Literature Review on Web Application Gamification and Analytics

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Abstract

As "Gamification" quickly becomes the hot debating topic across a wide range of industries and academia, it deserves more thorough studies and researches both qualitatively and quantitively. This document intends to survey this recent phenonemon of gamification being argued as a world changing layer or a useless buzzword. It provides a comparative review of different school of thoughts on the effectiveness of applying game mechanics to non-game context. Both industry implementations and academia researches are reviewed and analyzed. With the goal of providing a empirical research on effectively gamifying web applications, the current methodology of game related analytics is also surveyed.

Chapter 1

Introduction

Wikipedia defines gamification is the use of game play mechanics for non-game applications, particularly consumer-oriented web and mobile sites, in order to encourage people to adopt the applications.

The term is almost not exists until in February 2010, as part of the DICE 2010 conference, Game designer and professor from Carnegie Mellon, Jesse Schell gave a presentation "future of games" that elements of games, is and will invade every part of our daily live [19] . The term becomes prominent as several recent books such as Gabe Zicherman's "Game Based Marketing"[ref], who advocated the use of game mechanics in marketing as a form of loyalty program, and Jane Mcgonical's "Reality is Broken"[ref], who assures us that games will make us better and a solution to the broken reality, and Baron Reeves's "Total Engagement"[ref], who elaborates games and virtual world will change the way people work and business compete. In the SXSW 2011, Google backed startup SCVNGR CEO Seth Priebatsch talks[ref] about game is the new layer that similar to the social layer, "will change the world".

In IT industry research, Gartner [ref1] predicts that by 2015, more than half of companies managing innovation processes will employ Gamification, a process of applying game mechanics to non-game contexts. In that same time frame, M2 Research [ref2] forecasts that the game mechanics production will generate 1.6 billion in revenues and will account for 23 percent of social media marketing budgets.

In the newly release Gartner Hype Cycle report, gamification, along with big data and internet of things, are added to the 2011 hype cycle, that weren't present in 2010. According to Gartner, currently gamification is on the rise to the peak of the hype, the stage of the "peak of inflated expectation", with 5-10 years of mainstream adoption. [see figure 1.1].

Gartner use the hype cycle theory to track technology adoption, after the peak period, the technology will slip into the trough of disillusionment and some technologies will start climbing the slope of enlightenment and eventually reach the plateau of productivity. As any technology, Gamification will inevitably slip into the disillusionment trough where the hype is passed and the mass realize there are a lot of unsolved and criticism will arrive. The question remains if gamification will eventually climb out of the trough and appear in the plateau of the cycle.

In fact, there are already quite a lot critique of gamification in the media. Some called it a merely buzzword, a hype-up version of mileage loyalty program, or a superficial "pointification", where often misses element such as storytelling and experiences which are central to what make games effective.[ref]

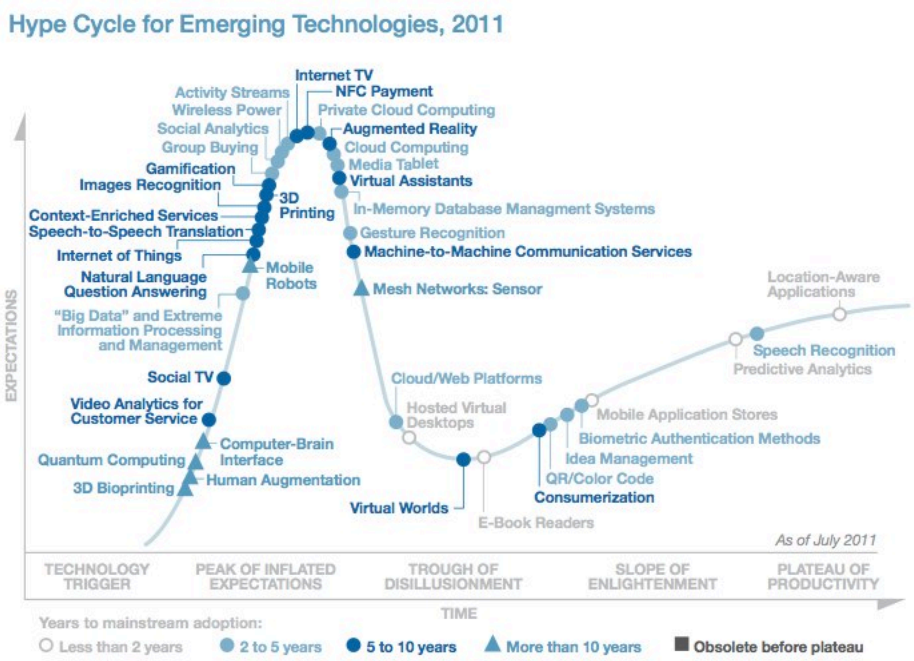


Figure 1.1: 2011 Gartner Hype Cycle

More and more game designers and researchers are looking into the deeper practice of gamification. Amy Jo Kim presents Smart Gamification which focus on designing the effective Player Journey with intrinsic preferred over extrinsic reward.[ref] Jane Mcgonical is emphasizing the aspect of "Playfulness" in an gamification instead of game mechanics.[ref]. Similarly, In his popular google tech talk, researcher Sebastian Deterding criticized the current practice of simple gamification and stress the important of "meaningful play".[ref]

It is surely becoming an IT phenomenon where gamification lies in between a meaningless buzzword and a layer that will change the world.

The goal of this paper is to review the deferent gamification design thoughts and approaches in a scientific way, examine most of the commonly employed game mechanics with their usages, effectiveness. In order to provide a quantitative insight of the research in gamification, we propose to examine the gamification metrics of the gamified applications, so the current state of game related analytics research are also surveyed.

Chapter 2

Related Works

2.1 Defining Gamification

Although gamification is a popular word nowadays, there are quite a few definitions came from different fields. Marketing industry defines gamification as integrating game dynamics into your site, service, community, content or campaign in order to drive participation. Wikipedia defines gamification as the use of game play thinking and mechanics to solve problems and engage audiences. They all seems evolve gamification with the goal of engagement. Some others considers any game related application is gamification, including serious game, playful interaction and game-based technologies.

Researcher Sebastian Deterding [ref] proposes an academic definition: Gamification is the use of game design elements in non-game contexts. It consists of 4 components:

1. Game: It is different than playful interaction, playful design.

2. Element: It is not the complete game such as a serious game.

3. Non-game Context: Similar to serious game, it uses game for other purposed than game's normal expected use for entertainment.

4. Design: It is not game-based technologies or practices of wider game ecology.

Figure 2.1 illustrates the distinction with serious games and playful interaction.

Figure 2.1: Defining Gamification

2.2 Gamification Examples

There are many examples of application that effectively employs game design elements. We will only briefly discuss a few here for the purpose of better understanding the gamification concept and how it is utilized across a wide range of everyday life. The example list here is solely personal selection with the hope to cover the broad range of influential gamification cases and in no way a completed list. In this quickly evolving landscape, it may well be a risk of missing some eminent ones.

2.2.1 FourSquare : Check-in to Unlock

FourSquare is a location-based game-like service where players check-in to locations for virtual points and rewards. It is probably the most recognized forerunner of applying game mechanics to location-based networking application and made badges rewarding a common practice in most of catch-up gamified applications. Foursqure proved that simple game mechanics can affect behavior that can engage 10 million customers and being a successful business model. By employing gamification elements such as points, badges, levels and leaderboards, it engages users to revisit a location such as restaurant or pub and become a loyal customer and finally the "major" of the place. Some virtual rewards such as the "mayors" of Starbucks or certain badges could be converted into real products, e.g. a free coffee.

