peers for a WOW parking – a free one week office parking, or they can reward each other with Zollars, as was mentioned before. Some departments have their own rituals, e.g. Tech department passes on a Mystical egg from the most outstanding worker of the month to his successor, who is supposed to add some decoration to the egg.

Among other mechanics the company uses *gifting* in a form of WISHEZ program, where any employee can leave a wish and others can try to grant it, e.g. baby-sitting or helping to paint a house. If the wishes are more demanding, then a team of magic fairies steps in and tries to find ways to grant this wish. And along with gifts come surprises, when the gifts are delivered in an unexpected manner.

The company also uses the mechanics of *contests* and *quests*. The contests are mainly used to select best ideas and are conducted in the form of an event, e.g. Hackathon for tech department, where anyone can pitch their ideas and others can vote for them. The quests mainly have a fun element in them, for example a theme or a costume party, or a New Hire Scavenger Hunt, when new employees have to take photos in different parts of the office campus or in Las Vegas downtown. But it could also be a call for help in a charity event, such as Thanksgiving dinner for homeless, and this particular quest contains some elements of hero acting in it.

The company also uses some forms of *intervention*, e.g. FaceMail, a game that asks a recipient to recognise a random employee and tell how well s(he) knows them.

And finally, all the departments and project teams are turned into *groups* or circles that are located within each other in a big circle, which represents the company and visualises all the connections between different departments and projects. This way of arranging activities is similar to Google Plus Circles, but the employees think that this idea came to Zappos first.

In this section we gave a brief overview of gamification examples that were found in Zappos; and we believe to have shown that it is an exciting and fun company. However, this is not only about fun: Zappos is also a very successful company. In the following section we try to make sense of these examples specifically in relation to KM.

Discussion

Most of the gamification examples that were found in Zappos aim to establish better connections and give employees more chances to interact with each other and acknowledge the contribution of each other. But to understand better the ways in which gamification impacts the employees, we need to look first at who the knowledge workers are and what types of knowledge workers can be found. The rest of this section will review different classifications of knowledge workers and discuss the potential connections between these roles and gamification, as well as describe the types of knowledge workers that were found in Zappos, and discuss examples of gamification that were found in the company and that support the suggestions that were expressed in the first part.

There is no agreement on the definition of knowledge workers in the literature, but there is a common understanding, that they deal with relatively unstructured ([Scarbrough, 1999](#)) or non-routine problems ([Reinhardt, Schmidt, Sloep, & Drachsler, 2011](#)), that might require symbolic-analytical skills ([Reich, 1991](#)). In other words, they think for a living ([Davenport, 2005](#)). Though Davenport acknowledges that this category includes manual skilful workers, such as plumbers, he focuses mainly on those whose primary task is to manipulate the knowledge and information. And the latter definition that shadows the skilful workers dominates in the KM research and outside it.

Knowledge workers are different by the nature of their interactions with each other, and by the essence of their work, and categorising them helps the organisation to understand how their work can be evaluated or improved and how they can be managed, if they can.

Davenport (2005) characterised the workers based on the level of collaboration they are involved in and the level of complexity of their work, which he defined as the level of judgement and interpretation needed to complete the work. The four groups of knowledge workers are: transactional workers (e.g. call centres), integration workers (e.g. software developers), expert workers (e.g. medical practitioners), and collaboration workers (e.g. investment banks). Different groups require different levels of collaboration support, and a level of standardisation of their work is possible to a certain extent. On the other hand, transactional and expert workers could benefit from collaboration no less than the other two groups. The nature of their work is more individual-activities oriented and can create isolation; therefore more active actions need to be taken in order to help them overcome this isolation. And gamification contains a number of mechanics that encourage collaboration, for example, gifting, rewarding, providing feedback, rating or teaming, therefore it could become that active component that creates collaboration.

With regards to this framework, Zappos employees mostly belong to the first group – transactional workers. This group of workers has indeed less need for collaboration naturally, but they could benefit from it as much as more collaboration-oriented types of workers. The company understands that and is actively creating collaborative dynamics through using the mechanics of peer-to-peer rewarding, gifting or rating through FaceMail game.

McIver et al. (2013) looked at the knowledge in practice for the organisational workers from the perspective of the knowledge tacitness and learnability, where learnability is defined by the amount of time and effort required to absorb the knowledge. The enacted information

category includes relatively easy to learn structured knowledge and could describe the work in call centres, while the accumulated information category consists of a similar structure of information, but requires a much more demanding learning process, a good example of which would be the work of an engineer. Both apprenticeship and talent & learning know-how consist of highly tacit knowledge, but the former category knowledge can be learnt through the apprenticeship (social worker), while the latter category is very difficult to transfer (artist). This classification covers a broader range of workers, including knowledge workers as well as the manual ones, and the authors partially relate it to the level of standardisation that can be applied to the particular work. Gamification-wise it is hard to give any general advice with regards to the framework, instead this paper will relate Zappos employees to a certain category and present the approach that the company pursued to support their work.

Zappos employees could be classified mostly as enacted information category workers, and this category overlaps with the transactional workers of Davenport, though it is reviewed through different parameters. But the company is more likely to see its employees leaning towards apprenticeship category, and there are several reasons to believe that. For example, the customer loyalty team does not have any script to answer the calls, they are encouraged to be creative with customers and establish a personal connection, and they have a great degree of freedom to do so. Apart from that, various departments run “Shadow sessions” (following another person at work for several hours) in addition to or instead of the trainings in order to learn about the work of others. Employees can also become a Z’apprentice (Zappos apprentice) for six months in a different role in order to learn new skills.

This degree of flexibility is supported by several gamification elements. Since the departments and projects have been replaced by circles (groups), it became much easier for employees to belong to several communities. And the system of people points helps to formalise it by distributing the points between the circles an employee wants to be a part of.

