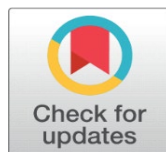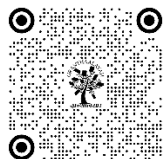# EVOLUTION OF GAMIFICATION, ITS IMPLICATIONS, AND ITS STATISTICAL IMPACT ON THE SOCIETY

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ABSTRACT

Whenever we play games, whether they are outdoor or indoor, it gives us the ability to make decisions, strengthens our brain activities, increases our visual perceptions, and gives us motivation to win. The phenomenon of applying game elements to our daily routine culture exists from many decades ago, when the word gamification never existed, but grew into the concept we recognize today. The aim of this paper is to highlight the evolution of gamification, how it came into being and started rolling its wheels to motivate people and engage them towards productivity, changing the mind-set towards learning techniques. In modern trends, what are the implications of gamification? The paper describes how gamification in the education field helps learners get motivated. In the marketing field, how does it aid in customer loyalty? In healthcare, gamification helps with daily routine behavioral changes to get fit. Will go through the statistical analysis of gamification trends and conclude to its impact on society.

Keywords: Gamification, History of Gamification, Gaming Elements

1. INTRODUCTION
1.1. GAMIFICATION GENESIS

The term "gamification" was coined by Nick Pelling, a British individual widely regarded as the pioneer of this concept, in 2002. Pelling, an esteemed game developer and programmer employed by a prominent game development company, was actively involved in the design and creation of a game-like interface for ATMs and vending machines. Since its inception, gamification has experienced notable

evolution in the 21st century, primarily driven by advancements in digital technology. Xu (2015), Pandey (2017)

Gamification encompasses the strategic implementation of game-based mechanics, aesthetics, and cognitive principles to effectively engage individuals, stimulate motivation, facilitate learning, and address challenges within non-gaming contexts. By employing a combination of motivational, captivating, and educational techniques, gamification fosters confidence, empowerment, interaction, and collaboration among consumers and audiences. This is achieved through the integration of gamified elements, such as badges, points, and reward systems, within non-gaming environments. Roungas et al. (2019), Seaborn & Fels (2015)

Within the technological landscape, particularly in the domains of augmented reality (AR) and virtual reality (VR), which have experienced exponential growth and exerted substantial influence across diverse sectors including entertainment, education, health, and marketing, a significant revolution is underway. These transformative technologies have been in use for several years, predating the advent of smartphones, computers, and digital technology. Koivisto & Hamari (2017) As far back as 1896, the Sperry and Hutchinson company implemented a reward system known as the "green stamp reward system" to enhance customer engagement and cultivate loyalty. This process involved the manual accumulation of stamps to obtain rewards from the company. While somewhat intricate, it marked an early instance of manual gamification implementation to incentivize both buyers and consumers within a traditional loyalty-based framework. Hamari & Koivisto (2015), Furtado et al. (2021)

Over the course of its existence, gamification has played an integral role and has been embraced by individuals and organizations across various contexts. It has been leveraged to establish reward systems and standardize features within companies and institutions. Boasting a rich and illustrious history dating back to the early 1900s, gamification's enduring significance is poised to persist well into the future. Huotari & Hamari (2016)

1.2. OBJECTIVE

Evaluating the impact, potential and efficacy of gamified treatments or techniques in many domains, such as education, health, or employment contexts, is one of the objectives of gamification research. Whether gamification enhances engagement, motivation, learning results, behaviour change, or other desired objectives may be the focus of research. To look into the variables influencing the success of gamification. In order to do this, it is necessary to investigate theories and evolution that describe the underlying mechanics of gamification. The overall objective of the evolution of gamification research study is to strengthen the skills, layout, and execution of gamification in an array of disciplines.

