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The group dynamics context of gamification

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Abstract
The functioning and methodology of the gamified medium draws on the findings of psychology and uses the tools of game design. Interaction with gamification features has positive effects on social, emotional and cognitive engagement, enhances loyalty, and can adopt engagement-based features such as those aimed at increasing social participation to achieve goals. Gamification offers ways to address social challenges. Its repertoire includes methods to address social challenges in an appropriate way. We can find gamification concepts to reduce poverty and social exclusion, to save energy, to stimulate local tourism, to promote public transport, or to address nature and environmental problems. We have also undertaken to describe examples and logical links to address societal challenges and to describe the specific gamification tools used to address them.
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The emergence of gamification in society

From the moment we are born, humans love to play, it provides us with a sense of relaxation, it is associated with experience, it develops our social and social competences, and it was therefore to be expected that the information society would raise the questions that lay the foundations for gamification (Kiss 2021). The term gamification itself was coined in 2002, and since then it has seen countless definitions and interpretations. In 2014, Andrzej Marcewski used quantitative and qualitative methods to collect thirty definitions and then investigated their interrelationships (Fromann 2017). The interesting thing about Marcewski's research is that he compared the words used to describe the definitions, highlighting the most popular ones (engagement 38%, people 28%, fun 25%, motivation 22%). We will present some of these definitions to outline the conceptual definition of gamification and its impact on social processes. "Gamification is a process whereby game-like thinking and game-like design elements (game dynamics, mechanisms, elements) are used in a non-game context to engage the user, help them solve a problem, or reveal or develop a skill/ability (Brown, 2020, 20)". Sebastian Deterding and his team set out to create a general definition of gamification, which was defined in 2011 as the application of game design elements in a non-game context, i.e. players do not see

their activity as a game (Fromann 2017).

Werbach and Hunter's definition adds to this description by separating game elements and game design techniques, emphasising game design thinking. Gamification can appear in the following three areas:a belső játékosítás (internal gamification):

1. when gamification supports the internal functioning and processes of an organisation),
2. external gamification: when gamification is targeted at customers,
3. behavioural gamification: when gamification is not business-driven, but is done in the spirit of social responsibility (Fromann 2017).

Karl M. Kapp has continued his research in the field of education on the use of play-based methods and strategies. The author's definition of gamification is the use of game-based operational principles, game aesthetics and game design thinking to engage people, motivate them to action, and facilitate learning and problem solving (Fromann 2017). According to the author, the integration of games and playful techniques in education has an impact on learning attitudes, significantly increasing motivation to learn. To reorganise the learning environment, it is necessary to mobilise the following motivational elements from the toolbox of games:

- curiosity,
- allowing mistakes to be made,
- belonging to others, the experience of commitment,
- the possibility of decision-making competences,
- providing a framework story.

Gabe Zichermann and Joselin Linder explore the concept of gamification in relation to workplace, business and marketing objectives, and the decline in loyalty and commitment to a company or brand from both employee and customer perspectives. Zichermann and Linder argue that gamification can reverse this process, that is, gamification is the process of increasing the engagement of participants using loyalty programmes and the tools of game design and behavioural economics (Fromann 2017).

In 2012, Huotari and Hamari defined gamification in the context of service marketing, whereby an existing basic service is supplemented with playful experiences to add value (Fromann 2017).

In this interpretation, gamification is a branch of product development that aims to improve the quality and quantity of services.

Brian Burke, an expert at market research and analytics firm Gartner, stated in 2014 that gamification can only be achieved through digital means, that is, gamification is a process of using digital tools to shape the game mechanics and experience to motivate and engage the player (Fromann 2017).

Structure and participants in gamified systems

We can distinguish three main levels of structure in gamified systems (Fromann 2017):

1. mechanics: it contains the elements that structure the game, the forms of action defined by the dynamics determine the mechanical elements.
2. dynamics: the sum of the actions performed by the user.
3. aesthetics: summarises the emotions that the player experiences during the game, the aesthetic elements are represented by the system's experience of the player.