“Circle structure has allowed people to follow their passions on side projects...”

Apart from that the company organises various ideas competitions which allow them to both participate in someone else’s project and pursue their own ideas.

“The Zprize was a great example of a company-wide competition... The team who ended up winning the mock commercial was then in charge of helping create a national Zappos TV advertisement... Hackathon (ideas competition) was primarily for our Technical employees who spend a lot of their time maintaining and fixing our e-commerce infrastructure. This could give them a chance to be creative and let loose so to speak.”

This way we see that gamification was used as a tool to change the nature of work of the knowledge workers in the company from a boring routine towards being more creative.

Davenport and Prusak (1998) look at the types of the knowledge workers from the perspective of their involvement in the knowing processes, and define two main roles: the *knower* and *knowledge seeker*. These roles are idealistic, and in reality most of the times the knowledge workers will share both of them. The interaction between the roles can be seen as an act of knowledge exchange, and takes place only if both parties know about the existence of each other. In all the other cases a third role becomes crucial for the successful transaction to be complete – *the connector* (Davenport and Prusak (1998) call it a broker). Connectors have an imaginary knowledge map in their heads; they are curious about different areas of expertise in different parts of organisation and are capable of directing the knowledge seekers. This role can be assigned formally (a librarian) or evolve informally due to the natural curiosity and communication skills. These knowledge workers are very often underestimated in the organisations; they are often viewed as gossipmongers and time wasters.

But finding the source of knowledge and connecting both parties is not always enough. Knowledge sharing related problems were discussed within the knowing processes section and will be covered in more details in the next chapter. A dedicated knowledge worker role is required to address these problems – *knowledge manager* ([Davenport & Prusak, 1998](#)). Knowing processes are often more sophisticated than a simple transaction, e.g. the processes inside the communities of practice, and therefore the responsibilities of the knowledge manager are much broader and include creating and promoting a knowledge sharing culture within the organisation, advocating KM initiatives, influencing the development of the company's vision and developing incentives to stimulate knowledge sharing. In some companies this role is dedicated to a specific person, such as the Leader of KM in ConocoPhillips, who works with different departments on developing and implementing KM initiatives with them ([Grant, 2013](#)). In other companies with more informal structure the knowledge workers share the responsibilities of the knowledge manager and organise themselves.

Wenger et al. (2009) introduce a fifth role – *technology steward*, which can be a partial responsibility of a knowledge manager if he obtains the required competence, or it can be a shared responsibility of other knowledge workers with more advanced knowledge of technology relatively to the others.

If the activities of knowledge workers are exposed to gamification, the primary purpose of the knowledge worker types, as we understand them now, might change. Of the roles discussed above, the knowers and the seekers will stay the primary types, though can rarely be found in their pure form, whereas other types will change to various degrees. For example, when the knowers become better visible, the connectors are not needed anymore to identify them. The connectors become more visible as well, if their connections are visualised, and therefore they could play a role of initiator of a new connection.

The knowers can become more visible, if their activities are tracked and rewarded, for example, the projects they participated in, the comments and reviews that they wrote and that were acknowledged as of good quality, and if these rewards are represented with such elements as badges and experience points. One could argue that mediocre specialists might attempt to play the system and gain such rewards as badges, while the real experts stay in shade, being not interested in participating in this system. But the combination of rewards that are actively achieved and that are being tracked at the background reduces the likelihood of this scenario.

As was mentioned before, the connectors are traditionally perceived as the ones fulfilling the role of points and badges, presented above. But in the new setup the role of connectors shifts from knowing the relevant people towards being able to introduce them to the knowledge seekers, which is not less important, but which becomes distributed to a wider range of people, if the connections are recorded by the system and are shown by means, such as a social graph. But the outstanding connectors become visible as having a much larger network of connections and identifying them as well as being able to see the knowers stays important for the knowledge managers.

Apart from other responsibilities the knowledge manager is a designer of the working knowledge environment, becoming or working closely with the technology steward. But designing this environment is an iterative process, and on top of other benefits that were discussed above, gamified systems can be a test ground for experiments with various initiatives and the reaction of the knowledge workers on it, for example, the effectiveness of the awards, statuses, and contests.

Unlike the types of knowledge workers, all types of knowledge worker roles can be found in any organisation, and therefore, unlike the previous examples, where gamification was a tool

for customisation, the role of gamification will also be different. As was suggested before, gamification could make different roles as well as each knowledge worker more visible, and it is mainly achieved through the use of badges and groups (circles) that visualise and map the organisational knowledge, and interventions (FaceMail) and peer-to-peer rewards that among others help identify more socially engaged workers.

The immediate purpose of the compensation and skills badges is to show others the skills and competences that a particular person has, and to create transparency with regards to the salary in particular. But they can potentially have much wider implications. For example, they could generate new requirements for a particular expertise, if there is a shortage of it in the company. They could also facilitate easier relocation of the employees to the areas that they are more interested in without the fear of losing a social status in the organisational hierarchy, because the badges and compensation that is linked to them stay with them, and they are not bound with the perception of moving up and downwards the career ladder anymore.

With the ease of move, enabled by badges, people points and circles together become a powerful tool to record and show the concentration of interest of the employees in certain areas. And potentially, by understanding the reasons behind, one could find the ways to make other areas that need more attention, more attractive.

On the individual level, FaceMail game helps to see the level of connectivity of different employees, as well as it helps them to get to know each other better.

“And that it gives us the way of knowing, how many people know this person, is this person sociable, do these people trust this person, do the people like this person, can this person handle the work? And that a kind of gives us a feel of whether this person lives up to the core values.”

On the other hand, as it happens with any initiative, it will not be attractive for everyone.

“Embarrassed to say that I’ve never tried FaceMail in all my years at Zappos. I don’t have a problem getting to meet and know people, so I don’t feel compelled to play the game.”

