MULTIDISCIPLINARY APPORACH TO INCREASING CREATIVITY: GAMIFICATION IN ORGANIZATIONAL CONTEXT

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Abstract: *This paper presents the history of Gamification, some basic concepts and examples of implementation. Based on Werbach's approach, the description of gamification and some of its aspects are presented in relation to creativity, and the provision of Csikszentmihalyi's flow as a condition improving creativity in organization. In the conclusion, introduction of gamification skills and knowledge is seen as desired in the arsenal of the future managers, increasing multidisciplinarity of their theory and practice.*

Keywords: *Gamification, creativity, implementation, tools, concepts, history.*

1. INTRODUCTION

Gamification, as the use of game design elements in non-game contexts, [1] is in its essence a multidisciplinary approach, combining insights from game design, psychology, sociology, organizational sciences and depending on the context, numerous other disciplines. There are as many definitions, as there are authors, but no such definition is universally accepted. The one that is very often cited quotes that *Gamification* as an approach which uses game elements and techniques in contexts that have nothing similar to games themselves. [2]

The history of *Gamification* began in 1912, when the product "Cracker Jack" started producing a pack with a toy in his box. This approach has given a game character and a feeling to the product. Also, a long time ago, in 1964, the famous Mary Poppins used this approach in her song "A Spoonful of Sugar", trying to explain that "in every job that must be done, there is an element of fun" and when you find fun, your job will become a game.[3] Often neglected as unfit in a "serious" environment like business, gamification found its place in creative aspects of business research and practice, such as increasing creativity, and will probably find more applications in the future due to the social trends. According to research by AVG company new "Techno-toddlers" aged 2-5 know how to play a 'basic' computer game (58%), can make a call on a mobile phone (28%), or start a web browser (25%), but only 9% of them can tie their shoelaces [4].

On the other side, it is difficult to say what date we should consider as the start of using the term *Gamification*. However, there are resources that show us 2002 as a starting year, and Nick Pelling was the first who used this term for the purpose of explaining his workplace.[5] In the late 2000s, the term *Gamification* found its place in every day communication.[6] There was a lot of researche which aimed at determining the role that fun has in all of experiences that users will remember. Recently, many application designers started, instead of using game elements, directly to include video game elements. Typical examples were *Chore Wars* and *Bunchball*, appeared in 2007. *Chore Wars* is an application which included game elements to make housework easier and more fun. This application will present all family members as online characters and give them awards with every housework finished, and registered on the site *chorewars.com*.[7] Also, *Bunchball* was organized to give gamified business solutions to organizations and companies.[8]

A turning point in the popularization of the Gamification concept is the book of world famous game designer, Jane McGonigal, entitled *"Reality is Broken: Why Games Make Us Better and How They Can Change the World"*. Also, she is well known for her public speeches on game elements, and lectures as *The game that can give you 10 extra years of life*.[9] In 2011, the world's leading company in IT area, *Gartner,* added *Gamification* in its leading technology *"hype cycle"* [10], and Gabe Zichermann also made his contribution to *Gamification* development with his books and researches.[11] Around $25 million was invested in *Gamification* in 2011, and it was predicted that 50% of the organizations that want to innovate their processes will decide to include game elements until 2015. [12]

2. GAMIFICATION CONCEPT

Game elements have been applied in other contexts since prehistory and ancient times – the Olympic Games added playfulness, public awards and in general "games" to the concept of sport competition. The Happy Hours is also an approach which comes from history, and is used now for motivating people to participate or behave as predicted. The typical example is encouraging customers to buy cookies or rolls in the last working hours by decreasing prices. [13]

For the purpose of clear understanding of the *Gamification* concept, it is very important to be familiarized with the game itself and the game elements, as well as its characteristics and function. The main game elements are:

- The goal of the game – shows us what is expected from participants to achieve.
- Game area – is the area out of the real world in which participants will play a game.
- Game borders – are referred to any kind of limits, for example time limits, space limits, etc.
- Game rules – give an explanation of how participants will play a game.
- Objects – help us to keep up with the game in progress and results during the game. [14]

Kevin Werbach presents "The Pyramid of Elements" as a three-level framework for *Gamification* concept. Those levels represent three main categories of game elements, and they are [2]:

- **Dynamics** – are the structure which has a pattern and reflects experiences in games. The following are the main elements of dynamics:

o Limits – are objects which exist in every game. Space limits, for example, in games make a possibility for participants to bring meaningful choices and solve interesting problems. It is considered that limits are one of the most important elements in games, so game designers should always think about it in details.