Figure 2.2: Foursquare makes modern badges popular

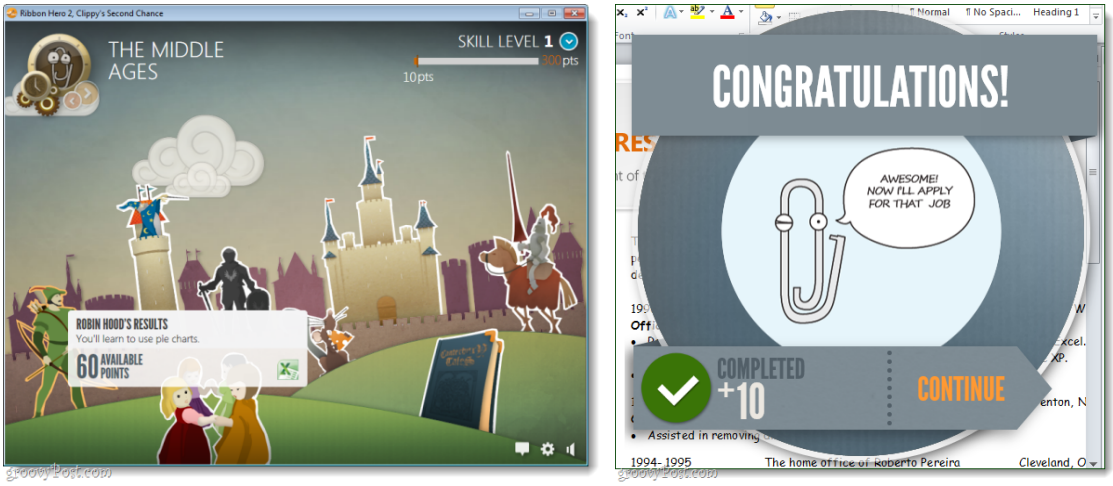
2.2.2 Nike+: Making Fitness Fun

Nike+ is a social running game-like service that employs game mechanics to encourage runners - both casual and hardcore - to compete and improve their fitness, with the goal to solve the main problem of fitness program: motivation. Nike+ makes it easy for runners to upload their run data to the website and start challenging themselves and their friends, they can also get supports from their friends.

Figure 2.3: Nike+ makes fitness run

2.2.3 Microsoft RibbonHero - Making You Better Your Job

RibbonHero is a game that helps users discover new Microsoft Office features in a fun and motivating way. The goal is to have users build familiarity and expose them to the Office UI, so that they understand what kind of features are available, which according to the belief that Office "has a lot of powerful features that users might not know but can be really useful". The game gave users a chance to game experience with software outside of typically dry IT training videos.



(a) Quest to earn points

(b) Competing a task

Figure 2.4: RibbonHero Helps to Learn Office

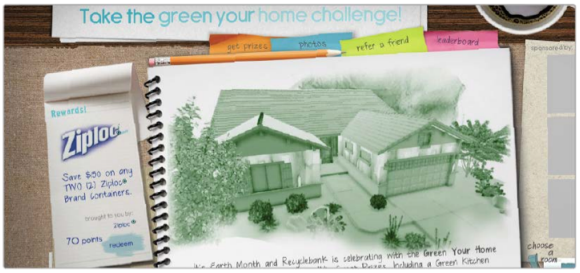
2.2.4 RecycleBank - Making the World Sustainable

RecycleBank introduces a series of "Green Challenges" that used gaming techniques to motivate participants to learn about green living and to take small green actions to live more sustainable lives. 49,000 individuals participated in the "Green Your Home Challenges". Partnered with Google Analytics and ROI research, they found that:

- Gamification can increase awareness of positive environmental actions. 97% of participants surveyed said the game increase their knowledge of environment.
- Games can drive individuals to take positive social and environmental actions. Most participants surveyed indicated they are very or extremely likely to take green actions as a result of participating in the challenge.
- Games are an effective and appealing educational tool. 86% participants agreed online games and contest can be a good way to inform and educate them personally.

2.3 Why Games and Now

Gamification is not about games, in fact as a subject gamification is deals with everything else but games. But the research in gamification have to largely base on the studies of games. The games



(a) Green Your Home Challenge

What green actions do you take?	Pre	Post	% +
I turn off the lights	18%	26%	44%
I use CFL/Eco bulbs	28%	38%	36%
I conserve water/energy	34%	45%	32%
I buy local produce	0%	14%	----
I wash clothes in cold water	0%	7%	----

(b) Game Change Behavior

Figure 2.5: RecycleBank - Gaming for Good

already prove to be an effective engaging media and ubiquitous as every day life. "Video game is everywhere" is the critical thesis of many gamification advocates.

Carnegie Mellon University professor and game designer Jesse Schell, who ignited the first wave of interest in gamification with a keynote address at the 2010 Design Innovate Communicate Entertain (D.I.C.E.) Summit, mentioned that he was surprised so many people took interest in his presentation now. He had talked about the phenomenon for years with little response. Even before, back in 2008, Gabe Zichermann coined the term "funware", which is the use of game mechanics in non-game contexts to encourage desired user actions and generate customer loyalty [wikipedia]. But now the term gamification replaces funware and climbs to the peak of the hype cycle within one year.

Why Now? According to Schell, "We're moving from a time when life was all about survival to a time when it was about efficiency into a new era where design is largely about what's pleasurable". Online games have entered the mainstream and become the new revolution of culture shift, helped by platforms such as smart phones, tablets and Facebook, and gamification is a way to arrive at a "fundamental understanding of what it is that's pleasurable to people" from many aspects of life.

In his book "Total Enagement" [17], Stanford professor Byron Reeves describes a "Game Tsunami" is happening now, "Games Are Big" in three ways:

1. Big Bucks. Game industry is already a $10 billion market, one of the largest existing entertainment categories. Besides the traditional console and software sales, the current model of subscription fees, virtual goods sales and in-game purchase also account for the huge revenue for the game industry.

2. Big People. The stereotype about the majority gamers are unemployed youth is easily proved wrong. One research reveals that across all computer games, the average age of gamers is thirty-five, and 26 percent of players are over fifty, an increase from 9 percent in 1999. [ref] ; Another research the mean household income of players in one popular MMO (Multi-Player Online game) was about $85,000, and almost two-thirds of the players have some college education.

3. Big Time. "One sizable cohort of players who are thirty-something, most with a full-time job and many with a family, play MMOs over twenty-five hours per week, compared with seven hours a week for all video games.

One the similar landscape, researcher and game designer Jane McGonigal also advocate playing game is the solution to the "Broken Reality" in her book[13]. She notes that currently more than 3 billion hours a week is spent in playing video game by our society, for good reasons. She says that the average gamer plays 10,000 hours of games by age 21. Thats about the same number of hours

that students spent in high school and middle school. There are 500 million gamers today, playing on all sorts of platforms from the iPhone to the game consoles. Instead of the common conception that gaming is a waste of time, she argues that "playing games is the single most productive thing we can do with our time."

The following sections examine a few popular games and genre to understand why game give games such power in our society.

2.3.1 Ancient Board Games

In the British Museum's department of Greek and Roman antiquities, there is an exhibition section about ancient games. The description of the exhibition states that "We know very little about how most ancient games were played. Their rules were probably too familiar for people to take the trouble of writing them down.". A favorite subject of Greek vase-painters was Ajax and Achilles playing a kind of board game called backgammon as exhibited in the British Museum (Figure [ref]). It is noteworthy that both Ajax and Achilles have the full armor on while playing the game. According to Arthur A. Krentz.[9] Plato's Republic states the connection between play and education of both adult and children. He points out that, etymologically in Greek the terms "paideia," the word for education/culture, "paidia," the word for play/game/pastime/sport and "paides" the word for children, have the same root, and the three terms often show up in the same context. "The central aim of pedagogy (paidagogia) is to encourage learning as a form of play (paidia), which is the most persuasive and effective approach to learning for the free citizens in a society which honors philosophers.".

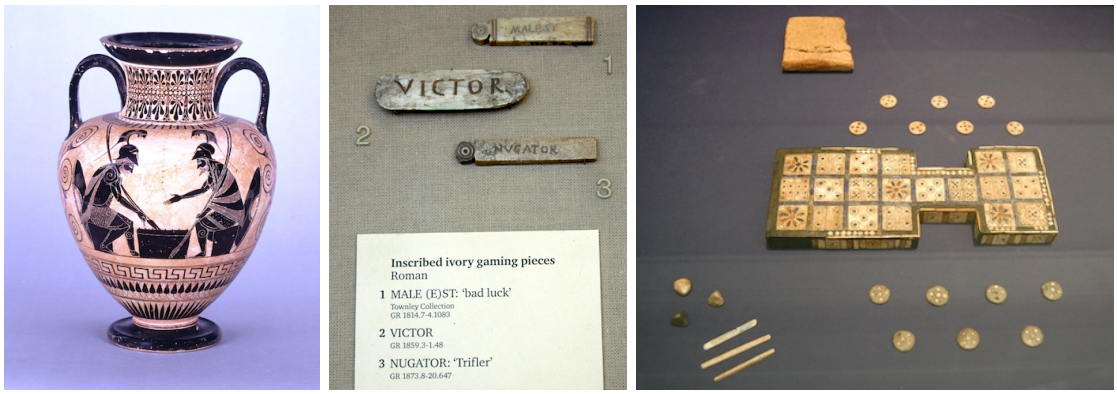
Another set of pieces belonging to a game exhibited are the label-shaped ivories, inscribed on one side with words, such as MALE (E)ST (means "bad luck"), NUGATOR ("trifler"), etc., and on the other with numbers. The whole series of numbers on these ivories runs from 1 to 25, and includes in addition 30 and 60; The highest numbers have inscriptions of a complimentary character, e.g., FELIX ("lucky") and BENIGNE ("kindly").[22] The pieces may have been used in the Roman game called "the game of soldiers". In the current day world, one can relate the worded and numbered ivory pieces to the badges in modern games.