A lot of gamification components and mechanics support competitive dynamics, and when they are applied, the competitive dynamics can occur naturally. In order to change it, one need to put emphasis on other types of game elements, and as we see from this case, the company was putting a lot of emphasis on rewarding mechanics to create collaborative dynamics with some elements of competition. And other time gamification could initiate dynamics, for example, start a conversation, especially if they are separated by distance from each other, e.g. sales representatives. One retail company launched a game “The hunt – reveal the secret customer”, during which the sales-men were given the code words, which were updated through intranet and which they had to incorporate in their speech, when they greet a new customer, in return the secret customer would reply “I’m a mystery man” if it was her. Apart from the improved performance and increased sales the company achieved the start of collaboration between the sales-men of different outlets, who were discussing various ways to incorporate each new word and sharing their experience (Eunen, 2015).

Gamification could also be used to identify types of knowledge workers that are not necessarily covered by any of the classifications. The company is already using power points as one of the indicators of people, who make good decisions locally.

“So I think original they chose the people who were fit, who were making good decisions locally. Because usually it's busy and you earn the power points... It's not completely based on them, but it's one of those criteria to see, gaining high points.”

Among others rewards could show helpers as well as altruists, and they are key to creating trust in the corporate environment that is believed to be a key for improved knowledge sharing ([Davenport & Prusak, 1998](#)). There are other ways to use gamification in a corporate

environment. For instance, a company could create a platform where employees could share their ideas and rate ideas of others, provide feedback and earn points for submitting ideas, providing feedback and suggesting improvements. This system could help identify those, who are good at generating new ideas, critically evaluating them or improving the ideas. And similar experiments have already been conducted, but they were mainly focused on identifying, whether competitive or collaborative behaviour would be prevailing and most rewarding ([Hutter, Hautz, Füller, Mueller, & Matzler, 2011](#)).

Concluding remarks

This paper presents an early exploratory study that suggests the ways in which gamification could be used for KM, in particular, it demonstrates that gamification can help to identify different types of knowledge workers in the company, visualise their skills and even create requirements for new skills, that the worker are more responsive to. It could also show the dynamics of interactions between the knowledge workers and even influence it.

This paper is based mostly on secondary data, but its findings are significant, because it opens a new area for further discussion and conceptualisation of the roles of gamification in the KM. And then further empirical studies need to be done in order to test the ideas and provide definite solutions to the gamification being implemented in the corporate environment. Apart from that, due to the field of gamification being relatively new, further research could also open new ways in which organisations could benefit from gamification.

Gamification becomes a trend, a fashionable practice, just like KM was two decades ago, and just like 80% of KM projects failed, four out of five gamification projects will probably fail as well. Some authors express concerns that gamification can be easily turned into 'pontification', meaning that implementing it is limited to introducing game mechanics with no meaningful experience behind (Werbach & Hunter, 2012). In the case study we could see

that implementation of game elements was driven by the need rather than fashion, which potentially explains the successful experience of Zappos with gamification.

Gamification was also criticised for becoming an exploitation tool (Bogost, 2011). Gamified systems allow to provide instant feedback on the progress, and instead of creating an enjoyable experience they can be turned into a “Big Brother is watching you” controlling mechanism (Cohen, 2015), but a matter of turning any useful tool into the means of abuse is a question of a weak implementation of this tool, therefore it is not a matter of concern of this paper.

Though this paper provides an example of successful implementation of gamification in the corporate environment, the example of Zappos should not be treated as a secret key to success; it is rather an illustration of a good gamification example. The use of gamification only partially contributes to the success of the company being a good place to work in, and therefore cannot be given all the credit. The company achieved these results primarily due to its informal and friendly corporate culture and values, and levelled organisational structure. In this company employees come first:

“It's not the customers, but the employee that come first, because if the employees are happy, they are going to make the customers happy.”

And at the moment Zappos is going through a major organisational change and shifting its organisational structure towards holacracy, in which the employees have all the responsibility and the managers are being replaced with lead-links, meaning that they do not manage anymore, do not have the final say, they rather facilitate and help to resolve the tensions. The hierarchy is being levelled, and it shows once again that gamification is one of the aspects, but not the core of the success of the company. And gamification could serve as a perfect environment for initiating an organisation change. For example, a former VP of customer

experience in Yahoo! used gamification to implement change by making slight changes in the system, and he claimed that it accelerated the speed of change several times (Rimon, 2015). The influence of gamification on corporate culture and organisational change could become two other significant new areas of research, and both topics overlap with KM.

Apart from that, gamification is praised for improving motivation and user engagement, and the topic of motivation was extensively researched in the field of KM. This topic was deliberately avoided in this paper, partially because gamification can offer much more than that, and this paper tried to demonstrate some of its potential, and partially because trying to motivate demotivated people with games is similar to trying to treat the symptoms instead of the cause of an illness. Similarly Zappos thinks, that:

“Motivation is necessary; however, when I feel that I need to motivate myself, it’s usually to do something that I really didn’t want to do in the first place. It may seem that motivation is a good thing, and it is, if it’s coming from the right place.”

Of course, there are examples of monotonous routine jobs that are boring, but need to be done, for example, calibrating a sensor ([Flatla, Gutwin, Nacke, Bateman, & Mandryk, 2011](#)) or digitalising a library ([Roth, Schneckenberg, & Tsai, 2015](#)), and we see examples of successful gamification of these processes, but one could argue that this work can hardly be called a knowledge worker, and the majority of knowledge worker jobs is more sophisticated and interesting.