o Emotions – as is well known, every game may cause different types of feeling – happiness, success, satisfaction, and also sadness or disappointment. Emotions encourage players to move forward, to participate in games, to spend time playing games, so this aspect is very important in every game.

o Storyline – is the factor that makes a game whole, which collects all parts of game and compiles them in one. If the game does not have sense, *Gamification* will not be properly implemented and will not make the predicted results.

o Progression – presents the player's cognition that s/he will be able to progress, respectively to change his/her current position. It is a concept that presents moving through levels or defined scale by collecting points or solving problems.

o Relationships – are relationships between team players, but also between rivals or competitors.

- **Mechanics** – are defined as the processes or elements which encourage systems to move forward and players to keep participating in games.

o Challenges – exist in games when the aim players should achieve is defined.

o Chance – means that the result of a game is not always consequence of player's actions, but also includes accidental circumstances.

o Competition and cooperation – elements that are opposite, but trying to encourage players to cooperate for achieving an aim, or fight for it against competitive players.

o Feedback – gives information about current player's position and provides them with an opportunity to think and decide about their future steps.

o Acquiring resources – is the process of achieving different kind of resources through the game, in order to encourage players to keep participating in games.

o Awards – include any kind of benefits awarded through the game as recognition for achieving something, for moving through levels, etc.

o Transactions – refers to every purchase or sale between players.

o Turnovers.

o Win definitions – define what is considered as a win in the game.

- **Components** – include typical examples of dynamics and mechanics, which are very often used in Gamification.

o Achievements – are generally representative of quests which are included in games. They refer to achieving awards or moving through the game levels.

o Avatar – is a virtual picture of every player in the game.

o Badges – are graphic images of all achievements player had through game participation.

o Boss fights – typically present finish game fights in the game, which is a fight on a high and difficult level or an obstacle.

o Collection – refers to a collection of defined goods, resources, virtual stuff during the game.

o Content unlocking – implies to previous set tasks or actions that players should complete to unlock next content or level.

o Presents – have an impact to a time period which players spend in playing games. The way that games can make people have fun and be happy just because they are awarded something is very important.

o Leaderboards – are typical element of every game and very often are used in *Gamification.* It is based on a status or a level which every player has on leaderboard, according to number of points or any other criteria.

o Levels and points – levels are parts of game and all players are playing a game through these levels, but points are very often used as a way of awarding.

o Challenges – which challenge players to participate in the game and move through levels and various actions.

o Social influence – very important type of influence and means that players can follow what they friends do in games through social networking or participating in the same game.

o Teams – are groups of players who participate in games together, as a team.

o Virtual stuff or awards – refers to less important, small awards which players can take through the game. [2]

The SAPS Award System is based on four elements which represent awards and they all have influence status on the leaderboard. The elements are rated according to their influence on the players.

1. Status – is a position of one player compared to other players, and refers to a group of people or a team. This award can function in real world, but also in a virtual environment. The most commonly used mechanics which belong to status as element of SAPS are badges, levels and leaderboards.

2. Access – implies that defined group of players will have early access to particular activities or informations, as an award for levels passed or something similar. This type of awards is not in the money form, or another tangible form, but it gives a feeling of personal satisfaction to the players and high reputation among the other players.

3. Power – this element presents power as a type of award. The typical example for this type of award is assigning a role of forum moderator to the player who passed a defined number of levels or participated in some activities. Just because this player has a power of moderator's role will be enough for him/her to perform this role for free and to enjoy it. Many forums give similar types of power, a good example is the forum of popular video game *World of Warcraft*.

4. Stuff – given that the list of elements of SAPS reward system is composed by rank, we conclude that the last element on the list is one that players want least. This does not mean that it should be completely ignored, because there is always a group of players who want this award most. If you have a small reward that you can offer to your players, and that is exactly what they want, then this element of SAPS reward system is the one that will be the most effective. For example, there is no need to offer the player the status and the title of "King of ice cream," if what s/he wants is simply an ice cream. [15]

Authors Dan Hunter and Kevin Werbach propose 6D process for successful implementation of *Gamification* practice in organizations:

1. Define business goals
2. Describe target behaviors
3. Describe players
4. Define loop activities

5. Don't forget fun
6.   Implementation of appropriate tools [16]

Many authors devoted their attention to fun as a feeling, and one of the segmentations conducted by Nicole Lazzaro, President and Founder of XeoDesign Inc., includes:

- "Easy" fun – hang out with friends and having fun which is everyday and commonplace.
- "Hard" fun – which includes some accomplishment, achievement, reaching a goal, recognition.
- Fun aimed at people – it is a kind of fun which can be realized through teamwork and in contact with other people.
- "Serious" fun – which involves creating a sense of fun while performing different activities that are in any way important to the person who performs them, regardless of whether the environment observes them the same. [17]

The issue that is important for many people who design *Gamification* practice is creating solutions that promote a sense of happiness in humans. Most often then not, this problem is viewed through positive psychology. The idea of positive psychology is actually based on the concept that generally takes psychology as a branch – unusual situations that arise and make people unable to think or to reflect in changed, different way than usual, bad situations with bad outcomes. Positive psychology, developed by Martin Seligman and Mihaly Csikszentmihalyi, is based on the research of what it is that makes people happy, which makes people feel successful and help them to prosper. Psychologist Jane McGonigal has defined the concept named *Perma*, the name being composed of the initial letters of the elements it consists of. These are:

1. *P*ositive emotions
2. *E*ngagement
3. *R*ealtionships
4. *M*eaning
5. *A*chievement

McGonigal believes that these elements are the key for achieving a sense of happiness and fulfillment, a sense of self-satisfaction.[18]

One of the creators of the theory of positive psychology, Mihaly Csikszentmihalyi, brought out some interesting findings related to the game and a sense of happiness that is created when people participate in games. He believes that games can cause two main extreme states: anxiety and boredom. The diagram explains where, depending on the dimensions, these states are.
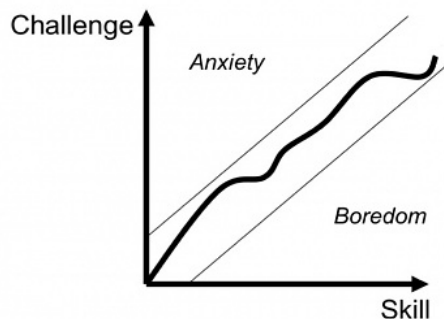

"Flow" concept by Mihaly Csikszentmihalyi.

Csikszentmihalyi gives the following explanation for the diagram below. Those situations in which people participate in some very easy games, games that do not require specific skills, abilities and knowledge, produce a sense of boredom. The explanation says that the cause is that there are no ups and downs, there are no obstacles, no unsolvable step in the game,

and people are not interested in playing. Another extreme situation is the one that includes a game which is too difficult. By too difficult games are meant the games that require skills, abilities and knowledge above average, games in which obstacles do not allow a player to progress. Such games cause anxiety and a feeling of dissatisfaction. Achieving a sense of happiness is somewhere between the two extreme states. The ideal situation is one in which the player never finds it too easy nor too difficult to play. Satisfaction is caused by a game which, as a rule, is sometimes heavier, sometimes easier, but which constantly records the jumps and crashes, and thus creates fun, which is the most important sense of games.[19] Such environment is found to be most beneficial for improving creativity in organization.

Understanding the players, their behaviour and characteristics, is an important process for the implementation of *Gamification*. The best known categorization is given by Richard Bartle [20], who presents four basic concepts of game participants. They are present in the graph, where the y-axis is located on one side and up to the other side of the world, and the x axis is defined with a specific behaviour, and the interaction with the other hand.
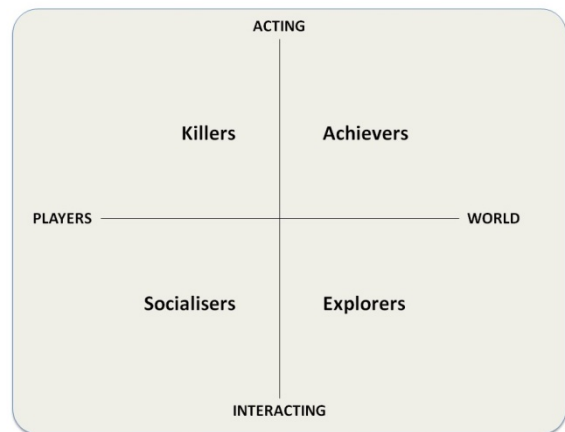
There are four basic types of players:

- Killers – their aim and satisfaction is not only to win, but they want to fight and feel as if they did something important for the whole world.
- Achievers – they see their success in an achievement or recognition of achievement, in something that will motivate them and lead to the goal.
- Socialisers – are the players who find most important contact with other players, and they enjoy interacting with them and encouraging communication.
- Explorers – as the name implies, they like to research. They want to explore the territory of the game, all the opportunities that exist in the game, always experiencing something new, and this is what leads them to the aim.

