You Have Leveled Up! Gamify Your Life

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Abstract

Gamification is the application of game design and mechanics to daily life to improve attention, engagement, and enjoyment. Many people today have encountered gamification when they gain virtual levels and achievements on websites unrelated to video games, but its application extends far beyond software systems. It is the ultimate melding of complex engineering and interactive social engagement.

Introduction and Brief History

Gamification at its core is the application of game design elements into non-game activities. Whether you're using credit card rewards or leveling up on websites or even drinking alcohol as a part of a game, you've probably encountered some form of gamification in your daily life.

The term "gamification" was coined in 2002 by Nick Pelling [1] and gained popularity in 2010 [2]. However, the concept of gamifying a task isn't modern. Gamification has been

around well before the term was coined. Nonetheless, it hasn't been formally studied until the recent years despite being identified in 1984 by Charles Coonradt, the "Grandfather of Gamification"[3].

The term itself is rather amorphous and can take on different meanings depending on an individual's background. Searching for "gamification" on Google Scholar yields 6010 results, but a closer look reveals that 4070 of those results were published between January 2012 and February 2014, almost 68%. Thus, while gamifying a task has been around for centuries, the study of the underlying gamification mechanics is a modern concept.

Games Mechanics Dissected

Players enjoy games for their entertainment, but how exactly do games provide that unique blend of engagement and enjoyment? At their core, games are engineered to be a complex form of play. As described by Edmonds [4], games have structure through rules as well as goals for motivation. They teach through outcome and spark creative problem solving.

A simple explanation of successful gamification is shown in Figure 1. This simple figure shows that the difficulty of the game increases with the time the player spends playing. Unlike traditional tasks where individuals are given a set of instructions to follow, gamification sets loose boundaries through the game design process. This means that gamification relies on intrinsic motivation. An important part in gamification is to give players a sense of autonomy. Autonomy refers to providing players with feedback and the freedom to make their own problem-solving choices. It is shown to increase intrinsic motivation in players [5].

Players in a well-gamified task also feel more competent at what they do [5] which relates to Figure 1 in that the elevated difficulty correlates improved player skill. Finally, gamification can incorporate social aspects. Aparicio calls this "relatedness" [5], since it gives a sense of security through being able to relate with fellow players, ultimately increasing intrinsic motivation.

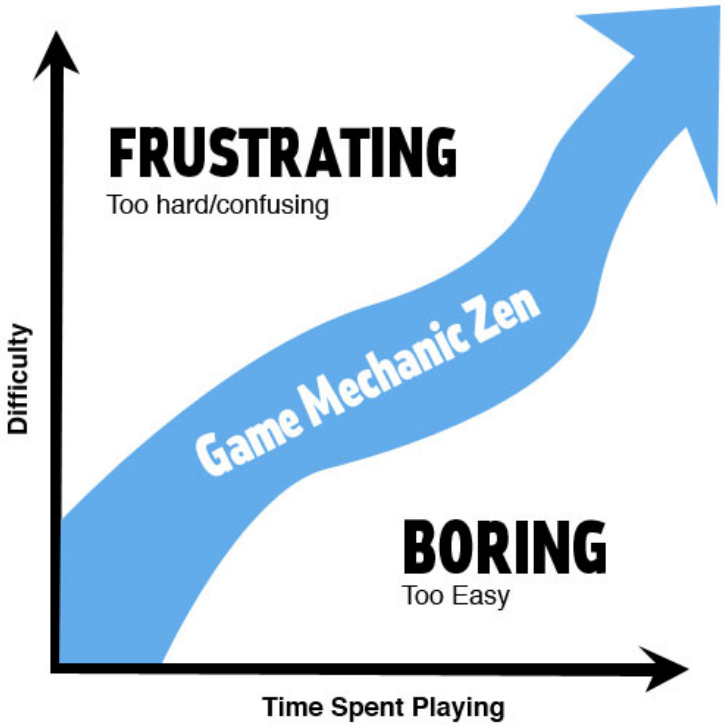

Figure 1: Game Mechanic Zen (Crackjack Marketing)

Does It Really Work?