Gamification is a relatively new field, but it has already demonstrated strong presence in a number of areas, including marketing (Hsu, Chang, & Lee, 2013; [Huotari & Hamari, 2012](#)) and education ([Baker et al., 2012](#); [Lee & Hammer, 2011](#)). And the latter is quite often associated with KM by those who do not know anything about KM. Education is probably one of the most knowledge-intense industries and has always been. The generation of

millennials grew up playing video games, and it might seem natural that education was also among the first experimental fields for gamification. The millennials grew, and gamification moved to other areas together with them. Education, having gathered a substantial amount of experience and being a natural habitat for knowledge workers, could be a good place to start looking for practical ways that gamification could be of use to KM.

But even now we can find an early evidence of a positive influence of gamification on KM practices. Apart from increased motivation and engagement, which gamification has been praised for (Burke, 2012; Werbach & Hunter, 2012; [Zuckerman & Gal-Oz, 2014](#)) and which KM researchers have extensively studied ([Collins & Smith, 2006](#); [Hsu & Lin, 2008](#); [Quigley, Tesluk, Locke, & Bartol, 2007](#)), there is early evidence that gamification has an impact on such knowing processes as thinking and learning. Apart from that gamification is believed to create social connectivity ([McGonigal, 2011](#)), therefore encourages conversations and knowledge sharing, and a sense of belonging to something bigger, such as the purpose of the organisation which the knowledge workers are working in.

When looking at the technology side of KM, gamification is believed to reinforce the benefits of some of the KMS that became widespread in the recent years (mainly social computing technologies). Gamification elements have already been used in some of the systems, but more research and experiments need to be done to discover its full potential and go beyond simple gamified tutorials ([Li, Grossman, & Fitzmaurice, 2012](#)).

Apart from that, this study does not elaborate on important criteria such as cultural (Rimon, 2015), age ([Hartmann & Klimmt, 2006](#); [Williams, Consalvo, Caplan, & Yee, 2009](#)) and gender (Coppens, 2015) differences that are being explored in the field of gamification and that will have an impact on the ways it could be used in the corporate environment. All of these questions could not be possible covered in one paper, partially due to the limits of this

paper, partially due to the novelty of this research area. But this is what makes the contribution of this paper significant – it steps on a virgin field and opens a wide range of new areas for further research.

References

- Agogu , Marine, Levillain, Kevin, and Hooge, Sophie. 2015. "Gamification of Creativity: Exploring the Usefulness of Serious Games for Ideation". *Creativity & Innovation Management*, 24(3): 415–429.
- Alavi, Maryam, and Leidner, Dorothy E. 2001. "Review: Knowledge Management And Knowledge Management Systems: Conceptual Foundations And Research Issues". *MIS Quarterly*, 25(1): 107–137.
- Ardichvili, Alexander, Page, Vaughn, and Wentling, Tim. 2003. "Motivation and barriers to participation in virtual knowledge-sharing communities of practice". *Journal of Knowledge Management*, 7(1): 64–77.
- Argyris, Chris, and Sch n, Donald. 1978. *Organizational Learning*. Reading: MA: Addison-Wesley.
- Baker, Paul M.A., Bujak, Keith R., and Demillo, Rich. 2012. "The evolving university: Disruptive change and institutional innovation". *Procedia Computer Science*, 14: 330–335.
- Blohm, Ivo, and Leimeister, Jan Marco. 2013. "Gamification: Design of IT-based enhancing services for motivational support and behavioral change". *Business and Information Systems Engineering*, 5(4): 275–278.
- Bogost, Ian. 2011. "Persuasive Games: Exploitationware". Gamasutra. Retrieved August 17, 2015, from http://www.gamasutra.com/view/feature/6366/persuasive_games_exploitationware.php
- Bordia, Prashant, Irmer, Bernd E., and Abusah, David. 2006. "Differences in sharing knowledge interpersonally and via databases: The role of evaluation apprehension and perceived benefits". *European Journal of Work and Organizational Psychology*, 15(3): 262–280.
- Brathwaite, Brenda, and Schreiber, Ian. 2009. *Challenges for game designers*. Cengage Learning.
- Brown, J.S., and Duguid, P. 2000. "Balancing act: how to capture knowledge without killing it.". *Harvard business review*, 78(3): 73–80.
- Burke, Brian. 2012. *Gamification 2020: What Is the Future of Gamification?* Retrieved from <https://www.gartner.com/doc/2226015/gamification--future-gamification>
- Chinowsky, Paul, Molenaar, Keith, and Realph, Allison. 2007. "Learning Organizations in Construction". *Journal of Management in Engineering*, (January): 27–35.
- Cohen, Julie E. 2015. "The Surveillance-Innovation Complex: The Irony of the Participatory Turn". In I. D. Barney, G. Coleman, C. Ross, J. Sterne, & T. Tembeck (Eds.), *The Participatory Condition* (Forthcoming) (pp. 1–14). University of Minnesota Press.
- Collins, C.J., and Smith, K.G. 2006. "Knowledge Exchange and Combination: the Role of Human Resource Practices in the Performance of High-Technology Firms.". *Academy of Management Journal*, 49(3): 544–560.
- Coppens, An. 2015. "Feminine gamification viewpoint: Social conversations". Gamification Nation. Retrieved September 22, 2015, from <http://gamificationnation.com/?s=tone+of+communication>
- Davenport, Thomas H. 2005. *Thinking for a living : how to get better performance and results from knowledge workers*. Boston, Mass.: Harvard Business School Press.
- Davenport, Thomas H., and Prusak, Laurence. 1998. *Working knowledge : how organizations manage what they know*. (L. Prusak, Ed.). Boston, Mass.: Harvard Business School Press.
- Davison, Robert M., Ou, Carol X.J., and Martinsons, Maris G. 2013. "Information technology to support informal knowledge sharing". *Information Systems Journal*, 23(1): 89–109.
- De-Marcos, Luis, Dom nguez, Adri n, Saenz-De-Navarrete, Joseba, and Pag s, Carmen. 2014. "An empirical study comparing gamification and social networking on e-learning". *Computers and Education*, 75: 82–91.

