

Gamification in library websites based on motivational theories

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Abstract

Gamification is defined as “the use of game elements and techniques in non-game contexts”. In fact, this definition is the most comprehensive one presented so far. This concept emerged first in 2002 but it has been prolonged for 8 years to attract individuals’ attention. Gamification has been applied in various disciplines according to their different needs. In fact, gamification tries to present tedious and usual daily tasks in a manner which proved to be fantastic for users/players. This paper studies gamification’s role as an engagement tool for libraries. Also, the study aims to

investigate the role of the common theories in library game operations. These theories, namely “self-determination theory” and “flow theory”.

Keywords

Gamification; Library game; Library websites; Self-determination theory; Flow theory

Introduction

Nowadays, games and techno-related games have broken traditional boundaries and the evidence shows that uses of games have been developed among a wide variety of audiences. The most new presence term in this area is “gamification” which is defined as “a use of online and video game elements in non-game contexts to improve users’ experience and increase their engagement” (Deterding et al., 2011).

Gamification has been coined first by Nick Pelling in 2002; but it took 8 years for the world to attract people’s attention. Pelling himself used this word as “constructing a better user-interface to accelerate digital games in an electronic environment” (Perryer, Scott-Ladd & Leighton, 2012). Although it can be really claimed that gamification originates from digital media industry (Schönen, 2014) we should remember that this concept includes a vast range of disciplines today such as education, health, e-commerce, environment and so on.

Libraries are one of the most important organizations which need to use new ways and innovative approaches to solve their ever-increasing problems. One of the problems with libraries is how could librarians increase the users’ engagement in library websites and library operations. This question could be answered by using new trends in digital library environment. The use of the games and gamification elements in library websites could improve their operation. As Sukovic, Litting, and England (2011) remarked “engagement through serious games and plays is proposed as a way of dealing with discrepancies between library traditional roles and contemporary demands, enabling experimentation and exploration of future roles”.

Actually, library managers now recognize that their institutions should gamify services to attract more and more users as well as boost customers’ engagement with library website (Radhakrishnan, 2013). This attitude brings about many profits. The most important profit is that it will have more “joy” in library operations, both in library patrons and staff (Figure1).



Figure 1. The role of library game

Types of Gamification

The use of gamification in non-game contexts (such as libraries) can emerge in three forms:

1. Internal gamification
2. External gamification
3. Behavior change gamification (Werbach & Hunter, 2012)

Internal gamification has been sometimes named as “enterprise gamification”. Small corporations also can use game design techniques to improve their efficiency. Two prominent aspects can be observed here: first, players who are the inseparable part of a given organization; in fact, organization recognizes its players and these players interact with each other based on specific principles. Second, gamification motivational structures must be interacting with existing management in a given organization as well as reward structures.

External gamification involves potential and active players/users. This usually relates to organization’s marketing goals. In this case, gamification acts as a strategy that improves the relationships between users and offered services. This means that it leads to increase player’s engagement, enhance their faithfulness, and ultimately raise the efficiency in an organization.

Behavior change gamification aims to create new useful habits for target audiences. This includes everything which may help the people improve their lives. All in all, these new habits lead to form favorable social outcomes: less obesity, less cost in health services, more efficiency in education systems, and better financial decisions. Behavior change gamification has been supported by governments and nonprofit organizations as well (Figure2).

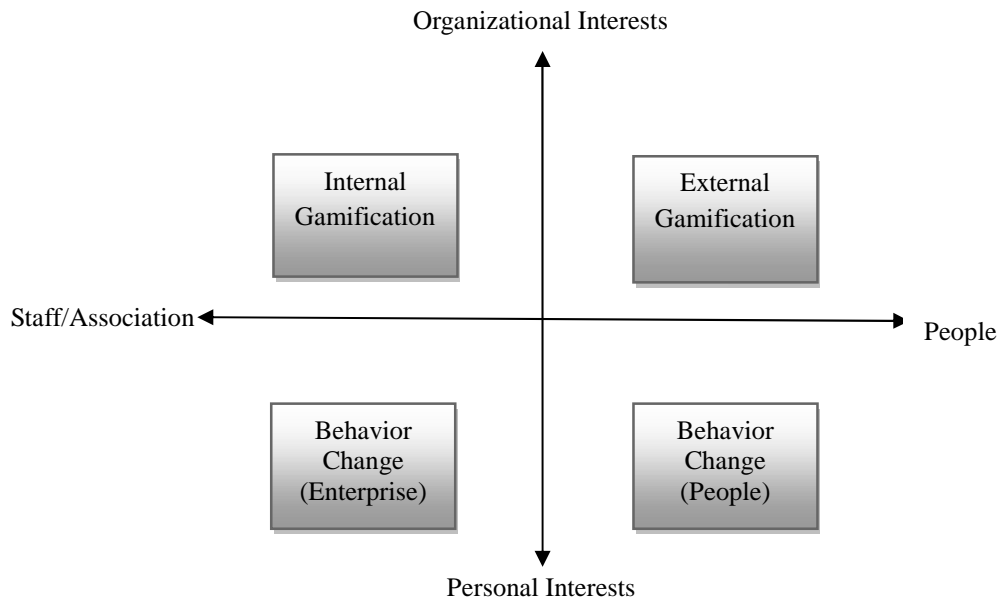


Figure 2. The Relationship between Various Steps of Gamification (Werbach & Hunter, 2012)

As mentioned before, these three forms illustrate the representations of using game elements in non-game contexts. To achieve this, we should recognize the game elements called “game pyramid”.