An important game antique in the British Museum is the Royal Game of Ur, dated from the First Dynasty of Ur, before 2600BC. It is one of the most popular games of the ancient world, and probably the oldest set of board game equipment ever found. The beauty of the equipment is still amazed by the audience today. It is said that the game is still played in Iraq. [wikipedia]

2.3.2 Angry Birds: the Additive Casual Game

In today's tech world, no gaming platform is completed without the new star game Angry Birds. This simple game has been downloaded over 300 million times, and has been played roughly 200 million minutes a day across the world, that is 1.2 billion hours a year. According to Neiman Journalism Lab[ref], all person-hours spent creating and updating the entire wikipedia totals about 100 million hours. That is half day of the Angry Birds play time.

Why is this seemly simple game so massively additive? Charles Mauro [ref] discussed the cognitive ways of Angry Birds in Human factor engineering (aka usability engineering) for the sake of answering the more "important" real world question, "why users don't find their company's software or product engaging?": (1) Simple Engaging Interaction Concept: Angry Birds' simple interaction model is easy to learn and incremental increase of complexity with anticipated rewards. (2) Cleverly



(a) Ajax and Achilles Playing (b) Ancient Game Badges (c) The Royal Game of Ur

Figure 2.6: The Beauty of Ancient Board Games

managed response time: In Angry Birds design, it is not "faster is better", instead, different birds have different trajectory time and the flight path of the bird is intentionally illustrated. It solved one huge problem for user interfaces - error correction.It also take a seemly long time for the pigs to expire once their house are collapsed, this non-functional time delay increases the playfulness of the game and bring users entertainment.

Michael Chorost [2] explains that Angry Birds is addictive because: (1) its simple, with no learning curve to get going; (2) its rewarding we get a primitive pleasure in blowing stuff up; (3) its realistic the physics of the game are just as youd expect; and (4) its funny the sounds, laughter and backflips are amusing. The anticipation of reward puts your dopamine system into overdrive, which makes you compulsively want to know what will happen when you fling the next bird.

2.3.3 FarmVille: Social Games

With the motto "Connecting the world through games", Zynga who found in 2007 quickly become the top game company catching up to the more traditional establishment such as EA and Activision Blizzard. With the help of socal network platform Facebook, the FarmVille and CityVille quickly become the most popular games within Facebook. Zynga later expanded the games into other platform such as mobile and new google+ social network.

FarmVille has 71 million active players and although it is free to play, Zynga is estimated to generate $50 million in revenue from the most engaged players who buy virtual goods in game. Phil Michaelson [16] writes about 8 tactics that FarmVille uses to design for Engagement:

1. Reward users for returning in a short time period.
2. Reward users for helping friends every day.
3. Allow users to create without typing.
4. Show progresseverywhereon everything.
5. Make users feel lonely without friendsbecause if they get friends on, theyll stay longer.
6. Enable self expression.
7. Offer increasing levels of complexity for mastery.
8. Have surprises and limited time events.

2.3.4 World of Warcraft : Alone together in MMORPG

World of Warcraft (WoW) is a massively multiplayer online role-playing game (MMORPG) with 11.1 million subscribers, currently the world's most popular MMORPG.

From his research in MMORPG, Nick Yee, [24] describes 5 Motivation Factors for Why People Play them:

(1) Relationship: This factor measures the desire to develop meaningful relationships with other players in the game - usually in the form of a supportive friendship.

(2) Immersion: This factor measures the desire to become immersed in a make-believe construct. Players who score high on this factor enjoy being immersed in a fantasy world they can wander and explore.

(3) Grief: This factor measures the desire to objectify and use other players for one's own gains. Their means may be both outward or subtle by killing or deceiving.

(4) Achievement: This factor measures the desire to become powerful within the construct of a game. Players who score high on this factor try to reach the goals as defined by the game.

(5) Leadership: This factor measures the gregariousness and assertiveness of the player. Players who score high on this factor prefer to group rather than solo.

Most of the activities offered by a MMORPG are already present in single player games. What makes a difference for many is apparently the shared experience, the collaborative nature of most activities and, most importantly, the reward of being socialized into a community of gamers and acquiring a reputation within it. [25]. its the people that are addictive, not the game

Based on longitudinal data collected directly from playing the game, Nicolas Ducheneaut etc [4] concludes that

(1) WoW is not just communities, as most MMORGPs emphasize. In the basic, WoW truly is a virtual Skinner box [23] , smoothly increasing reward and difficulty and reinforcing player commitment along the way. Players are always on the edge of opening up new abilities, of discovering new content.

(2) Many of WoWs subscribers play alone with a different kind of social factor, "audience", a sense of social presence. It is different than the quest grouping that providing direct support and camaraderie. There are three appeals in being "alone together" in multiplayer games: (a). interacting with an audience: MMORPGs are in essence reputation games - an avatar wearing powerful items, for instance, is essential to the construction of a players identity (b). Being surrounded by others. (c). Laughing at and with others.

2.4 Why Gamification ?

2.4.1 Game can change the world

In her popular and inspiring TED talk "Gaming can make a better world" [14] and her book "Reality is Broken", [13], researcher and game designer Jane McGonigal illustrated why good games make us better, and how they can help us change the world. She said "Reality is broken", and game is the fix. Games are nothing more than unnecessary obstacles that we volunteer to tackle. Why are we spending so much time on unnecessary obstacles? McGonigal says it has a lot to do with eustress, or positive stress. Based on the findings of positive psychology, She argues that the blissful productivity comes from the flourishing feeling, i.e., Positive Emotion, Relationships, Meaning and Accomplishments.

Another instrumental work came from Byron Reeves's book "Total Engagement", [17]. He argues that games, especially MMO type games and virtual worlds, can change the way people work and business compete. He illustrates ten ingredients of great games and how to use them to design a better productive work place. (1) Self-Representation with Avatars (2) Three-Dimensional Virtual Environments (3) Narrative Context (4) FeedBack (5) reputations, ranks, and levels (6) Marketplaces and economies (7) Rules that are explicit and enforced (8) Teams (9) Comunication system that can be reconfigured by participants (10)Time pressure.

2.4.2 A Game Layer On Top Of The World

Seth Priebatsch, young CEO at startup SCVNGR, gave a great talk at TED titled The game layer on top of the world. His main message is: Last decade was the decade of social. This next decade is the decade of games. social layer's purpose is to connect; a game layer is to influence.

How to build a game layer? He claims there are seven game mechanics that can get anyone to do anything, and lists four of them: 1) Appointment dynamic: in which to succeed, players have to do something at a predefined time, generally at a predefined place. 2) Influence and status: the ability of one player to modify the behaviour of anothers action through social pressure. 3) Progression dynamic: success is granularity displayed and measured through the process of completing itemized tasks 4) Communal discovery: a dynamic wherein an entire community is rallied to work together to achieve something, to solve a challenge. It leverages the network that is society to solve problems.

2.4.3 Game Based Marketing

In his book "Game Based Marketing", Gabe Zichermann stated that "Funware", aka, Gamification, is about taking the lessons learned from the games industry around points and badges and levels and challenges and achievements and bake those into any kind of life experience. Games can help improve the outcomes in every aspect of life. Marketing has always been about a certain degree of persuasion and motivation, and a degree of manipulation. Games do that most effectively. "Game mechanics and the psychological conditions (Funware) exploit are powerful tools that marketers can use, and they are a lot cheaper ... than cash in the long run." "Games are the only force in the known universe that can get people to take actions against their self-interest, in a predictable way, without using force.". This resonates the volunteering attribute of game play in McGonigal's book.