The significant growth of the games industry has been accompanied by the scientific study of games, ranging from the observation of mathematical relationships, to the study of game design methods and techniques, to the scientific observation of player behaviour (Kenéz 2015). Statistical results of demographic analyses showed that a wide range of society plays (men and women, from teenagers to retired people), with the average age of the player being 30. The motivation of games lies in the impact on the player's cognitive, emotional and social functions For the game to have an experiential effect, the player must be absorbed in the activity, in a state of harmonious and orderly consciousness. When a natural function becomes a socially elaborated task that can be performed according to a goal-directed, predetermined set of rules and requires skill, a flow experience is created, the player's dopamine production increases, and thus the game stimulates the brain (Kenéz 2015).

A gamified system, if compared to an engine, consists of the following components (Barna and Fodor 2018):

- game experience (the apex of the pyramid, the goal),
- dynamics of play: this includes rules, emotions, storytelling, progress during play, self-expression, and the network of relationships built during play,
- game mechanics: this includes challenges, chances, competitions, turns, cooperation, feedback, acquisition of resources,
- game elements: game elements provide the foundation, including points, badges, levels, avatars, achievements, leaderboards and community graphs.

It is important to underline that just because a system uses any of the player elements does not make it interesting or effective for the participants, nor will it produce the expected results.

A gamified application will achieve the desired effect if it is addictive and motivating, providing the opportunity for the participant to achieve short-term goals, fail to achieve them, as well as fail and try again. In summary, the following factors play a role in increasing engagement: vision, opportunities, work and tasks, self-determination, social environment, communication, environment, corporate values and practices, remuneration and recognition (Barna and Fodor 2020). Players can be typified in several ways based on their motivation (Fromann 2017). Of these,
we will describe the Bartle model in more detail. Richard Bartle is credited with

the birth of the multiplayer online role-playing game in 1978, and in 1996 he also created a test of thirty items with the aim of classifying players into one of four main game types based on their game identity.

Achievers: the group of achievers, also known as aspirants, is made up of players who strive for achievement (obtaining rewards, equipment, items, leveling up, gaining more points). They enjoy the game most when they are more prepared and at a higher level than other players.

Explorers: explorers are players who seek to explore the game world, its environment. Their primary objective is to solve puzzles, find hidden treasures and unravel mysteries.

Social: players who primarily seek to socialise with other players during the game, interpreting the game as one big chat room. Their main goal is to make as many friends as possible as soon as possible and to join all groups, guilds and clans. They are generally helpful, empathetic and open. They often use communication channels outside the game.

Killers: a group of players who take pleasure in destroying or causing damage to others. They take pleasure in showing off their power, annoying their teammates.

Their style of play is aggressive and provocative, yet their role in the gaming society does not make them negative characters, because they are not antisocial, not rule-breaking trolls, and often even leaders of guilds. They focus on the competitive part of the game, trying to get ahead of their peers through interpersonal combat.

The research of SpielosLét has expanded these categories in the light of different group dynamics (Fromann 2017). Through quantitative and qualitative methods, it was possible to develop the F-model, which is still valid today, distinguishing two main dimensions (people-centred, world-centred), three main motivational components (competitive, social, exploratory) and the seven motivational subcomponents that belong to them, i.e. the seven player types (leader, fighter, team player, dating, imaginative, hoarder, problem solver).

Applications of the gamification structure to increase social participation

The functioning and methodology of gamification draws on the findings of psychology to use game design tools (Fromann 2017). Interaction with gamification features positively impacts social, emotional and cognitive engagement, enhances loyalty, and can adopt engagement-based features such as those aimed at increasing social participation to achieve goals (Kiss 2021).

Gamification methods can be classified into four groups (Czeily and Dajnoki 2021).