Game Pyramid

A game, like the other phenomena, consists of different parts. Gamification experts have mentioned three game elements: dynamics, mechanics, and components (Figure 3).

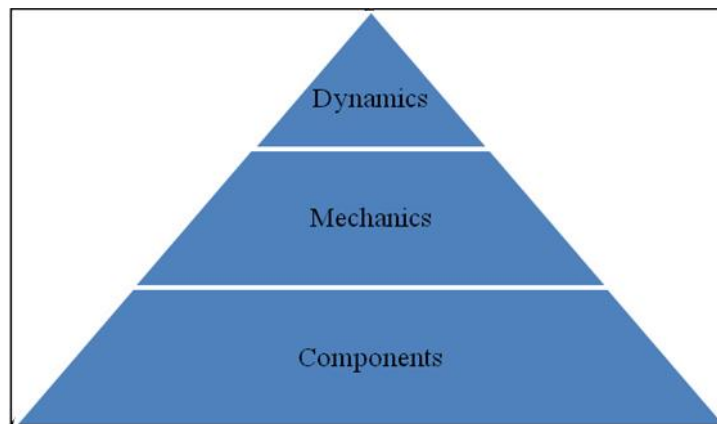


Figure 3. Game Pyramid (Werbach & Hunter, 2012)

- Dynamics: These are located at the top level of game pyramid. In fact, dynamics are considered as concepts that a specific game is shaped around them (Kuutti, 2013). Wu (2011) believes that “dynamics considered as temporary patterns and developments that make a game more enjoyable, both for game itself and players. In other words, dynamics form the essence of each gamified operation in relation to mechanics (Schönen, 2014). Dynamics may include limitations, emotions, narration, progression, and relationships between different elements in a game.
- Mechanics: Mechanics are relatively more special elements than dynamics that lead to uniqueness of players’ act. In fact, dynamics are shaped by combining various mechanics during the time which may lead to more attractiveness (Wu, 2011). Mechanics include challenges, chances, competition, collaboration, feedback, rewards, and interactions.
- Components: These are the capabilities that are potentially used in user interfaces for a given game. This is the most objective level that players or designers could use for a game. Components may include avatars, badges, levels, points, leader boards and so on (Kuutti, 2013).

Besides the recognition of game elements for designing a well-planned game, there should be considered the most important element that makes a player engage in games. This important element is called “motivation”. Undoubtedly, motivation is a force which makes people act (Brühlmann, 2013) and motivational capabilities, or actionable characteristics between game and player, could increase players’ engagement (Wu, 2011).

Engagement and motivation are the two sides of coin (Zichermann & Cunningham, 2011). It means that if you want to engage in a particular task, you should have been motivated enough in advance. On the other side, if you have been motivated enough to do a particular task, you are more likely to be engaged in that task. Considering this statement, two most prominent theories related to gamification will be discussed.

Self-determination Theory

Ryan and Deci (2000) first proposed self-determination theory (SDT). This theory is one of the most influential motivation theories (Brühlmann, 2013). According to the theory, humans are proactive in essence and have an intensive desire to develop intrinsically; but extrinsic factors should support this approach (Ryan et al., 2006). In fact, self-determination theory focuses on the idea that human needs various factors to reach an intrinsic development and flourish desired interests.

Kuutti (2013) believes that this theory considers the factors affecting empowering or underlying the human motivations- either intrinsically or extrinsically. Intrinsic motivations are originated

from *our core self* and not necessarily related with environment; they are defined as “an activity one does because it is inherently interesting or enjoyable” (Ryan & Deci, 2000). But extrinsic motivations have been led by our surroundings such as the tendency to gain money or winning a competition; they lead to a separable outcome (Zichermann & Cunningham, 2011). Besides these two types of motivations, this theory points to a third aspect named *amotivation*. It should be mentioned that self-determination theory emphasizes the three main characteristics: amotivation, intrinsic motivation, and extrinsic motivation.

Self-determination theory is a macro theory that focuses on *basic psychological needs* alongside the three characteristics mentioned above. These basic psychological needs include autonomy, competence, and relatedness. Autonomy relates to the individual’s tendency to do his/her activities freely. Competence refers to the individual’s ability to do a task. Relatedness could be defined as a form of social influences; it is the urge to interact with others (Figure4).