2.5 Gamification vs Serious Game vs Persuasive Game

A Serious game is a game designed for a primary purpose other than pure entertainment (Wikipedia). It include games that make use of computer technology and advanced video graphics and that are used for the purposes of learning and training. Its category includes educational games and advergames, political games, and training game (also known as game-learning).

One excellent example is Fold.it,

It is interesting to see that although the concept of serious games has been around since long before gamification, gamification has arguably steps into the mainstream whereas serious games stay in much smaller scale.

http://uxmag.com/design/why-persuasive-design-should-be-your-next-skill-set

Persuasive Design: A Framework for Changing Behavior Persuasive design is the process of creating persuasive technology, or technology that is designed to change attitudes or behaviors of the users through persuasion and social influence, but not through coercion. - Wikipedia / BJ Fogg

In other words, it is the use of psychology in design to influence behavior. With a focus on psychology.

2.6 Science behind Game and Gamification : Motivation and Behavior Change

Researchers from Physcology, game industries and acamedic, have studied the psychology of motivation that makes online games so engaging. Online games are voluntary experiences that become so addictive that "people [who play them] won't even go to the bathroom [in the middle of a game]," Rigby pointed out.

2.6.1 Flow

Psychology professor Mihaly Czikszentmihalyi introduced a specific kind of happiness that he named "flow"[3], which is widely accepted to be one of the fundamental reasons that people play games. Flow, a state of absorption in one's work, is characterized by intense concentration, loss of self-awareness, a feeling of being perfrectly challenged (neither bored nor overwhelmed) and a sense that time if flying.

As Csikszentmihalyi describes, there are seven core components of flow that are summarized in Table 2.1. These components can be broken into two categories: conditions and characteristics. Conditions must be achieved before flow can be reached. Characteristics occur while a person is in flow, even though they may be unaware of it.

Table 2.1: Flow Condition and Characteristics

Conditions of Flow	Explanation
Clear tasks	Person understands what they must complete
Feedback	Person receives clear and immediate feedback showing what succeeds and what fails
Concentration/focus	Person is not distracted and can fully attend to the task
An attainable, balanced goal	Goal is challenging and within their abilities to complete
Characteristics of Flow	Explanation
Control	Person believes their actions have direct impact on tasks and that they can control the outcome
Diminished awareness of self	Complete focus on the task leaves little room for feeling self-conscious or doubt. Often described as becoming a part of the activity.
Altered sense of time	Perception of time is distorted. Seconds can feel like minutes, minutes like hours. Yet, time also passes by quickly, unnoticed.

In order to achieve the flow, the right conditions above must exist. The last and the most important condition is a balanced goal that is challenging yet achievable within the individaul's

ability. A task that is not challenging or requires excessive time to complete becomes boring and players lose interest; A task that is too hard causes frustration and anxiety and again players lose interest. With a persons skills improve over time, the challenge needs to increase along with the improving skills. This balance is referred to as the flow channel as shown in figure 2.1 (based on a diagram from Csikszentmihalyi, 1990, p 74).

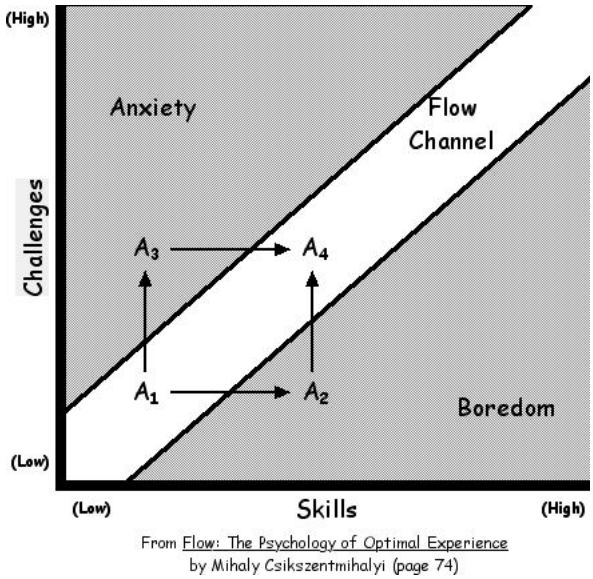


Figure 2.7: The state of flow is achieved between anxiety and boredom

2.6.2 Player Type

In order to understand why people play games, Ricahrd Bartle identified four player personality types by studying players of MMOGs (massively multiplayer online games), as shown in Figure 2.2

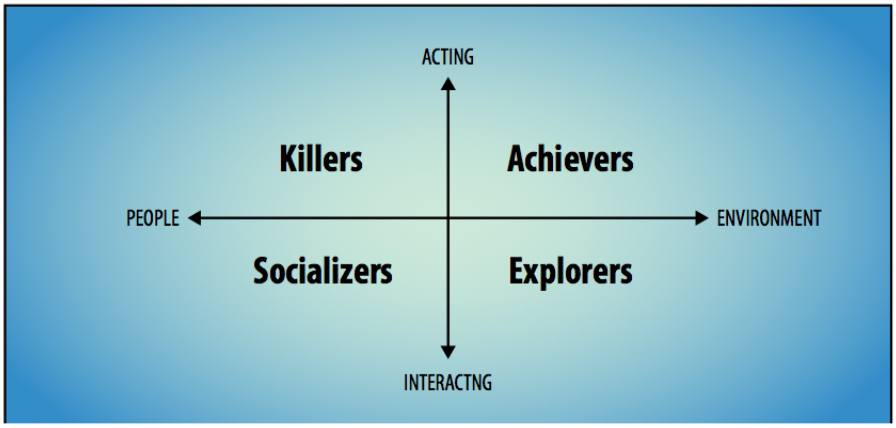


Figure 2.8: Bartle's Player Types

1. Explorers have a clear inclination towards discovery

2. Achievers are definitely motivated by the accumulation of experience points, status and ranks associated with their proficient use of the software

3. Killers are motivated by challenge, competition, and the rapid pace of usage as in a first-person shooter game.

4. Socializers like to socialize in a collaborative non-confrontational environment.

One study [ref?] found that approximately 80% of the populations are Socializers. Explorers, achievers and killers make up only about 20% of the population.

2.6.3 Fogg Behavior Model

Stanford University's researcher BJ Fogg [ref] introduces the Fogg Behavior Model (FBM) to explain what causes behavior change. The model shows that three elements, Motivation, Ability, and Trigger must converge at the same moment for a behavior to occur.

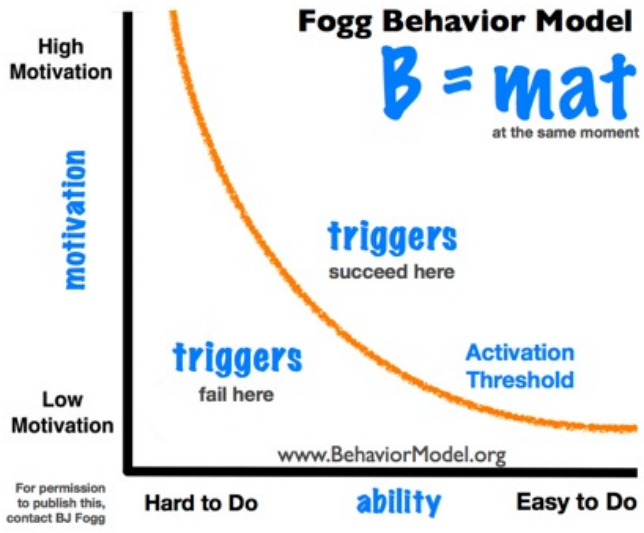


Figure 2.9: Fogg Behavior Model

1. Motivation: the person wants desperately to perform the behavior (i.e. he is highly motivated)

2.Ability: the person can easily carry out the behavior (i.e. he considers the behavior very simple)

3. Trigger: the person is triggered to do the behavior (i.e. he is cued, reminded, asked, called to action, etc.)

There are a few main tenets of the discipline: Behaviors can be classified based on whether they are positive or negative, and how long they will be sustained. (See the behavior grid) A persons motivation and ability determine whether they will perform a behavior or not. (See this illustration) Insights from psychology can be used to change someones motivation or ability, thus influencing the likelihood of a behavior. Triggers are single design elements that change motivation or ability. Triggers have a strong element of timing; they are most effective when presented when someones motivation or ability are already at peak levels.

Michael Wu [ref] uses FBM to analyze why and how gamification are able to drive actions. "Game mechanics and game dynamics are able to positively influence human behavior because they are designed to drive the players above the activation threshold (i.e. the upper right of the ability-motivation axis), and then trigger them into specific actions. In other words, successful gamification is all about making these three factors occur at the same time."