1.3. EARLY DAYS OF GAMIFICATION

1908: Scout Badge Movement - In 1908, a special scout movement emerged within organizations to enhance the efficiency and skills of scouts. This was achieved through the acquisition of special badges earned by participating in various activities and events, which aimed to improve their proficiency in different areas. Ali et al. (2021)

1973: The Game of Work - Published in 1973 by Mr. Charles Conrad, "The Game of Work" explored the theory of finding enjoyment in work akin to play. This

book emphasized the power of games to engage employees, resulting in increased productivity and job satisfaction for thousands of individuals in managerial and non-managerial roles. Pandey (2017)

1978: Creation of MUD Multiplayer Game - In 1978, two talented students named Roy Trishaw and Richard Bartle developed a text-based fantasy multiplayer game known as MUD (Multi-User Dungeon) at Essex University's computer lab. Operating on a large DEC PDP-10 mainframe, this game focused on social online gaming and adventure-based gameplay. Khaitova (2021)

1981: Gamification Takes Off with Frequent Flyer Programs - Frequent Flyer Programs (FFP), introduced in 1981, revolutionized gamification by incentivizing loyalty among airline customers. These programs were designed to encourage travelers to earn rewards and accumulate points based on factors such as distance flown, fare class, and partnerships. Points could then be redeemed for discounted air tickets, special seating, and various amenities available onboard. Chitroda (2015)

1982: Academic Recognition and Research on Gamification - In 1982, gamification gained academic recognition on a global platform. This was achieved through symposiums, seminars, and workshops dedicated to exploring the potential of gamification in diverse contexts.

1996: Categorization of Players and Bartle's Taxonomy - Richard Bartle introduced a classification system for players in 1996, categorizing them into four types: socializers, explorers, achievers, and killers. This taxonomy was based on character theory and provided insights into player behavior within games. The "Bartle quotient" was developed as a scoring system consisting of specific questions to measure player preferences and tendencies. Pandey (2017)

1999: Recognition of Fun as a Software Requirement - In 1999, Stephen W. Draper published an article analyzing the significance of fun as a crucial software requirement. This work aimed to establish the relationship between fun and software design, highlighting the importance of enjoyable user experiences in creating effective and engaging software applications. Landers (2014)

2000: Rise of Gamification in the Gaming Industry - As the new millennium approached, gamification gained momentum within the gaming industry. Game developers began incorporating rewarding elements to engage users, resulting in unique and sensational gaming experiences. This marked a significant turning point in the history of gamification. Ali et al. (2021)

2002: Coined Term "Gamification" by Nick Pelling - In 2002, Nick Pelling, a British software engineer known as the "father of gamification," named this concept "gamification." Pelling's extensive experience in developing computer games and designing game-like user interfaces for electronic devices, such as ATMs, mobile phones, and vending machines, contributed to the birth of gamification as a recognized field. Ali et al. (2021), Pandey (2017), Khaitova (2021)

2005: Bunch ball's Gamification Platform - In 2005, Rajat Pahari founded Bunch ball, a social gaming company focused on designing products that utilized game mechanics to influence social behavior and mindset. By 2007, Bunch ball had incorporated gamification tools into their products, providing motivation, rewards, and loyalty programs to customers. Ali et al. (2021), Pandey (2017), Khaitova (2021)

2008: Gamification Coined Term Documented by Bret Terrill - In 2008, Bret Terrill documented the term "gamification" for the first time in a blog article. Terrill aimed to elevate gamification by emphasizing its potential for enhancing user

engagement and motivation in the development of gamified applications. Ali et al. (2021), Pandey (2017), Khaitova (2021)

2009: Foursquare Introduces Gamified City Guide - Foursquare, founded in 2009, offered a city guide application that allowed users to explore new places and locations. Foursquare integrated a badge system, rewarding users with special badges for achieving specific milestones, fostering interaction and engagement between users and the application. Ali et al. (2021), Pandey (2017), Khaitova (2021)

2010: Jane McGonigal's TED Talk on Gaming's Potential - In 2010, Jane McGonigal delivered a compelling TED Talk, highlighting the transformative potential of gamification. She discussed how gaming could motivate individuals and contribute to creating a better world.