- Deterding, S., Dixon, Dan, Khaled, Rilla, and Nacke, Lennart. 2011. "From game design elements to gamefulness". Proceedings of the 15th International Academic MindTrek Conference on Envisioning Future Media Environments - MindTrek '11 (pp. 1–7).
- Deterding, Sebastian. 2012. "Gamification: designing for motivation". Interactions, 19: 14–17.
- Drucker, Peter F. 1969. The Age of Discontinuity. London: Butterworth-Heinemann Ltd.
- Eunen, Michiel Van. 2015. "Michiel Van Eunen". GWC14. Barcelona. Retrieved from https://www.youtube.com/watch?v=R1_PQiRqIrg
- Fahay, and Prusak, L. 1998. "11 deadliest sins of knowledge management.pdf".
- Flatla, David R., Gutwin, Carl, Nacke, Lennart E., Bateman, Scott, and Mandryk, Regan L. 2011. "Calibration games: making calibration tasks enjoyable by adding motivating game elements". 24th annual ACM symposium on User interface software and technology - UIST '11 (pp. 403–412).
- Gee, James Paul. 2008. "Learning and games". In K. Salen (Ed.), The Ecology of Games: Connecting Youth, Games, and Learning (pp. 21–40). Cambridge, MA: The MIT Press.
- Gioia, D.A. 2004. "A renaissance self: Prompting personal and professional revitalization". In R. E. Stablein & P. J. Frost (Eds.), Renewing research practice: Scholars' journeys (pp. 97–114). Stanford, CA: Stanford University Press.
- Gossen, Rahlyn. 2013. "The Gamification of Clinical Trials: What's Next? | Rebar Interactive". RebarInteractive. Retrieved September 7, 2015, from <http://rebarinteractive.com/gamification-clinical-trials/>
- Grant, Robert M. 2013. "The Development of Knowledge Management in the Oil and Gas Industry". Universia Business Review, (40): 92–125.
- Hamari, Juho, Koivisto, Jonna, and Sarsa, Harri. 2014. "Does gamification work? - A literature review of empirical studies on gamification". Proceedings of the Annual Hawaii International Conference on System Sciences (pp. 3025–3034).
- Hartmann, Tilo, and Klimmt, Christoph. 2006. "Gender and computer games: Exploring females' dislikes". Journal of Computer-Mediated Communication, 11(4): 910–931.
- Hsu, Chin-Lung, and Lin, Judy Chuan-Chuan. 2008. "Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation". Information & Management, 45: 65–74.
- Hsu, Shang Hwa, Chang, Jen-Wei, and Lee, Chun-Chia. 2013. "Designing attractive gamification features for collaborative storytelling websites". Cyberpsychology, behavior and social networking, 16(6): 428–35.
- Hunicke, Robin, LeBlanc, Marc, and Zubek, Robert. 2004. "MDA: A formal approach to Game Design and Game Research". Proc. AAAI workshop on Challenges in Game (pp. 1–5). AAAI Press. Retrieved from <http://www.aaai.org/Papers/Workshops/2004/WS-04-04/WS04-04-001.pdf#page=1&zoom=auto,-65,798>
- Huotari, Kai, and Hamari, Juho. 2012. "Defining Gamification - A Service Marketing Perspective". Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments (pp. 17–22).
- Hutter, Katja, Hautz, Julia, Füller, Johann, Mueller, Julia, and Matzler, Kurt. 2011. "Communitition: The Tension between Competition and Collaboration in Community-Based Design Contests.". Creativity & Innovation Management, 20(1): 3–21.
- Jung, J.H., Schneider, C., and Valacich, J. 2010. "Enhancing the Motivational Affordance of Information Systems: The Effects of Real-Time Performance Feedback and Goal Setting in Group Collaboration Environments". Management Science, 56(4): 724–742.
- Kim, Amy Jo. 2012. "Social Engagement: who's playing? how do they like to engage?". Amy Jo Kim. Retrieved August 20, 2015, from <http://amyjokim.com/blog/2012/09/19/social-engagement-whos-playing-how-do-they-like-to-engage/>
- Lambe, Patrick. 2008. "Is KM Dead? Larry Prusak, Dave Snowden, Patrick Lambe". Retrieved from <https://archive.org/details/Plambe-IsKMDeadLarryPrusakDaveSnowdenPatrickLambe548>
- Langley, Ann, and Abdallah, Chahrazad. 2011. "Templates and turns in qualitative studies of strategy and management". Research Methodology in Strategy and Management, Research Methodology in Strategy and Management, 6(2011): 105–140.
- Lee, Joey J., and Hammer, Jessica. 2011. "Gamification in education: What, how, why bother?". Academic