Wu describes a Fogg Behavioral Model and suggests that Gamification is an iterative process and works best when motivation, ability, and trigger (what they are told) all three of these converge. If a game you designed is not working, assess all three elements, figure out which elements need changes and improvements, and then, redesign the game in your feedback system accordingly to get the desired response.

2.6.4 Persuasion Profiling

Researchers at Stanford, [7], for example, have begun to develop the technique of persuasion profiling. This technique builds a profile of which psychological triggers work best for a given person, and uses these triggers to drive new behaviors in the future. In other words, beyond focusing on what content someone might prefer, this approach determines the how to deliver it most effectively.

[8] Cialdinis six principles of persuasion [2][3] - six ways of framing a persuasive request to increase behavioral compliance : 1. Principle of reciprocation: People feel obligated to return a favor. 2. Principle of scarcity: When something is scarce, people will value it more. 3. Principle of authority: When a request is made by a legitimate authority, people are inclined to follow / believe the request. 4. Principle of commitment and consistency: People do as they told they would. 5. Principle of consensus: People do as other people do. 6. Principle of liking: We say yes to people we like.

2.7 Gamification Debates and Critiques

Debate continues over whether gamification itself is inherently good or bad. That is, is its use motivated by bad intentions to dupe people into doing things that aren't necessarily in their best interest? Or are some attempts at gamification merely poorly executed, so that its effects are superficial and fail to transform people's behavior in long-lasting, positive ways? "If gamification is fundamentally about tricking people to feel happier about situations that aren't going to be better [for them], then it's problematic on a lot of levels – both ethically and in effectiveness in the long term," according to Kevin Werbach, a Wharton professor of legal studies and business ethics who organized the conference with Dan Hunter, a professor at New York Law School. "The question is: What are the aspects of [gamification] that are really about meaningfully improving people's experience?"

After his inspiring talk in DICE2010, Jesse Schell and Bryan Reynolds (Zynga chief designer) discussed about "Gamification vs. Gameplay" in DICE 2011's opening session "Hot Topic". [20] . They are arguing in a very basic level of the definition of gamifcation. Brian considered "Gamification is where you use game elements to try to get people to do stuff they don't want to do", while Schell responded that "It's a problem solving situation that you enter into because you want to". Reynolds argued Everyone who has tried to use game mechanics to improve their marketing has only managed the most basic concepts, and Schell responded that this was the developers', not the concepts fault.

In a debate-style session of GDC 2011, "The Great Gamification Debate", [12] panelists argue the merits of bringing gameplay mechanics to just about everything. On the pro-gamification side was Jane McGonigal (Social Chocolate), Margaret Robertson (Hide & Seek), and Jesse Schell (Schell Games). On the other side of the table was Eric Marcoullier (OneTrueFan), Ross Smith (Microsoft), Ian Bogost (The Georgia Institute of Technology), and Margaret Wallace (Playmatics). Although they most agreed that definition of gamification was summed up best by Schell, "gamification is taking things that aren't games and trying to make them feel more like games.", there are a lot different opinions between the two sides. While Jesse Schell believes the gamifcation is the cultural shift in every day life, Ian Bogost considers that the purpose of gamification is to cash in on the current popularity of games. While Margaret Wallace said "If a word gains traction, why fight it?", Bogost disagreed, saying that words actually do matter. Regarding the concept of intrinsic and extrinsic rewards through gamification, Schell notes the definition is "squirrely". While the idea of gamification is reduced by some to merely behavioral conditioning or creating a kind of Skinner box for users, McGonigal maintainned that users should at least find a reward of value.

As we see now, while the gamification is hailed as the next big thing in our future of life, there are a lot of criticism from academia and industry.

Designer Umair Haques post Unlocking the Mayor Badge of Meaninglessness [5] arguing "too much gamification is about zero sum games: often, for me to win, you've got to lose. For example, many "gamified" sites simply offer a fixed number of badges, trophies, or other trinkets, to the first N participants that, for example, visit six different pages. That's because, third, many games are relying on or worse, trying to create artificial scarcity."

Designer Stephen Andersons presentation Long After the Thrill: Sustaining Passionate Users [1] argues (a) gamification mistakes extrinsic rewards (rather than intrinsic motivation) for the power of games and hence offers only feedback, not goals & rules, (b) a long-term successful product or service thats not pure entertainment most go beyond delight/entertainment and be first & foremost useful.

Jane McGonigal, talked in GDC 2011 that We dont need no stinking badges: How to reinvent reality without gamification, [15] argued gamification confuses intrinsic/extrinsic motivation and propose "Gameful Design" instead of gamification.

Many critiques are surrounded with the suggestion that current gamification is shallow and superficial, as Ben Sawyer states, "is really gamification 1.0 (at best).". [**?**] Most gamification does not provide and thus does not reward with in-game strategy. There is no grand mystery to unravel, no in-game process to optimize, and so it really isnt a game. Instead what he see as Gamification 2.0 is sort of something of a combination of alternate reality games and augmented reality.

The followings are a few more eminent critiques of gamification:

2.7.1 Gamification is Bull*it

At the Wharton conference, Georgia Institute of Technology professor and game designer Ian Bogost called gamification efforts "exploitation-ware" that is being "invented by consultants as a means to capture the wild, coveted beast that is video games and to domesticate it for use in the grey, hopeless wasteland of big business." Gamification, he argued, "gets games wrong, mistaking incidental properties like points and levels for primary features like interactions with behavioral complexity.". In the GDC 2011 gamification debate, he states that "To take something like games, which are

complicated, and substitute it out for points and badges is a very efficient way to get a hot culture commodity into your product".

2.7.2 Poinstification

In her blog, [18], Game designer Margaret Robertson criticizes that "Gamification is an inadvertent con. It tricks people into believing that theres a simple way to imbue their thing with the psychological, emotional and social power of a great game". She states that Gamification is the wrong word for the right idea. The word for whats happening at the moment is Pointsification. The current use of gamification is a bad thing because its a misleading title for a misunderstood process. Points and badges are the least important bit of a game, the rich cognitive, emotional and social drivers which game designer are intending to connect with.

Pointsification, in and of itself, is a perfectly valid and valuable concept which nonetheless needs to be implemented carefully with due concern for appropriateness and for unintended consequences; while the actual gamification, (in her definition,) namely the conversion of existing systems into functioning games, is also a valid and valuable process which carries its own concerns, in other words, games are good, points are good, but games != points.

2.7.3 Can you gamify a suicide hotline?

Can you gamify everything? "No, you can not gamify game". According to Gabe Zichermann, the idea of baking game mechanics into everything you do is fun, but when asked how would you make a suicide hotline fun, he admitted that adding games to a suicide prevention seems distasteful at first, but he could add a game mechanics like a competitive environment in a call center setting.

2.7.4 Gabe Vs Sebastin

it a merely buzzword, a hype-up version of mileage loyalty program, or a superficial pointification, where often misses element such as storytelling and experiences which are central to what make games effective.[ref]

Gamification is naturally suspect if it is used by corporations, terrorist organizations or others with the intention of potentially causing harm – whether to push the sales of useless products and services like subprime mortgages, or to lure recruits into suicide missions. Even if the goals of gamification are exemplary, however, does gamification merely gloss over real problems that require real answers? For example, does awarding participants points and using other incentives through the HopeLab program significantly impact the root causes of teen obesity in low-income neighborhoods, such as the lack of access to, and the high price of, fresh fruits and vegetables? By gamifying the problem, "you're spreading butter over toast so it tastes better, but it doesn't solve the problem," Georgia Tech's Bogost pointed out.

2.7.5 Intrinsic Vs Extrinsic rewards

But Carnegie Mellon's Schell cautioned against writing off extrinsic rewards without a deeper understanding of the psychology behind motivation. "We don't fully grasp the complex relationship between intrinsic and extrinsic rewards," he noted. And extrinsic rewards can be a catalyst for intrinsic motivation, added Michael Wu, chief scientist of Lithium Technologies, a social networking research and consulting firm. "Using an extrinsic reward is a good way to get people to start doing

something," he said. Although the outside incentive may be the initial reason that people adopted a particular activity, Wu suggested that they may ultimately develop internal motivators. Once teens start losing weight and looking better, spurred by the lure of HopeLab's Zamz currency, for example, they may embrace a healthier lifestyle because it makes them feel better about themselves.