Despite this segmentation, it is important to emphasize that not all the players are distributed into categories. Most often it happens that a player combines characteristics of each type of player in the division above. It is often the case that a player is changing his/her behaviour during the time period.[21]

When we are talking about periods of awarding, we actually talk about the time when the award will be offered, and the frequency of rewarding. There are four options:

1. Continuous awards – this type of awards are rarely used in *Gamification,* because it means continually rewarding and here, the award is given automatically. Players are rewarded

too often and this, in fact, reduces the impact on people, their emotions and behaviour.

2. Fixed ratio – refers to giving a prize every n-th time when the defined activity happens.

3. Fixed interval – is very similar to the previous type of awarding. It implies an award that comes every n-th time units.

4. Variable awarding system – most often used in *Gamification*. No one knows the moment in which the prize can be given, and because it contains aspects of surprise, it is often used as a motivation. This type of rewarding is shown as a very powerful, considering players' response to them.[22]

3. SUCCESSFUL AND UNSUCCESSFUL EXAMPLES OF GAMIFICATION IMPLEMENTATION

The first example is related to language localization of *Microsoft* Windows 7, due to the fact that the company operates in a lot of different countries. The project is related to the use of elements of the game that refers to its internal application. For employees of Microsoft, this was an extensive, but not overly interesting job – to test a new operating system in the languages of those countries. In this situation, Microsoft had chosen the introduction of game elements, and in every country, in their own language, employees have tested Windows 7 and gave their own grade for the system. This encouraged all employees to perform better in their jobs and make a better "localized" Windows – the best in the company. Each localized operating system was viewed by all employees who gave their grades, and thus helped correcting mistakes and pointing out what is successful and good. Also, there was a table with the leaders, and all employees were able to monitor their results considering where their localized Windows is ranked on the list. This internal implementation of *Gamification* has produced the following results: 4,500 participants, more than 500,000 dialogue windows viewed, reported about 7,000 errors and made just as many repairs.[23]

Disney tried to introduce *Gamification* in their hotel complex Disneyland in California. This is an example of unsuccessfully implemented practice. The target group included all employees in a laundry in the hotel complex. In fact, in the room where the laundry was located, there was a huge monitor that was showing to all employees informations about their work performance. This means that each employee was able to see his/her results, but also the results of other employees. Those performance indicators informed employees about how quickly they fulfill their tasks, and the whole concept was based on the list of leaders, whose idea was to encourage employees to work more efficiently, better, with more effort. On the contrary, it was shown that this approach had the opposite effect than the one expected. Among the employees unnecessary competitiveness was generated, and such situations occurred where employees pushed with their results and their measurement, were skipping even their toilet breaks just in order to finish as much work as they could. On the other hand, those employees who were ranked poorly by the results in the list, were also under pressure because they constantly had the fear of losing their jobs.

Of course, employees' performance monitoring is the new generation concept, even very often carried out on jobs that involve routine work done. However, it seems that in this case Disney took the step of introducing a leaderboard too easy, not paying attention to how players, or their employees feel in this game, whether they want to participate, whether they enjoy the game and feel the fun or any other emotion that is desirable. Simply ranking employees, through a concept which is based on a leaderboard is not a solution that yields good results. Disney's example of unsuccessfully implemented *Gamification* is not the only one of this kind. Researches show that, among the elements that are commonly used in introducing *Gamification*, there is nearly always a list of leaders. In these situations, in most cases, it is not the list itself with leaders who produce opposite results than expected, but the feeling that is generated by the players during the game, referring to the fear before the fun.[2]

4. CONCLUSION

Employees' creativity is very desirable, while at the same time very hard for companies to achieve. Encouraged with creativity, motivated and satisfied, employees generate ideas that lead the organization towards achieving goals, maintaining their position in the market and survival in harsh conditions and numerous challenges of competition. Creativity helps the organization as a whole system, and in all areas of business. For this reason, it is important to know the methods and techniques to encourage employees and constantly strive for new organizational solutions that lead to the desired results. Mostly limited to psychology and organizational theory, the research of creativity in a business context did not include implementation of game design principles.