2011: Gamification's Outburst and Introduction of "Reality is Broken" - Following Jane McGonigal's influential TED Talk, gamification experienced a surge in popularity. The official release of "Reality is Broken" at the G-Summit in 2011 further fueled the interest in applying game design elements to non-gaming contexts. Workshops and conferences dedicated to gamification research and application were held, such as the Gamification Research Network and the CHI (Computer-Human Interaction) Conference. Ali et al. (2021), Pandey (2017), Khaitova (2021)

2012: Anticipated Rise of Gamification - In 2012, gamification was projected to continue its upward trajectory, with predictions of over 2000 gamified applications expected by 2014 across various sectors. Mozilla introduced Open Badges, while Amazon released the Game Circle to track achievements and leaderboards. The fitness app Zombie Run was also launched, utilizing gamification elements to track users' physical activity. Ali et al. (2021), Pandey (2017), Khaitova (2021)

2013-2015: Gamification Research and Evaluation - During this period, extensive research and evaluation were conducted on gamification strategies across different sectors. While some implementations fell short of meeting expectations or engaging users effectively, valuable insights were gained regarding the design and application of gamified apps. Chitroda (2015), Pandey (2017)

2016: Pokémon Go's Augmented Reality Game Success - In July 2016, Niantic released Pokémon Go, an augmented reality game that quickly gained worldwide popularity. With over 800 million downloads and becoming the fastest application to reach 100 million downloads, Pokémon Go demonstrated the potential of gamification in leveraging augmented reality and captivating players.

2017: World Government Summit and Focus on Gamification - In 2017, the World Government Summit hosted around 100 gamification advocates who gathered to discuss the significance and ideas behind gamification. The aim was to harness the potential of gamification as a software tool and deploy its principles in various design elements. The future of education and gamification was introduced and documented. Chitroda (2015), Pandey (2017)

2018: Viral Spread of Gamification - In 2018, numerous organizations and companies introduced gamification applications for mobile and computer platforms. The Human Resources (HR) departments of many organizations shifted their focus towards skill development and motivation of employees by implementing gamification apps, departing from traditional learning solutions. Chitroda (2015), Pandey (2017)

2019: Productivity and Motivation Boost with Gamification - A 2019 survey by Talent LMS revealed that around 89% to 88% of employees felt more productive

and motivated when using gamification elements at work. While 43% of employees did not consciously notice the presence of gamification, 33% expressed a desire for more gamified apps to enhance their engagement and concentration in the workplace.

2020: Gamification in Online Teaching Amidst the Pandemic - The year 2020 witnessed a significant turn for gamification as it played a crucial role in online teaching during the global COVID-19 pandemic. With traditional classrooms transitioning to virtual settings, gamification software emerged as a solution to combat student disengagement. Special rewards were offered to students who actively participated in classes, fostering interest, and facilitating easy learning outcomes. Chitroda (2015), Pandey (2017)

2021: Gamification Trends in Fitness Programs - As the COVID-19 pandemic continued to impact lives, gamification gained prominence in fitness 2021: Gamification trends for fitness programs: as the covid pandemic is still on its moves. Many people started facing health issues due to home quarantine and working from home decreased their mental health and after-effects of covid. Gamification again took charge to support well-being and fitness programs for employees to boost their mental health. Landers (2014), Chitroda (2015), Pandey (2017), Pandey (2017)

2022: Gamification blending with mixed reality for an immersive change in the technology of different sectors like education, and medical sector.