Current efforts at gamification come with other pros and cons, including the relative value of extrinsic motivators (such as points, badges and rewards) versus intrinsic motivators generated by an individual's internal will or desires. "In the long run, [extrinsic rewards] are not fun," said Nicole Lazzaro, Founder of XEODesign, which helps companies such as Sony, Sega and Leapfrog improve player experiences. "The use of extrinsic motivation will decrease motivation to use your products and services once you remove that reward.... You have to keep upping the dose to have the same motivation and change in behavior over time."

Extrinsic motivators may lead to merely short-range activity while actually reducing long-range interest in a topic, while in Intrinsic motivatiors, people are best motivated when they are working toward personally meaninful goals whose attainment requires activity at a continuously optimal (intermediate) level of difficulty. [21]

2.7.6 Meaningful Play

On a side note, I elaborated on some more potential side effects here: http://www.slideshare.net/dings/meaningful-play-getting-gamification-right .

In other words, if you have no choice in the matter, its not a game.

When it comes to psychology and game design, 1. confusing intrinsic/extrinsic motivation when it comes to why games are fun leads to 1a. mistaking points/feedback (= rewards) to be game design, rather than rules/goals (= challenges). 1b. overlooking the side effects of extrinsic rewards and quantitative performance measuring.

When it comes to ethics and political economy, 2. gamification can be used for evil purposes, specifically 2a. making something fun can actually be a Huxleyan way of exploiting and abusing people even more fully and stealthily than coercion, 2b. morally disenfranchising and dumbing down people.

2.8 Gamification Design: HOW

2.8.1 Gamification 1.0

Different game mechanics and elements can be used to serve different functions in satisfying players' needs:

2.8.2 SCVNGR Game Mechanics Playdeck

The entire SCVNGR game mechanics playdeck was published on TechCrunch []. http://techcrunch.com/2010/08/25 game-mechanics/

a week later, social interaction designer Adrian Chan posted a blog, "I just killed a social game mechanic", comments on each of the decks 47 points. http://www.gravity7.com/blog/media/2010/08/507.html

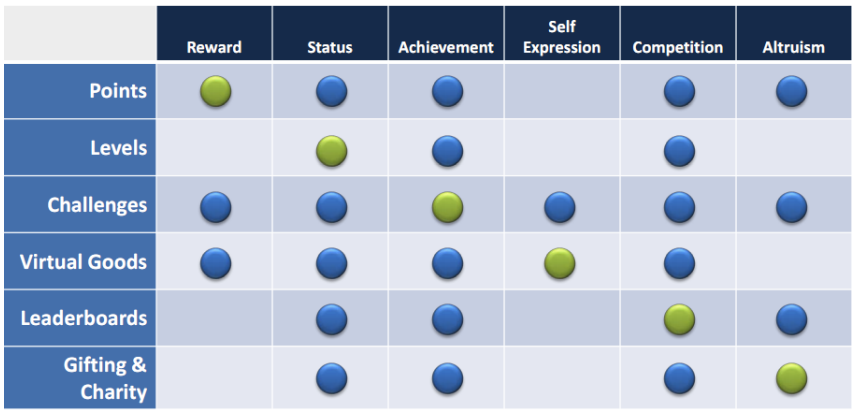


Figure 2.10: Game Mechanics and Elements Satisfies Human Needs

2.8.3 Four Keys to Fun

The Four Keys to Fun: Designing Emotional Engagement and Viral Distribution without Spamming Your Friends [10] Why do some games quickly go viral and others don't? What kinds of player experience make users tell their friends, "There's an app for that?" Nicole Lazzaro, president of XEODesign, explains how the kinds of choices users get to make in a game result in emotions that drive real engagement in play and self-propelled social distribution.

Lazzaro maps out the various emotions that users feel when experiencing what she calls "hard fun, easy fun, serious fun, and people fun." The most popular games will have elements of at least three of these four. By crafting user interfaces that maximize opportunities for each of these kinds of fun, game developers can raise the stakes, making their games more fun to play and more likely to go viral.

Social networks like Twitter, Facebook, and Flickr all have the capacity to spread new games and enhance game play, and Lazzaro identifies the unique aspects of each that game designers can use to successfully promote new kinds of satisfying play. Reducing the number of clicks to play or increasing the potential for deepening social bonds through play tend can push your game faster and farther. And incorporating true social features into your game, where the player's input alters the game experience for many players, is the new frontier of game development in the post-Wii world.

2.8.4 Smart Gamification

Amy Jo Kim presents Smart Gamification which focus on designing the effective Player Journey with intrinsic preferred over extrinsic reward.[ref]

http://www.slideshare.net/amyjokim/gamification-101-short-talk

Similarly, In his popular google tech talk, researcher Sebastian Deterding criticized the current practice of simple gamification and stress the important of meaningful play.[ref]

Jane Mcgonical is emphasizing the aspect of Playfulness in an gamification instead of game mechanics.[ref].

2.8.5 Gamification Design Frameworks

** MDA Game Design Framework: Mechanics/Dynamics/Aesthetics(MDA), introduced by game designer Marc LeBlanc, describes three pillars of a good game:

Mechanics: The rules and concepts that formally specify the game-as-system. They make up the functioning components of the game.

Dynamics: The run-time behavior of the game-as-system, They are the player's interactions with mechanics.

Aesthetics: The desirable emotional responses evoked by the game dynamics. They are how the game makes the player feel.

**A Gamification Framework For Interaction Designers

A Framework for Understanding Degrees of Gamification As the critics point out, some gamified products are just poorly executed. Just because you saw something in a game once doesnt mean itll be fun in your product. But I think that most of the critics of gamification fail to take into account the wide range of execution thats possible. Gamification can be applied as a superficial afterthought, or as a useful or even fundamental integration. To tease out some differences and to think about how to implement gamification, we at DesignMap have started to put together a framework: Cosmetic: adding game-like visual elements or copy (usually visual design or copy driven) Accessory: wedging in easy-to-add-on game elements, such as badges or adjacent products (usually marketing driven) Integrated: more subtle, deeply integrated elements like % complete (usually interaction design driven) Basis: making the entire offering a game (usually product driven).In the basis category, activities that werent games before have become games. The pleasure people get from playing games is layered onto everyday activities.

** SAPS Gabe Zicherman, chairman of at the Gamification Summit, talks about SAPS: status, access, power, and stuff. Gabes model may be a game-centric take on Maslows broader model.

There is a certain hierarchy of rewards, "SAPS": (Status, access, power, stuff). Status is what users want the most and stuff is what they want the least. Its not just about the lazy marketers who give discounts.

2.9 Gamification Service and Platform

2.9.1 Commercial and a bushfire of startups

This section outlines the current industry players that provides gamification service via platforms or consultation service. [see figure 2.1]

2.9.2 Mozilla - Open Badges Infrastructure

Open Badges[ref] is a project of Mozilla with support from the MacArthur Foundation to provide a software infrastructure to making it easy to issue and display badges across the web. It uses shared badges as the recognition for all types of learning and achievement that take place anywhere, such as a skill learned from after-school program, a certification earned or simply an achievement of providing useful technical answers. The badges could be displayed in the personal or social website, or being used in the job search as a convenient showcase of applicant's qualification.

Figure 2.11: Gamification Service Industry

2.9.3 Open Source Gamification Platform

Userinfuser [ref] is an open source platform that provides customizable gamification elements designed to increase user interaction on websites. The project involves badging, points, live notifications, and leaderboards. Additonally, the platform provides analytics to track user participation. The current documentation shows the following widgets available in the platform.

2.10 Gamification Analytics

[4]

2.10.1 E-Score

E-Score is introduced by Gabe Zichermann, mainly applies in marketing gamification.[ref] These are the metrics that go into the score: Recency How long ago did they visit? Frequency How often did they come back? Duration How long did they stay? Virality How many people have they told about you? Rating What did they explicitly say when asked about you?