The reward-based gamification method: it is recommended to use this method if you have short-term goals. For example, if an organisation wants to make immediate changes. The use of this method leads to an immediate deepening of engagement, as the new system attracts the interest of users who want to experience the

exciting changes first hand as soon as possible. But this positive shift will only last as long as the reward system is in place. If the reward system is discontinued, the positive effects triggered up to that point will also disappear.

2. The instinctive gamification method: this methodology is recommended if you want to achieve long-term results. As the name suggests, it is a method that builds on people's inner drives. There are actions that people feel are important because they have an inner urge to do them. According to organisational integration theory, when an individual is motivated to perform an activity, his or her attitude towards the performance of the activity is more positive. Achievements of intrinsically motivated activities are more enjoyable, more important, more meaningful and more challenging. The difficulty of the method is to create individual challenges for the participants that awaken their intrinsic motivation (this is different for everyone).

The structural gamification methodology: a method that does not change the content of the activities, but adds playful elements to them, by gamifying the way they are performed.

Content gamification is a method of structural change that changes the content of an activity and transforms it into a game. It is a costly method and less flexible. Examples include Farmville and Duolingo.

Based on the literature reviewed, gamification can be applied in the following areas:

- management, employee motivation, service marketing, knowledge management, consumer loyalty,
- marketing, online consumer behaviour,
- innovation, product development, service, industrial service development,
- tourism, tourism,
- education-research, student motivation,
- production, logistics
- healthcare,
- cultural fields.

Possible outcomes of the gamification process at different analytical levels of the organisation (Tóth 2022):

- individual-level results:

o perception: creativity, problem-solving ability develops, learning skills increase,

o Health and well-being: reduced feelings of exhaustion, boredom and stress,

o Attitude: emotions are more easily expressed, job satisfaction and organisational involvement increases,

o task-related results: transforming tasks into games increases the time spent on them, training is put into practice more effectively,

- group level results:

o trust between members is strengthened, a creative and effective work climate is created, peer interactions are enhanced, thus increasing the quantity and quality of bonds, and a sense of solidarity is developed between people at different levels

of the hierarchy and in different jobs,

o results at organisational level: a more welcoming organisational atmosphere is created, commitment to the organisation increases.

The effectiveness of gamification is directly applicable and tangible in the listed application areas. Gamification offers ways to address social challenges, and in its toolbox we can find methods to address the social challenges discussed below (Kiss 2021).

We can find gamified actions to reduce poverty and social exclusion, to save energy, to stimulate local tourism, to promote public transport, to address nature and environmental problems. Specific examples and logical links and the gamification tools used to address these social challenges (Kiss 2021):

energy waste: energy saving – MVM EDISON startup competition, Smart Home,

generational tensions:

- Reducing generational differences - Evoke, Sociopoly, Gamified education,

- Strengthening workplace competencies – COVIDEA, Babel, Coursera, Doulingo, Redmenta.com, Start me up! brainstorming competition, COVIDEA, MVM EDISON startup competition,

- knowledge enhancement – National Blue Tour, Geocaching, Smart Home, SmartWall, Immigropoly, FreeRice, Gamified Education

deprived areas and the backwardness of their inhabitants:

stimulation of local tourism: Kajla Passport, Geocaching, National Blue Trail,

Reducing poverty and social exclusion: Sociopoly, Immigropoly, FreeRice, Evoke,

contamination of the natural environment:

promotion of public transport: the Kajla Passport,

Kajla Passport, Geocaching, National Blue Hike, Fox Crawl, Smart Home, Smart Larder.

In the above list, we have summarised the social challenges from Gergely Kiss' study and have listed the gamified possible methods already in practice, which we have also grouped according to the problem areas where they can provide effective help. Based on this, small local communities, civil society organisations, new or existing businesses and organisations can also make excellent use of good practices complemented by gamification. The motivational aspects of gamification can be observed as a general social impact of good practices (Kiss 2021).