2. GAMIFICATION STANDARDS
2.1. VARIABLES OF GAMIFICATION

Over the years, gamification has become a widely adopted practice in numerous organizations, companies, and educational institutions. It has demonstrated its efficacy in engaging the target audience and yielding meaningful outcomes. Gamification has established a universal standard that encompasses various elements and principles to effectively drive user engagement. The elements of gamification encompass conditioning, communication, and meaningfulness. These elements are further manifested through features such as badges, leaderboards, point systems, timers, and rewards. Gamification creates a competitive environment where participants engage in gamified activities that adhere to predefined rules and strive to achieve specific goals or win conditions. The principles underlying gamification play a crucial role in facilitating behavioural change within the targeted community. These principles serve as a framework for understanding and classifying the transformative effects of gamification. Ašeriškis & Damaševičius (2014), Lee (2011), Uppalike (2022)

- **Strong narrative:** Players are engaged and encouraged to be creative when a storyline keeps them wondering what will happen next. This inspires children to take initiative and keep paying attention to the tale as it develops. Uppalike (2022), Kwon & Özpolat (2021), Xu & Hamari (2022)

- **Rewarding system:** Players should get rewards for their successes and game-related advancement. Giving them real prizes and acknowledging their accomplishments inspires them to keep up the good work. Players should receive prizes that rise in line with their progress towards higher scores, providing better benefits and incentives. Tsai et al. (2015)

- **Stylistic considerations:** The gaming interface is crucial to drawing in players. Whether a player chooses to play on a computer, phone, or television, visually attractive designs and visuals are crucial to grabbing

their attention. The interface should be simple to use and comprehend in order to allow for improved engagements. Thomas (2012)

- **Engage the players:** Giving players the freedom to create their own goals and establish targets within predetermined timeframes may significantly boost their motivation. As students work to finish activities and accomplish their self-set objectives, this method fosters a sense of competence and accomplishment. Uppalike (2022), Tsai et al. (2015)

- **Team feedback analysis:** Gathering player feedback is essential to defining the gameplay environment. Their inventiveness and involvement in the game are sparked by understanding their preferences and applying their feedback. By progressively adding complexity and raising the bar for goal-setting by adding new rules and challenges depending on feedback, you can encourage ongoing involvement. Kwon & Özpolat (2021), Xu (2015)

3. IMPLEMENTATION OF GAMIFICATION FOR THE CHANGE
3.1. GAMIFICATION IN EDUCATION

Gamification has emerged as a crucial strategy in education to motivate students and enhance their learning experience through the incorporation of gamified elements. The motivation of students can stem from intrinsic or extrinsic factors, influencing their engagement and behavior within educational contexts. Bozkurt (2017) By creating an environment that fosters understanding and provides responsive instructional feedback loops, gamification amplifies students' learning capacity. Swacha (2022) The immersive nature of gamified approaches drives students to exhibit increased reflexive responses when encountering complex subject matter. Fogg's Behavioral Model states that gamification effectively modifies desired behavior by addressing three key factors: motivation, ability, and triggers. Prisms of Neuroscience: Frameworks for Thinking About Educational Gamification. (n.d.) By ensuring learners are sufficiently motivated, have the necessary skills to perform the desired behavior, and are triggered to engage in that behavior, gamification becomes a powerful tool in education. Jaskulska & Starba (2020) As the education landscape continues to evolve rapidly alongside technological advancements, gamification proves to be a valuable tool in cultivating students' learning abilities and motivation to grasp intricate subject matters. Numerous online applications and portals have been developed to educate students through both offline and online modes. These platforms leverage gamified elements to facilitate increased student engagement and concentration during classes. By implementing reward systems and offering points for correct answers and regular class attendance, students are encouraged to actively participate and consistently attend classes. Ali et al. (2021) These accumulated points can later be redeemed for special rewards and gifts, further motivating students. Prominent examples of such gamified educational platforms include Oda Classes, Bijuce Classes, and Khan Academy. Raphael (2015), Hidayat (2021)