2.10.2 Fun Meter

[11]

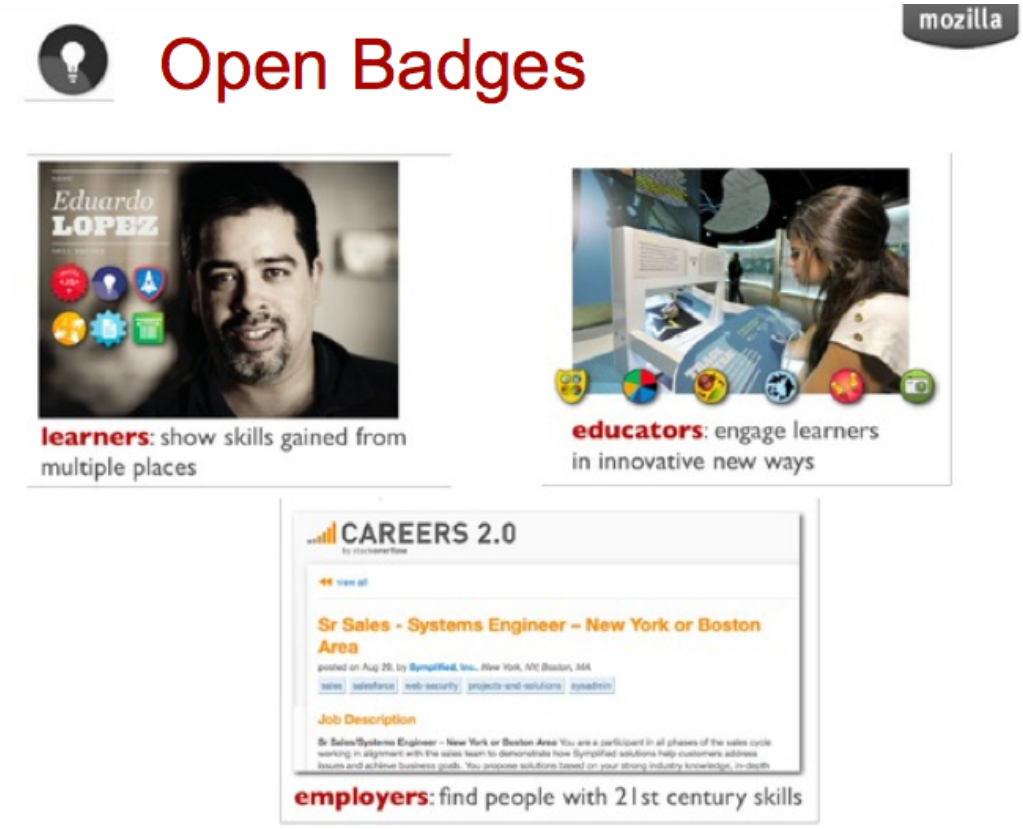


Figure 2.12: Mozilla - Open Badges Infrastructure

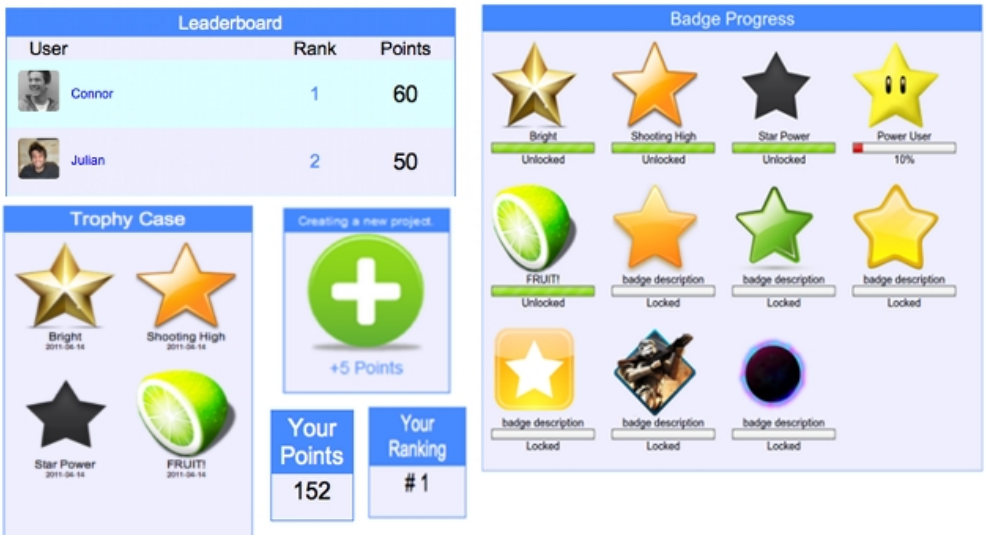


Figure 2.13: Open Source Gamification: Userinfuser Widget

2.10.3 Player Experience

Game usability: Advancing the Player Experience [6]

The objective evaluation of Player Experience (PX)[ref] in games is the goal of game metrics and analytics research. With the technology advancement, it is possible to automatically log numerical informations on in-game player behaviour and analyze them in different context. This methodology provides a qualitative and quantitative result of the player experience in games, which in turn affect the result of gamification.

2.10.4 social game metrics

http://www.appdata.com/apps/facebook/102452128776-farmville

Player metrics are employed most widely by social/Facebook game designers to determine what the playing audience likes and dislikes about a current game experience. The game is then built up around that opinion. Given that development on a social game technically never stops, employing player metrics makes senseespecially since an unhappy player can jump ship and take his or her money to any of the thousands of social games currently available.

Source: top 10 social game metrics

1. Entry Event Distribution
2. Exit Event Distribution
3. Message/Post/Comments distribution
4. Message Click Through Rate
5. Engagement time
6. Revisit Rate
7. Virality (K-factor)
8. Lifetime Network Value
9. Conversion to paying users
10. Average Revenue Per Paying User

[Explain above metrics with the following glossary] The Secret Glossary of Social Games Analytics http://www.wavedash.net/2010/04/the-secret-glossary-of-social-games-analytics/

ARPU

A term carried over from Telecom companies, Average Revenue Per User (ARPU) is measured as total revenue divided by the number of subscribers. This includes revenue from subscriber fees, virtual goods, affiliate marketing and ad impressions. Because social games are so metrics-heavy, ARPU can be broken down by day, by country, by demographic, or by pretty much any other metric.

Churn

The turnover rate (or attrition rate) of a social games active players. The noise level in casual gaming is extremely high, which means social games have a user base that is constantly changing as gamers abandon the game or delete the Facebook app. Churn refers to this constant loss and gain of members.

Cohort

A common term in statistics, a cohort is a group of subjects who have shared a particular experience during a particular time span. In social gaming metrics, cohorts are used for analyzing retention. By organizing users in groups such as everyone that visited on June 10th and analyzing the percentage that revisit, you can pinpoint what promotions are having the greatest effect.

DAU

Daily Active Users (DAU) is just what it sounds like: the number of active users over the course of a single day.

DAU/MAU

The DAU/MAU ratio is one of the hot metrics in social games. Comparing Daily Active Users to Monthly Active Users shows roughly how many days per month your average user engages with your game. If you have 500,000 daily users and 1 million monthly users, the DAU/MAU is .5, translating to the average user logging in 15 days per month. The DAU/MAU ratio is strongly correlated with social gaming success. According to Lisa Marino from RockYou, the minimum threshold for DAU/MAU is .2. This is necessary for a game to hit critical mass virality and engagement.

Engagement

Facebook players typically have dozens of active games at a time. Engagement measures how long they spend playing your game. How many features do they access? Are they spending hours or seconds? How many pages does the average user view? What percentage are returning visitors?

Entry Event

An entry event is the first action a user performs when they enter the game. Online social games can track every action you perform, and the Entry Event Distribution is one of the more important metrics to follow. What do your users do first? Which entry events are the most effective at bringing people back?

For example, you might find that a majority of your users log in when they receive a gift, and the first thing they do is check that gift. By determining the more popular entry events, you can push more resources towards them, thus increasing retention, engagement and re-engagement.

Exit Event

The opposite of entry events. Exit events are the last actions a user performs before exiting the game. Tracking the Exit Event Distribution helps show why users are disengaging with the game.

K Factor

K Factor measures the virality of your product. K Factor = (Infection Rate) * (Conversion Rate). An Infection Rate is how much a given user exposes the game to other players, such as through status updates or email invites. A conversion rate, as marketers know, is when that infection results in a new sign up (or install.) Put more simply, a K Factor of 1 means every member is bringing you one additional member. A high K Factor is treasured by social game publishers, because it becomes a very effective vehicle for bringing in new players. Lifetime Network Value The value a user provides to your network over the course of their entire lifetime on the network. For instance, is the user contributing to viral effects? Evangelizing the game? Contributing positively to ARPU? This is compared to the User Acquisition Cost, or how much it costs (via marketing and viral efforts) to bring in new members. According to Facebook app analytics provider Kontagent, a (very basic) equation is 1/(1-k) * Monthly ARPU * User Lifetime.