It is important to describe Sociopoly in more detail because it is one of the gamification methods that serves the social function of gamification. In addition to being a very intensive programme, its knowledge-enhancing function is indisputable. The idea and its realization was developed by the Gyerekesély Közhasznú Egyesület as a weapon in the fight against poverty and social exclusion, an interactive board game for groups of 20-25 people, which aims to provide new knowledge about extreme poverty and the opportunity to reflect on stereotypes through the participants' own experience of the game (Kiss, 2021). The game lasts three hours and requires a trained game leader.

By skilled a complex set of knowledge and skills that combines geographical and historical knowledge of a given situation with appropriate leadership skills and knowledge of social contexts and processes are meant. The game shows families' day-to-day lives, from working to shopping to unexpected expenses. Team members have to imagine themselves in the role of a family member and have to behave and make decisions according to the situation. The game can be used to increase social awareness and team building.

Gamification in the education sector

Gamification is the use of games and game elements in non-game areas of life with the aim of making the processes that take place there more interesting and effective (Fromann and Damsai 2016). It can be implemented in two ways in the learning process: content gamification and structural gamification (Jaskóné 2020).

On the course of the lesson, i.e. content gamification.

Classcraft: the primary aim of the platform is to develop students' learning skills and prepare them to work effectively in teams, integrating a role-playing system with a special reward system, independently of the curriculum. It is detailed in both interface and content and is engaging to use (Jaskóné 2020).

b) MinecraftEdu: poorly structured in graphical elements, so it does not burden students. What is the educational purpose? For example, to organise a virtual field trip to a remote location, or to the site of a former battle, to simulate the results of physical experiments. The portal also offers complete lesson plans for teachers.

The Hungarian-developed Smart Box: tasks are categorised by subject and topic, for lower, upper and secondary school students.

The collection contains digitised tests, which do not differ in structure from paper tests, nor do they contain playful design elements (Jaskóné 2020).

Redmenta is a Hungarian-language platform: a worksheet creation platform that aims to facilitate the work of teachers, but this site does not contain playful design elements either.

Classtools: English language site for educators, with a variety of task and game types (e.g. puzzles, arcade-type games, Facebook profiles for famous people), with a playful design look.

GoalBook: favours interaction between students, especially teamwork, in a way that both teacher and parent can track milestones in individual student progress (Fromann – Damsa 2016).

ClassDojo: a digital classroom, a digital classroom management system that involves the student, the teacher and the parent in a unified system, where they have the opportunity to build and complete different challenges, students can create an avatar for themselves, which they can develop through their activity in the process (Fromann – Damsai 2016).

KidBlog: a communication platform that allows whole classes to share content with each other. A teacher-developed programme that aims to provide an effective

tool for developing literacy skills and competences (Fromann, Damsai 2016)

OpenBadges: a platform developed by Mozilla to build a diverse merit badge system around the goals and challenges we have outlined. It provides the possibility of continuous feedback (Fromann – Damsai 2016)

For the accountability-assessment, i.e. structural gamification.A very important factor in gamification for assessment is to provide students with an optimal workload (tasks should be neither too easy nor too difficult), appropriate levelling (subgoals to maintain motivation), reward system (feedback on performance), offering choices and decisions (students should have the opportunity to shape events).

In 2020, Krisztina Győri and Dávid Papp conducted a questionnaire survey in this area: they compared traditional and video game lessons, asking the participating students to score the lessons according to given criteria. There were pattern similarities between the results of the two groups, but the average motivation score was higher in the case of teaching with video games (Győri – Papp 2020).

The gamification approach is proving its validity in education every day, materialising as an alternative way of expanding knowledge, providing a proven way of maintaining the attention of students of different age groups and ensuring a shared experience of working together. The experience of educators using gamification methods is that not only does student activity increase, but student performance is directly proportional to this, with better grades. Students of all ages show a more open and active attitude to innovative opportunities.

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