Gamification is a modern concept of organizational solution which involves employees in the game, leading them to the generation of ideas and innovations to create the basic products or services of the organization. However, for the implementation of these practices it is very important to know the basic concepts of gamification as a discipline. As it was shown in the examples provided, without understanding the basic concepts, gamification can work against the goals of the organization and its employees. A multidisciplinary approach which includes psychology, organizational theory and gamification needs to be followed if benefits of the gamification are expected for the organization. Sometimes motivation through the game may be in conflict with other motivators, so that creates a dilemma which of two motivators should the employee choose. Also, it is important for the organization to have the prerequisites for the implementation of Gamification, a well determined structure and to recognize significance of the introduction of this practice. Gamification opens vistas for a new discipline for modern managers, providing another skill in their multidisciplinary arsenal for the requirements of future business.

REFERENCES

[1] Deterding, S, Dixon, D, Khaled, R, & Nacke, L. From game design elements to gamefulness: defining gamification. (2011) In Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments, pp. 9-15, Tampere, Finland: ACM.Chicago

[2] Werbach K, Hunter D. – "For the Win", 2012, Wharton Digital Press, Philadelphia

[3] Fitz-Walter Z. – „A brief history of Gamification", 2013, online: http://zefcan.com/2013/01/a-brief-history-of-gamification/

[4] Norman, G. Children Know More about Computers than Riding a Bike (2011) available online: http://www.findmysoft.com/news/Children-Know-More-about-Computers-than-Riding-a-Bike/ [last accessed 30th May 2014]

[5] Pelling N. „The (short) prehistory of Gamification", 2011, online: http://nanodome.wordpress.com/2011/08/09/the-short-prehistory-of-gamification/

[6] Nick Pelling on Wikipedia, online: http://en.wikipedia.org/wiki/Nick_Pelling

[7] Chore Wars Game : Claim Experience Points for Housework, online: http://www.chorewars.com/

[8] Bunchball: The Leader in Gamification solutions, online: http://www.bunchball.com

[9] McGonigal J. – "The game that can give you 10 extra years of life", 2012, Ted Talks, online: http://www.ted.com/talks/jane_mcgonigal_the_game_that_can_give_you_10_extra_years_of_life.html?,

[10] Brockmeier J. – "Gartner Adds Big Data, Gamification, and Internet of Things to Its Hype Cycle", 2011, online: http://readwrite.com/2011/08/11/gartner-adds-big-data-gamifica#awesm=~om9HoQibY4TpBQ

[11] Gamification Corporation: The leading source for gamification news & info – About Gabe Zichermann, online: http://www.gamification.co/gabe-zichermann/

[12] Gamification: Learn about Gamification, History of Gamification, online: http://gamification21.wordpress.com/content/2-history-of-gamification/

[13] Aichholzer M. – Introducing Gamification, 2012, online: http://markenregisseur.at/wp-content/uploads/2012/08/gamification-factsheet_2012.pdf

[14] Gray D, Brown S, Macanufo J – "Gamestorming, A Playbook for Innovators, Rulebreakers and Changemakers", 2010, O'Reilly, Sebastopol, California

[15] Zichermann G, Cunningham C. – "Gamification by Design", 2011, O'Reilly, Sebastopol, California

[16] Werbach K. – Coursera lecture: "The Design Process", 2012, Gamification Course, online: https://class.coursera.org/gamification-2012-001/lecture/54

[17] Lazzaro N. – "Why we play games: Four keys to more emotions without story", online: http://www.xeodesign.com/xeodesign_whyweplaygames.pdf

[18] McGonigal J. – "Reality is Broken: Why Games Makes Us Better and How They Can Change the World", 2012, The Penguin Press

[19] Snyder C, Lopez S. – "Handbook of Positive Psychology", 2002, Oxford University Press, New York

[19] Self-Determination Theory: An Approach to Human Motivation & Personality, online: http://www.selfdeterminationtheory.org/theory

[20] Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. Journal of MUD research, 1(1), 19.

[21] Nicholson, S. – "A User-Centered Theoretical Framework for Meaningful Gamification", 2012, online: http://d-nb.info/1020022604/34#page=39, http://scottnicholson.com/pubs/meaningfulframework.pdf

[22] Finkel D, Wei Q. – „Gamers and the Games They Play", Worcester Polytechnic Institute, online: http://www.wpi.edu/Pubs/E-project/Available/E-project-050409-135413/unrestricted/MQP_Report_Final_Edited.pdf

[23] Smith, R. The future of work is play: Global shifts suggest rise in productivity games. In: Proceedings of the Games Innovation Conference (IGIC), 2011 IEEE International (pp. 40-43). IEEE.