3.2. GAMIFICATION HEALTHCARE

Applying gamification to human health changes the behavior routine and all-day activity of the individuals physically and mentally by setting up set rules and goals to be followed in a given time which gives in turn, reward points on daily basis. Malik & Momin (2022), Mat Zain (2020) In the past few years, many health researchers have shown their interest in the potential of engaging and indulging

people with gamified applications for their interventional health and behavior change. Gamification in health signifies the physical outcome of humans and improving mental health sickness, aiming at particular goals to be achieved, keeping track by engaging users from time to time with specific alarms. McDougall (2017), Lister et al. (2014) Much health-related application has been developed on android, iOS, and windows over smartphones from which each individual can track their walking steps, heart points, and many other things. Gamification in health has proven to be masterful in its form. Some examples of health fit application that uses gamified tools are, google fit. Kim et al. (2022), Fleming et al. (2017), Floryan et al. (2020)

3.3. GAMIFICATION AS A MARKETING TOOL

Increased in the demand for the use of mobile phones eventually raised the demand for mobile applications which tends to generate competition in the digital marketplace where competitors are racing to provide customers the real value of the product, gamification provides the value points and special discount through gamified apps over their product purchase; in turn, customers can buy other products on discount rates e.g., licious, pizza hut, dominos, fresh to home, goibibo air tickets, etc. Sam-Epelle et al. (2022), Romashkin (2023), Xu et al. (2022)

4. GAMIFICATION STATISTICAL ANALYSIS.
4.1. EDUCATION

According to Forbes Digital, the e-learning industry achieved a remarkable $107 billion in revenue in 2015 and is projected to reach an impressive $325 billion by 2025. The integration of game-based elements in learning has become increasingly prevalent and is now considered mainstream, as indicated by Metaari's 2019 report. Metaari has revised its global revenue forecast for the game-based learning market, revealing a compound annual growth rate (CAGR) of 33.2% globally, which is slightly lower than the 37.1% observed in the previous five years. However, it is anticipated that the market will experience revenue growth more than quadruple in the next five years. Research conducted by Koivisto, Majuri, Koivisto, and Hamari (2018), as well as Seaborn and Fels (2015), has shown that gamification elements are highly suitable for the education system. Furthermore, Metaari's 2019 report predicts a significant growth rate of 15.4% in the higher education sector from 2019 to 2024. With the rapid advancement of technology, students are increasingly relying on smartphones to access online classes and tutorials. In fact, a current study conducted in 2019 by Ed Tech revealed that 64% of students use smartphones to complete their homework, and they prefer learning methods that employ gaming elements for a simplified understanding of complex topics. Elsie Boskamp (2023), Griffin (n.d.), Folse & Poole (2023)

4.2. MARKETING

In marketing gamification technique is proving to be a hot cake of selling products and services to their consumers by offering award cashback systems and loyalty programs to their customers. Over the years there is a tremendous change in the market size due to the globalization of digital and e-commerce applications and websites. Smartphones replaced the traditional gamification methods of worksheets with digitalized workspaces. The global value of the gamification market size for 2020 was $ 9.1 billion and is expected to grow up to $30.7 billion by

2025 (markets and markets, 2020). The corporate sector and it sector is turning out to be the biggest user of gamifying element solutions with a 47.5% exceptional growth rate. In the education sector market size of the gamified educational application is estimated to generate revenue of more than $24 million by 2024(eschool news, 2019). Nearly a maximum of all digital application has adopted the gamification element to their market strategies. Will discuss some case statistics of the market size of gamification like: O'Neill (n.d.)

1) Kahoot is a Norwegian-based educational video games platform having 90 million and over marked users with 75%growth rate to become the fastest learning online portal in the world using gamification market strategies. Metaari (2019)

2) Duolingo: another language certification online platform having user-based over 300 million (citrus bits, 2020) applying full game-based algorithms to retain the users to learn languages in a simpler form.

3) Roblox: in 2018 Roblox introduced an education program through gamified elements which led to a boom in active users of the Roblox application it raised to 90 million users having a 75% growth rate

4) 106% sales growth has been seen in kfc Japan after the implementation of gamified content in their marketing strategies. (Gamify 2021)

5) Starbuck's gross sales increased to $2.65 billion after the deployment of Starbucks dedicated reward application (gamify 2021) Healthcare Gamification Market Size, Share & Growth Report, 2032. (n.d.)