- Exchange Quarterly, 15(2): 146–150.
- Li, Wei, Grossman, Tovi, and Fitzmaurice, George. 2012. "GamiCAD: A gamified tutorial system for first time AutoCAD users". 25th Annual ACM Symposium on User Interface Software and Technology (pp. 103–112).
- Marquardt, Michael J. 1996. Building the learning organization. New York: McGraw-Hill Companies.
- McDermott, Richard. 1999. "Why Information Technology Inspired But Cannot Deliver Knowledge Management". California Management Review, 41(4): 103–117.
- McGonigal, Jane. 2011. Reality is broken: Why games make us better and how they can change the world. New York: The Penguin Press.
- McIver, D., Lengnick-Hall, C.a., Lengnick-Hall, M.L., and Ramachandran, I. 2013. "Understanding Work and Knowledge Management from a Knowledge-in-Practice Perspective". Academy of Management Review, 38(4): 597–620.
- Nelson, Mark J. 2012. "Soviet and American precursors to the gamification of work". 16th International Academic MindTrek Conference on - MindTrek '12 (pp. 1–4).
- Nickols, Fred. 2000. "The Knowledge in Knowledge Management". In J. A. Woods & J. Cortada (Eds.), The Knowledge Management Yearbook, 2000–2001 (pp. 12–21). Boston, MA: Butterworth-Heinemann.
- Nonaka, Ikujiro, and Takeuchi, Hirotaka. 1995. The knowledge-creating company: how Japanese companies create the dynamics of innovation. New York: Oxford University Press.
- O'Dell, Carla, and Grayson, C. Jackson. 1998. "If we knew what we know: Identification and transfer of internal best practices". California Management Review, 40(3): 154–175.
- O'Dell, Carla S., and Huber, Cindy. 2011. The new edge in knowledge: how knowledge management is changing the way we do business. Hoboken, N.J.: Wiley.
- O'Malley, and Lisa. 1998. "Can loyalty schemes really build loyalty?". Marketing Intelligence & Planning, 16(1): 47–55.
- Pedreira, Oscar, García, Félix, Brisaboa, Nieves, and Piattini, Mario. 2015. "Gamification in software engineering – A systematic mapping". Information and Software Technology, 57: 157–168.
- Pelling, Nick. 2011. "The (short) prehistory of “gamification”...". Funding Startups (& other impossibilities). Retrieved September 16, 2015, from <https://nanodome.wordpress.com/2011/08/09/the-short-prehistory-of-gamification/>
- Pelling, Nick. 2015. "Gamification Past and Present". GWC14. Barcelona. Retrieved from <https://www.youtube.com/watch?v=XZ4AbQvUGho>
- Petersen, Soren Ingomar, and Ryu, Hokyoung Blake. 2015. "Gamification in Concept Design: Applying Market Mechanisms to Enhance Innovation and Predict Concept Performance". Journal of Design, Business & Society, 1(1): 95–110.
- Polanyi, Michael. 1962. Personal knowledge: Towards a post-critical philosophy. (L. Routledge & Kegan Paul, Ed.). London.
- Polanyi, Michael. 1967. The Tacit Dimension. New York: Doubleday.
- Quigley, Narda R., Tesluk, Paul E., Locke, Edwin a., and Bartol, Kathryn M. 2007. "A Multilevel Investigation of the Motivational Mechanisms Underlying Knowledge Sharing and Performance". Organization Science, 18(1): 71–88.
- Reich, Robert B. 1991. The Work of nations: Preparing ourselves for 21st century capitalism. London Simon & Schuster.
- Reinhardt, Wolfgang, Schmidt, Benedikt, Sloep, Peter, and Drachsler, Hendrik. 2011. "Knowledge Worker Roles and Actions — Results of Two Empirical Studies". Knowledge and Process Management, 18(3): 150–174.
- Rimon, Gal. 2015. "Gamification is More than a Productivity Tool. It Tunes Organizational Change.". GameEffective. Retrieved September 18, 2015, from <http://www.gameeffective.com/customer-service/gamification-more-than-a-productivity-tool/>
- Rinc, Sergej. 2014. "Integrating Gamification with Knowledge Management". Management, Knowledge and Learning, International Conference (pp. 997–1003). Portoroz.

- Roth, Steffen, Schneckenberg, Dirk, and Tsai, Chia-wen. 2015. "The Ludic Drive as Innovation Driver : Introduction to the Gamification of Innovation". Creativity and Innovation Management, 24(2): 300–306.
- Ruggles, Rudy L. 1997. Knowledge management tools. (R. L. R. 1966-, Ed.). Boston: Butterworth-Heinemann.
- Scarborough, Harry. 1999. "Knowledge as work: Conflicts in the management of knowledge workers". Technology Analysis and Strategic Management, 11(1): 5–16.
- Swan, Jacky, Newell, Sue, and Robertson, Maxine. 2000. "Limits of IT-driven Knowledge Management Initiatives for Interactive Innovation Processes : Towards a Community-Based Approach" (Vol. 00, pp. 1–11). 33rd Hawaii International Conference on System Sciences.
- Tsoukas, Haridimos. 2003. "Do we really understand tacit knowledge ?". In M. Easterby-Smith & M. A. Lyles (Eds.), Handbook of Organizational Learning and Knowledge (pp. 410–427). Oxford: Blackwell.
- Van der Spek, Rob, and Spijkervet, Andre. 1997. "Knowledge management: dealing intelligently with knowledge". In J. Liebowitz; & L. C. Wilcox (Eds.), Knowledge management and its integrative elements (pp. 31–59). Boca Raton, Fla.: CRC Press.
- Vassileva, Julita. 2012. "Motivating participation in social computing applications: a user modeling perspective". User Modeling and User-Adapted Interaction, 22: 177–201.
- Voelpel, Sven C., Dous, Malte, and Davenport, Thomas H. 2005. "Five steps to creating a global knowledge-sharing system: Siemens' ShareNet.". Academy of Management Executive, 19(2): 9–23.
- Wagner, Christian, and Bolloju, Narasimha. 2005. "Supporting Knowledge Management in Organizations with Conversational technologies: Discussion Forums, Weblogs, and Wikis". Journal of Database Management, 16(2): 1–8.
- Wenger, Etienne, White, Nancy, and Smith, John D. 2009. Digital habitats : stewarding technology for communities. (N. White & J. D. Smith, Eds.) (1st ed.). Portland, OR: CPsquare.
- Werbach, Kevin. 2014. "(Re)defining gamification: A process approach". Persuasive Technology (Vol. 8462 LNCS, pp. 266–272). Springer.
- Werbach, Kevin, and Hunter, Dan. 2012. For the win: How game thinking can revolutionize your business. Wharton Digital Press.
- Williams, Dmitri, Consalvo, Mia, Caplan, Scott, and Yee, Nick. 2009. "Looking for gender: Gender roles and behaviors among online gamers". Journal of Communication, 59(4): 700–725.
- ZapposInsights. 2015. "The Zappos Insights Blog". Retrieved December 9, 2015, from <http://www.zapposinsights.com/blog>
- Zicherman, Gabriel, and Cunningham, Christopher. 2011. Gamification by design. Sebastopol, CA: O'Reilly Media.
- Zuckerman, Oren, and Gal-Oz, Ayelet. 2014. "Deconstructing gamification: evaluating the effectiveness of continuous measurement, virtual rewards, and social comparison for promoting physical activity". Personal and Ubiquitous Computing, 18: 1705–1719.