MAU

Like DAU, Monthly Active Users (MAU) tracks the total number of users in a given month.

Re-Engagement

Gamers stop playing eventually. Re-engagement is how you get them back. It includes re-engaging gamers who have been signed off for an hour, a day, a month, or more. Theres a lot of competition out there, so implementing and tracking re-engagement practices is a must.

Retention

Think of it as the opposite of churn. Retention is how well you maintain your userbase.

Viral Rate/Virality

Viral growth is the name of the social media game. Measured by K Factor, the Viral Rate/Virality shows how much your users are promoting, evangelizing and spreading your game. Because of this, social games are increasingly built around cooperation, competition and the constant addition of new features, which increase virality. Every feature is a source for growth, whether its liking, Facebook notifications or tweets. Not often confused with virility.

Chapter 3

Future Directions

It seems the major take away of reading the debates of gamification is that, before the novelty of simple gamification hadnt worn off, and it seemed like an amazing idea that everything could be made more fun and motivational with achievements and points. Now we know its crucial that we make good games, rather than take the easiest bits to reproduce (points) and apply them to everything.

There was a definite feeling of, Were only at the start of something here, a turning point, so we better steer it well throughout it all

In a field rife with anecdotes but little hard data, Wharton's Werbach and New York Law School's Hunter intend to develop in-depth case studies to examine the types of business problems organizations want gamification to solve, the techniques used and the results. According to Werbach, there currently are few bridges between game design as a craft and psychological research. "That's why research is valuable – to get beyond whether gamification is good or bad, and does it work or not." "

** Important People to Follow:

Jane McGonigal

Ian Bogost

Jess Schell

....

Chapter 4

Appendix

4.1 Game Mechanics

The gamification wiki [ref] compiles a comprehensive list of gamification mechanics and categories them into three types (Behavioral, Feedback, Progression) and their benefits in measurable metrics (Engagement, Influence, Loyalty, User Generated Content (UGC), Time Spent, Virality) and other non-metrics (Fun, Revenue, SEO).

Table 4.1: Mega List of Game Mechanics and Benefits, part 1

Types	Mechanics / Examples	Benefits	Personality Types
Progression	Achievements: normally represents as badge, completed something	Engagement, Loyalty, Time Spent, Influence, Fun, SEO, UGC	Achievers, Explorers, Killers
Progression	Levels: a system of reward for a cumulation of points, Often are unlocked as players progress to higher levels.	Engagement, Loyalty, Influence, Time Spent, Virality, Fun	Achievers, Explorers, Killers
Progression	Points: a running numerical value given for any single action or combination of actions.	Engagement, Loyalty, Influence, Time Spent, Virality, Fun, UGC	Achievers, Explorers, Killers
Progression	Progression: success is granularly displayed and measured through the process of completing itemized tasks, such as a progress bar.	Engagement, Loyalty, Influence, Time Spent, Fun, UGC	Achievers, Killers
Feedback	Appointment Dynamics: at a predetermined times/places a user must return for a positive effect	Engagement, Influence, Time Spent	Archivers, Explorers, Socializers
Feedback	Bonuse: a reward after having completed a series of challenges or a specific task	Engagement, Influence, Time Spent, Virality, Fun, UGC	Archivers, Explorers, Socializers, Killers

Table 4.2: Mega List of Game Mechanics and Benefits, part 2

Types	Mechanics / Examples	Benefits	Personality Types
Feedback	Cascading Information Theory: information should be released in the minimum possible snippets to gain the appropriate level of understanding	Engagement, Loyalty, Influence, Time Spent	Archivers, Explorers, Socializers, Killers
Feedback	Combos: reward skill through doing a combination of things, usally comes with the reward of a bonus	Engagement, Influence, Time Spent, Virality	Archivers, Explorers, Socializers, Killers
Feedback	Countdown: players are only given a certain amount of time to do something. This will create an activity graph that causes increased initial activity increasing frenetically until time runs out, which is a forced extinction.	Engagement, Fun, Influence	Achievers, Explorers, Killers
Feedback	Quests/Challenges: Challenges usually implies a time limit or competition whereas Quests are meant to be a journey of obstacles a player must overcome. a way to organize player effort.	Engagement, Loyalty, Revenue, Influence, Time Spent, Virality, SEO, Fun, UGC	Achievers, Explorers, Killers
Feedback	Reward Schedules: The fixed or variable timeframe and delivery of the rewards, contingency, response, reinforcer.	Engagement, Loyalty, Revenue, Influence, Time Spent, Virality, SEO, Fun, UGC	Achievers, Explorers, Killers
Behavioral	Discovery/Exploration: players love to discover and to be surprised.	Engagement, Loyalty, Influence, Time Spent, Fun	Explorers, Achievers
Behavioral	Epic Meaning: Players will be highly motivated if they believe they are working to achieve something great, something awe-inspiring, something bigger than themselves.	Engagement, Loyalty, Influence, Time Spent, Fun	Achievers, Explorers, Socializers, Killers
Behavioral	Free Lunch: getting something for free due to someone else having done work. Groupon	Engagement, Loyalty, Revenue, Influence, Virality, Fun	Achievers, Explorers, Socializers, Killers
Behavioral	Infinite Gameplay: do not have an explicit end, static state is its own victory.	Engagement, Loyalty, Revenue, Influence, Time Spent, Fun	Achievers, Killers
Behavioral	Loss Aversion: influences user behavior not by reward, but by not instituting punishment. the player having to perform an action to avoid losing something they currently have.	Engagement, Loyalty, Influence, Time Spent, Virality, Fun	Achievers, Explorers

Table 4.3: Mega List of Game Mechanics and Benefits, part 3

Types	Mechanics / Examples	Benefits	Personality Types
Behavioral	Lottery: the winner is determined solely by chance. winners will generally continue to play indefinitely while losers will quickly abandon	Engagement, Loyalty, Revenue, Influence, Time Spent, Virality, Fun	Achievers, Explorers, Socializers, Killers
Behavioral	Ownership: creates Loyalty by owning things.	Engagement, Loyalty, Revenue, Influence, Time Spent, Virality, SEO, Fun, UGC	Achievers, Explorers, Socializers, Killers
Behavioral	Community Collaboration: an entire community is rallied to work together to solve a riddle, a problem or a challenge. Immensely viral and very fun.	Engagement, Influence, Time Spent, Virality	Archivers, Explorers, Socializers
Behavioral	Behavioral Momentum: a tendency of players to keep doing what they have been doing	Engagement, Loyalty, Revenue, Influence, Time Spent	Archivers, Explorers, Socializers, Killers
Behavioral	Blissful Productivity: playing hard rather than relaxing makes you happier	Engagement	Archivers, Explorers, Socializers, Killers
Behavioral	Status: The rank or level of a player. Players are often motivated by trying to reach a higher level or status. Also relates to envy.	Engagement, Loyalty, Revenue, Influence, Time Spent, Virality, SEO, Fun, UGC	Achievers, Socializers,Killers
Behavioral	Urgent Optimism: The desire to act immediately to tackle an obstacle combined with the belief that we have a reasonable hope of success.	Engagement, Fun	Explorers, Killers
Behavioral	Virality: more successful in the game if you invite your friends, the social check-in.	Engagement, Loyalty, Revenue, Virality, SEO, UGC	Socializers, Achievers,Killers

4.2 Game Elements

Game Elements are different than mechanics, as illustrated in the examples below, they manifest the game information to the player, usually as a UI components.

Table 4.4: List of Game Elements

Elements	Description and Examples
Activity Feed	shows players what has been taking place in the system overall and motivate the player to obtain the same achievement as others.
Avatars	unique representations for a player. shows a high emotional attachment between the player and the game. often customization and decoration are enhancement for higer engagement.
Easter Eggs	an intentional hidden message, in-joke.
Instances	are created for players to have a unique experience that is outside the normal experience. When a player creates a special unique page experience that allows to log into and view their unique content an instance has been created.
Leaderboards	are a means by which users can track their performance, subjective to others. Leaderboards visually display where a user stands in regards to other users. Leaderboards can be broken down into several subcategories such as: Global, Friends, Relative, Isolated etc.
The Notifier	is a direct way to give the user direct feedback about their progress, change of status in the gameplay experience etc.
User Profile	displays a User's data about their activity on a website and can be used to tell the world and a community on the internet who they are.

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