4.3. HEALTH CARE

The covid19 pandemic globally impacted many industries. Due to the outbreak, everything went digital from education to the healthcare sector which has proven to be on the positive side due to the increased adoption of digital global healthcare applications. At the time of the covid-19 pandemic, physical yoga, massage therapy, meditation centers, and gyms were closed which compelled people to adopt healthcare applications to keep track record of their health. According to (allied market research) the global healthcare gamification market will generate a revenue of $9,040.9 million by 2031. In the 2021 report, the market size has shown a result of $3,260 million and is expected to grow at the 11% cagr. Gamification in Healthcare: The Value of Fun. (2020)

5. FINDINGS AND DISCUSSION

Gamification has been demonstrated to boost student participation and motivation by raising their levels of engagement in educational activities. Improved learning outcomes to studies, gamification can improve students' comprehension, knowledge retention, and problem-solving abilities. Enhanced motivation: by utilizing students' inherent motivation and offering extrinsic rewards and incentives for progress and performance, gamified learning experiences can boost student motivation. Collaboration and social contact with gamified educational activities can encourage student cooperation, teamwork, and social contact, which will improve their communication and cooperative abilities. Positive attitudes towards learning experiences have been linked to happier, more upbeat attitudes and feelings about learning, which increases satisfaction and enjoyment. The gamification technique is pacing with the standard to indulge the consumers and learners to its best possible ways. Mazarakis (2021), Kleszczyński (2019)

6. SIGNIFICANCE OF GAMIFICATION

The usefulness of gamification to impact society lies in its capacity to persuade and inspire individuals to engage in and retain desirable behaviors.

Gamification has the capacity to positively impact user behavior and drive change in that behaviour. Studies on gamification have the potential to solve societal issues and foster constructive social change. It could be used to foster environmentally friendly habits, advance civic involvement, and inspire group action to address global problems. Bengtsson et al. (2021) Studies help create novel solutions and a brighter future by researching how well gamification works in addressing social concerns. By integrating gamified aspects into work settings gamification helps in, jobs, and projects to get completed more effectively and with greater interest by encouraging healthy competition, goal-setting, and feedback loops. Kahila et al. (2020) Integrating game aspects into educational environments. Learning may be made more interesting, interactive, and personalized through gamification, which can boost motivation, promote deeper learning, and enhance academic success. Awadzi (2018), Zainuddin et al. (2020)

7. LIMITATIONS

Every new tech has its limitations, gamification is been accepted widely all over the world but every caset has two sides so does gamification. Making games is tedious work and takes plenty of time to develop the elements of it which are quite costly. Merging the right game element to the selected topic in education is a major task, the wrong element can affect directly the potential of the learner or distract the outcome of employees from their actual task. Learners often get addicted to the gameplay leads to overstimulation and a waste of time for the learners competing with certain levels of the game. Online gaming learning platform tends to increase the screen time of the learners affecting the eyesight and physical health of the individuals.

8. CONCLUSION

The paper aimed to describe the evolution of the gamification system and to investigate whether its elements are proving to be a boom to society or not. We came across several reviewed papers and concluded the implementation of gamification elements for well-being purposes. Gamification works on the promising shreds of evidence of a survey done. If the gamification principle applies in the right sense it proves to be the right implementation of behavior change the people. Although many studies have also shown to have no positive effects of gamification on learning and behavior change as it only triggers the extraneous motivation of the learners for a short period. There is no empirical proof till now which proves the implementation of gaming elements improves the actual learning or behavior change. It only anticipated in terms of the statically implementation of gamification in different sectors. Further investigation and analysis are required blended with technology to outcome specific results.

CONFLICT OF INTERESTS

None.

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