Tables and Figures

Table 1. Definitions of Gamification.

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|--|---|
| (Pelling, 2011, p. 1) | ‘Applying game-like accelerated user interface design to make electronic transactions both enjoyable and fast.’ |
| (Zicherman & Cunningham, 2011, p. xiv) | ‘The process of using game-thinking and mechanics to engage users.’ |
| (Deterding et al., 2011, p. 1) | ‘The use of game design elements in non-game contexts.’ |
| (Burke, 2012, p. 1) | ‘The use of game mechanics and game design techniques in non-game contexts to design behaviours, develop skills or to engage people in innovation.’ |
| (Werbach & Hunter, 2012, p. 26) | ‘The use of game elements and game-design techniques in non-game contexts.’ |
| (Huotari & Hamari, 2012, p. 19) | ‘A process of enhancing a service with affordances for gameful experiences in order to support user's overall value creation.’ |
| (Werbach, 2014, p. 266) | ‘The process of making activities more game-like.’ |

Table 2. Classifications of gamification elements.

| Source | Game elements | Examples |
|--------------------------------|----------------------------------|--|
| (Zicherman & Cunningham, 2011) | Mechanics | points, levels, progression bar, leaderboards, badges |
| | Dynamics | pattern recognition, collecting, surprise, creating order, gifting, flirtation, recognition for achievements, leading others, fame, heroism, gaining status, growing |
| | Aesthetics | sensation, fantasy, narrative, challenge, fellowship, discovery, expression, submission (Hunicke et al., 2004) |
| (Werbach & Hunter, 2012) | Components | achievements, avatar, badges, boss fights, collections, social graph, virtual goods, combat, content unlocking, gifting, leaderboards, levels, points, quests, teams |
| | Mechanics | challenges, chance, competition, cooperation, feedback, resource acquisition, rewards, transactions, turns, win states |
| | Dynamics | constrains, emotions, narratives, progression, relationship |
| (Deterding, 2012) | Interface design patterns | e.g. badge, leaderboard, level |
| | Design patterns and mechanics | e.g. time constraint, limited resources, turns |
| | Design principles and heuristics | e.g. enduring play, clear goals, variety of game styles |
| | Game models | e.g. MDA, challenge, fantasy, curiosity, game design atoms, CEGE |
| | Game design methods | e.g. playtesting, play-centric design, value conscious game design |
| (Blohm & Leimeister, 2013) | Mechanics | documentation of behaviour, scoring systems, badges, trophies, rankings, ranks, levels, reputation points, group tasks, time pressure, tasks, quests, avatars, virtual worlds, virtual trade |
| | Dynamics | exploration, collection, competition, acquisition of status, collaboration, challenge, development / organization, motives |

Table 3. Gamification elements.

| Level | Element |
|--------------|---|
| Components | avatars, badges, collections, leaderboards, levels, points, progression bar, ranks / status, social graphs, teams, virtual goods |
| Mechanics | betting, challenges, chance / surprise, collecting, contest (competition), fame, feedback, flirtation, gaining resource / access, gaining status, gifting, growing / developing, hero acting, interventions, organising, pattern recognition, ranking / rating, rewarding, rules, teaming (collaboration), transactions |
| Dynamics | collaboration, competition, exploration, expression, narrative, progression |

Table 4. The summary of results.

| Second-order code | First-order code | Coded Text |
|-------------------|-----------------------------|--|
| Badges | Compensation badges | serious badges, that are compensation badges, that you have to complete a lot of serious things and meet the goals to get those, and there is a kind of compensational ladder |
| | | Now you need references, you need credentials, you need experience, you need all these different things before you can think about obtaining this badge. It's a really unique system. |
| | | badge called "Teal badge", and it means that you read all the material... it's really 40 hours of working time... So everything that you've read or watched, you need to write about what you've learnt, and then you write about an overall understanding of the teal... submit that, then somebody approves that, and you are certified. |
| | | We don't want all these people with their talents and abilities to go down this path and a being compensated fairly for what they are able to accomplish, |
| | | We're exploring a badging system where skills and work can be turned into badges with requirements that allow people to earn them and can even be tied to compensation. |
| | | you want them to strive for greatness. We want them to say: "I have these skills and these abilities, I'm going to learn this to get this badge." |
| Fun badges | core value avatar badge | For me, I was the humble, which is really funny, because I'm really loud and outgoing... when you think of someone humble, you think, that this person is quiet, intimate... But me being humble means me working with other people, me making sure that other people get it right, making sure, that everyone are doing the right things, other people come first... And when people see: "oh, you badge is humble?", "that's what they say." |
| | | There are some that are fun, just a kind say what you did. |
| | | We actually just created a badge within our circle. And this one is a little bit for fun, but it's also you know a kind of appreciation. |
| Skill badges | Skill badges | skill badge, or the latest one I've done was because we are moving toward the latest best customer strategy, and there is whole bunch of articles, how best customers were selected and things like that. And then at the end there was a test, and once you complete the test, you have to pass no less than 90%, and then you get that badge. |
| | | So the badging system a kind of taking over for endorsing. It's that criteria, every badge has that you a kind of have that skill, so with every badge you have to prove that you have those skills. |
| Contest | Hackathon (project contest) | there is this thing called Hacketun and another one that is called in a similar way. But yes, Hacketun is where people, who are interested in new projects, join in and it usually lasts for a few hours. There's been some good things, that came out of that |
| | | The execution is very organic – a tech person gets to pick their team and gets to decide what idea to work on. On hackathon day, the different teams present their ideas to the rest of the company and we get to vote on the winner. |
| Gifts | WISHEZ | My favorite wishes are the ones when someone isn't asking for something for themselves, but when someone is asking for someone else, |
| | | the whole platform is that people put on their wishes and you can go and look through: "o, I can grant this wish." Because let's say somebody needs something and I have it, then it is granted. But some are a bit harder, so there is the whole team that works on that, and they are trying to find the ways. |
| | | Things like that, you know: "I really need to bike to work." "Here is your bike." it's a great way to keep in touch with a company |
| Groups | Circles | we don't have teams any more. They are so called teams, but they are like circles |
| | | It's just, imagine, like a university, you have your classes, but you also have those extra activities. You go to the organisations, volunteering, so you get this primary role, but you can get involved in all the extra activities. Then you can get involved in the different things around the company too. |
| Points | People points | let's see people points are 100, and 80% of my people funds would be HR, and then 5 points in the parking circle, and the other 5 points in the garage circle, and the other 10 points elsewhere. Indeed just a great way to spread your wealth if you will |
| | | whatever circle you're in, if you're not putting enough time to your circle, they can move you from the circle. |
| | Power points | At the end of the month they get swiped and you start all over every month. |