Determining whether or not gamification improves user engagement and motivation is crucial to the economic viability of the field. Even if it's confirmed that user engagement and motivation are increased, there is still the question of whether or not that translates to better quantity and quality of interactions. For example, prospective companies who want to gamify their website would want concrete evidence that correlates gamification to increased engagement with the website and more frequent visits. They need evidence that gamification leads to more traffic and higher customer retention which lead to higher sales. In response to this questions, Mekler from the University of Basel in Switzerland performed a study to try to understand the effects of gamification [6]. First they identified two key features in a game. One is a system that keeps track of player progress and provides immediate feedback. The second is a way to make a task meaningful, where "helping to finish a project" does not have meaning whereas "contributing to the end of hunger" does have meaning. Next, Mekler conducted an experiment where participants are given a menial task. He created a points tracking system to rate task performance. 172 participants were divided into four groups to fulfill the 2x2 independent variables of points system vs no points points system and meaning vs no meaning. Their results indicate that a relationship between having a points system and output since the points system increased output by 33%. At the same time, the quality of work increased by 40% when the task was given meaning. While the experiment was not extensive enough to derive sound conclusions, it does hint that feedback and meaning increase productivity.

Today's Applications of Gamification

While the scope of gamification vastly covers beyond that of software, a major focus of gamification is its integration with software systems. A number of notable software applications today apply the principles of gamification to better engage with users.

Habit RPG [7] is one such software. It is a habit, task, and reward management system. Users can train good habits or break bad habits through a system of rewards and punishments. The player struggles to stay alive to reap rewards. Most interestingly, all tasks, habits, and rewards are set by the player. Figure 2 shows the software's user interface.

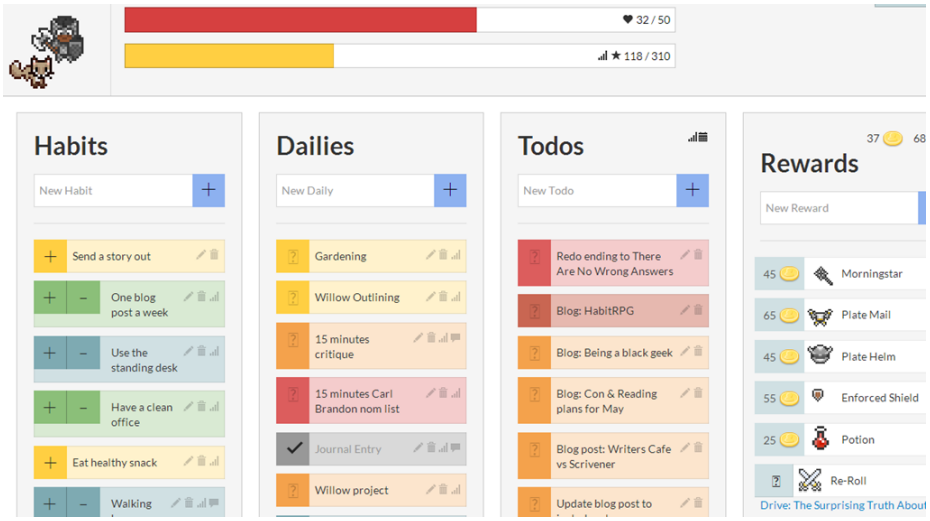

Figure 2: Habit RPG User Interface

As you can see the example in Figure 2, in the habits section the user gets rewarded for posting a blog post every week or gets punished for failing to do so. Fulfilling habits, dailies, and todos give rewards in gold which can be redeemed for both in-game rewards that help the user survive in the game, and custom rewards such as "New gaming laptop."

With mobile technology, today's gamfied software applications are no longer constrained to tasks on a desktop computer. A mobile application called *Zombies, Run!* [8] tries to gamify exercise by placing players in the shoes of a zombie apocalypse survivor. Players are made to run in real life to escape from the clutches of virtual zombies.

Gamification is by no means limited to pure software systems. The Swedish National Society for Road Safety created a "Speed Camera Lottery" system where individuals driving at legal speeds were entered into a pool of drivers, one of whom would be randomly selected to win money derived from traffic tickets. Figure 3 shows how the lottery is displayed to drivers. The end result of this was an overall average of 22% reduction on vehicle speed [9]. If this system works on a larger scale, countries could benefit from decreased vehicle accidents.