It's not completely based on them, but it's one of those criteria to see, gaining high points. If you are getting high points, they are contributing, if there is a need, you can stay in a busy time you know, not just leaving when it is busy.

| | | |
|---------------|------------------|--|
| | | it's busy and you earn the power points |
| | Zollars | basically everybody has the power to give Zollars, you know. can be donated to one of the charities that Zappos partners with on behalf of the employee. It gives employees a warm, fuzzy feeling that every time they spend Zollars it can help others out which, in turn, makes the employee happy for being part of something bigger than themselves. |
| | | There is this little Zappos store inside, where you can buy Zappos T-shirts, little Zappos pens, there is plenty of things, like little things, like CD holder, little back-packs, suitcases Zappos, like everything. But yes, you can use only Zappos dollars there, you can't just buy it for money. talk, and then they ask a question, and then sometimes... they just ask the question. |
| | | The company actually had it trending on Facebook and they wanted it trending, so they wanted everybody go and share it on Facebook, so that it becomes very popular on Facebook, so you could get some Zollars, if you did it, some posts sharing on Facebook. |
| | | Yes, for the most part you are getting Zollars for learning something. But it could be almost... like dressing up that day or even just Trivia... But for most it's a kind of educational. |
| Quest | charity projects | Wednesday we did the same not for homeless, but for families that are struggling. They gave them all the stuff they need for Thanksgiving dinner, like turkey, just the products to make the dinner |
| | FaceMail | face mail. And that is randomly once a week the person will pop up an email, and they will ask: "do you know this person?" and you say yes. And then they'll ask: "how well do you know him?" and the you press, you type in: " pretty well, decently well, enough to trust him." ... And then it gives more questions, depending on your answers you'll get more questions... |
| | Scavenger Hunt | All employees at Zappos are required to go through our month-long new hire training. At the end of the training they are assigned challenges to locate employees around the company. For example, find someone with a Zappos shirt on and find out how long they have been at the company, or find who schedules training classes and take a picture with them, and find the longest tenured employee in the finance department. |
| | | It was more I think an activity to a kind of learn about the company and bond with your group. It was a lot of taking picture you know across the campus, and also about getting to know around the campus, this is also very new, taking a picture with you know, this sculpture or this statue. There is like a chair. There is different pictures of the places that are here in downtown Las Vegas. |
| Rewards | co-worker bonus | employee to employee reward, I'm allowed to give a \$50 bonus to anyone I want to. Once a month I can give these \$50, and it's not my money, it's the company that is paying, and I can give this money to absolutely anyone that I want to for any reason... you are attaching the reason to one of the core values that we have. Every month every person receives \$50 to give it to someone else. Don't you decide who gets it, and they get it, no matter what. |
| | Hero Award | The Zappos HERO Award works in conjunction with the Coworker Bonus Program. A Zappos HERO is an employee who embraces our core values to the fullest and lives to deliver WOW to their fellow Zapponians. Our heroes are nominated by employees and chosen by the leadership team which is made up of all the heads of departments along with the CEO, CFO, and "no title." |
| | Mystical Egg | the Mystical Egg, is a peer-based award passed along each month in our Tech department. |
| | WOW parking | WOW parking is chosen once a week (usually Friday) for a one week period (usually the following workweek). Any Zappos employee can award the parking spot to a lucky employee. |
| | Zollars_rewards | So there was one time, it was in all the bathrooms, the bulks of one Zollar bills. So basically you can award it to somebody, but you need to right your name, that you award, and you need to write the reason why you give it to somebody. So if I see, that somebody did something good to somebody, I can write: "ok, this person helped this old lady go upstairs." |
| Surprise | Wish team | Just now there is a band that played here in Las Vegas last night, and for the band singing there were the yellow cards rolling up. The bandwidth really big, a rock band. And there was someone who ... couldn't afford to get some. So he made a wish that he wanted one to see this rock band. And so a few days ago Oasis team walked to one of our zappers, and there was music and speakers playing, and she looked up and they gave the tickets to the person |
| Visualisation | circle map | So they basically, you go there and you see all the circles, you see like a big picture, the general circle... and it includes all the other circles, and then you can zoom in... and see, who is there. when I was in a different role and changed the circle, the lead-link removed me from that role, and then a new lead-link assigned me to a new role. So under my name I only see my current role |