Figure 3: Speeding lottery system in Sweden (Coloribus)

A cursory glance at scholarly articles relating to gamification would tell you that the field of marketing is a driving force in the development of gamification. Many firms today across a large variety of industries utilize gamification to enhance service quality. It is

defined in the marketing world as "a process of enhancing a service with affordances for gameful experiences in order to support users overall value creation" [10]. What this means is that adding elements of gamification to interfaces that customers use enhances customer satisfaction. It also allows converts menial or uninteresting tasks that dissuade customers from participating into interesting and engaging tasks that the customer willingly volunteers to perform. An example that Huotari [10] provides is an alternative approach to filling out a social profile. Instead of a mere progress bar on completeness of a profile, use a system that rates the profile page with "progress related psychological biases" [10]. That is, instead of displaying "80% complete", display some textual representation of 50%. LinkedIn gamifies their profile filling process this way, displaying "Expert" instead of "80%". This simple change better connects with users and better contextualize the user's progress. It ultimately enhances both profile completeness and quality while simultaneously making it less of a menial task for the user. The powerful force of social gaming is also a major driving force in creating and gamified services. With the social profile example, the service could theoretically create a high score system that compares a user's profile to the user's direct connections in a form similar to a high score table.

Ultimately, gamification is an option companies are exploring to create and maintain a large base of customer "players" in order to reach out to more potential product/service consumers.

Gamification of Education

One topic of particular interest to the field of gamification is education. This is due to the many drawbacks of the traditional education model, where students learn through tests. What makes education a particularly interesting candidate to gamify is that its current implementation does not engage students to learn. As Kapp explains, the concepts explained in lectures are abstracted from its applications in the real world [11]. Listening to lectures is a passive activity where the student merely observes. This lack of activity together with abstract concepts is what creates student disengagement and boredom. Gamification seeks to rectify these problems by requiring students to actively participate in the learning process and receive immediate feedback. In fact, research shows that the effectiveness of gamified learning is directly correlated with learner activity. [11]. With proper game design, gamified education can better contextualize abstract concepts to help increase student learning. Of course, gamification of education is difficult in many ways. Designing games to be both educational and fun is difficult. This difficulty translates to high costs and time spent by engineers and designers.

Gamification of education on a large scale may be difficult, but experiments in the field of gamifying early education are already under way. In New York City, a public charter school called Quest 2 Learn shifted its entire curriculum from the traditional education model to a game-based one [12]. The effectiveness of this approach to education has not yet been formally studied, but one publicly available metric for effectiveness is the Progress Report Overview for the school's 2012-2013 school year [13]. Figure 4 graphically compares the

school with the citywide average and indicates that the school's average ELA state exam score was slightly higher than the citywide average. While concrete subjects such as math and science are easier to gamify than abstract subject such as writing, Quest 2 Learn's mathematics test scores have similar comparative results. These figures do not seem to indicate a dramatic difference impacted by gamification, though there exist many other factors beyond the scope of this article that impact these values. Nonetheless, the scale and media interest towards education gamification may very well pave the way for other large scale experiments in the future.

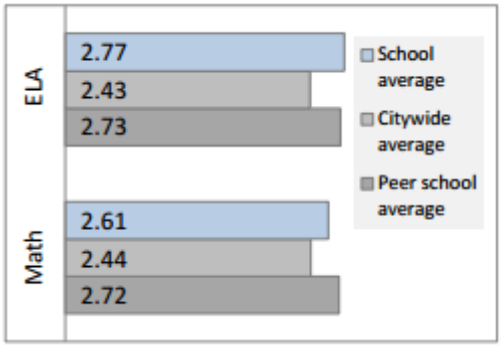

Figure 4: Quest 2 Learn Progress Overview (NYC Dept. of Education)

The Future of Gamification

Opinions on the future of gamification are still quite controversial. On one side gamification optimists believe that gamification will be an integral part of daily life in most activities in the near future. On the other side is the belief that gamification is a transient phenomena that will fade away. A study by Pew Research reinforces these dissonant opinions, showing

that barely half of people (53%) agree with the idea that gamification will be incorporated into our daily lives in 2020. Another idea is that gamification is a subsection of a larger field of discourse, that the word "gamification" is an improper representation of more complex ideas such as "game-design thinking" or "gaming interfaces"[14]. Whether or not gamification is even achievable is in debate. Gamification in small-scale and often niche applications show positive results, but this may not translate to a successful large-scale deployment. After all, as William Shakespeare said, If all the year were playing holidays; To sport would be as tedious as to work.[15]. Ultimately, only time will tell the future of gamification.

Conclusion

While gamification is still not well understood and may very well prove to be insignificant, it nonetheless has the tremendous potential to radically change the approach society has to human labor. It has far reaching applications that cross the boundaries between engineering and almost all other disciplines. While its future is uncertain, the concept of gamification is distinctly modern and its many implementations are true feats of engineering.

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