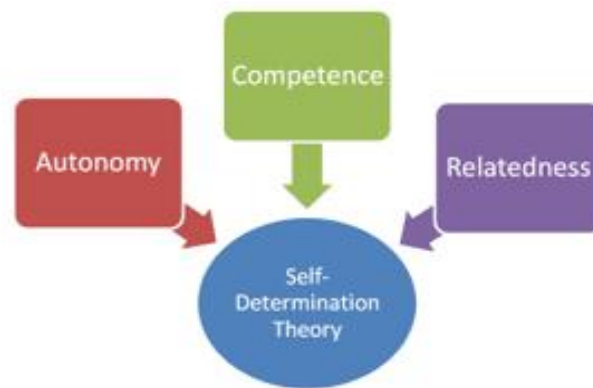


Figure 4. Self-determination Theory

Flow Theory

This theory formulated by Csikszentmihaily in 1990, a positivism psychologist who noted for his work in the study of happiness and creativity. He proposed the idea of flow. As Brühlmann (2013) said “flow is considered as the optimal experience, a state of mind and body with absorption and enjoyment; so, when everything comes together and we feel totally focused and involved in the task, we experience flow”. The flow or *zone* shows a player’s state between anxiety and boredom; it could satisfy the motivational level for the player (Figure5).

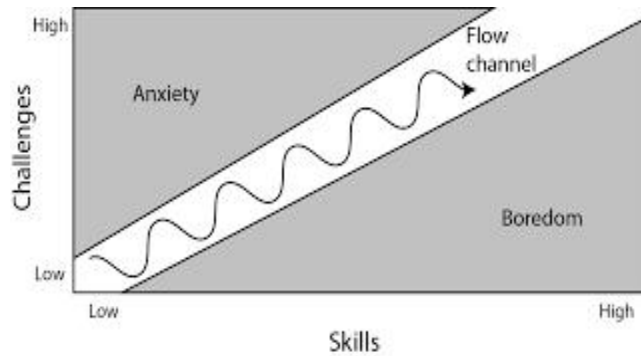


Figure 5. Flow theory

In the initial steps of constructing this theory, Csikszentmihaly and his colleagues focused on painters who would essentially get lost in their work. They got so immersed in their work that they would disregard their needs for food, water and even sleep. Later, he developed his studies and proposed flow theory as “an operation in which a person performing an activity is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of that activity” (Csikszentmihaly, 1990).

Csikszentmihaly himself called flow the *autotelic* experience, which means doing something for its own sake (Brühlmann, 2013). It has the most related meaning with intrinsic motivation in self-determination theory. This theory has various dimensions called “conceptual elements” as follows:

1. Challenge-skill balance: This is probably the core element of the flow concept. In order to experience flow, both the challenge of the situation and the skill to meet the challenge need to be at an individually high level (Jackson, 2012).
2. Action-awareness merging: This dimension describes the feeling of oneness with the activity (Jackson, 2012).
3. Clear goals and unambiguous feedback: These with unambiguous feedback allow people to check their progress in a task anytime (Brühlmann, 2013). These two aspects are related to competence in SDT.
4. Concentration on task: It is described as pure mental order without any irrelevant information.
5. Sense of control: This includes a feeling of liberation of the fear of failure and a feeling of empowerment (Brühlmann, 2013).
6. Loss of self-consciousness: Due to flow, total absorption in the activity leaves no room to worry about self evaluation or about evaluation of others (Jackson, 2012).
7. Time transformation: For some persons, time seems to slow or stop and others perceive time to pass quicker than usual (Jackson, 2012).
8. Autotelic experience: It is an experience so enjoyable that one is motivated to repeat it (Jackson, 2012).

Altogether, these dimensions represent the optimal psychological state of flow. Now, we describe the application of gamification and its importance as well as the role of motivational theories in library websites.

Gamifying Library Websites

Games have capabilities to influence library operations and services, especially in digital environment. They could lead to improve personnel and library users' creativity (Walsh, 2014). Surely, the most important effect of games in libraries is its influence on staff and users' view. In other word, games can be an answer to broken traditional boundaries as well as attitude and behavior change (Kurt, Kurt & Medaille, 2010).

Let's reconsider the definition of gamification: "the penetration of game elements in non-game contexts" (Fuchs & Escribano, 2012); if accepted, then it could be claimed that using games in library websites may help the users to feel themselves in a safe place and do the tasks they had refused to do previously (Walsh, 2014). According to this, libraries use gamification principals in different ways; it means that they create and design digital games in their services to attract more users. However, we should remember that all libraries may not have the required facilities for gamifying their services in digital form.

Battles, Glenn and Shedd (2011) believe that "librarians could design gamified library websites based on different learning styles of users/players. This may have intensive effect on users/players and could engage them more in library processes". Although there are various approaches toward gamification in libraries today, one of the most influential factors is: gamifying library websites (Malon, 2013).

Gamifying library websites have attracted library managers and web designers' attention in recent years. For example, three main library game projects have been developed in past 5 years in England: *Lemon Tree* (especially designed for the academic library website in Huddersfield University), *BookedIn* (especially designed for the academic library website in Manchester University), and *Orange Tree* (especially designed for public library websites).

In *Lemon Tree* project, each student opens an account and becomes a member of the project. Then, he could reserve the book, and search the databases to gather points. In this way, a competition among students (or library players) forms, and they could follow their own accomplishments and their colleagues in using the library website by leaderboard (Figure6).

Today, there is no doubt that many library policy makers and planners have come to believe that by gamifying library websites, they will likely be experiencing a growth in the number of users/players (Walsh, 2014).

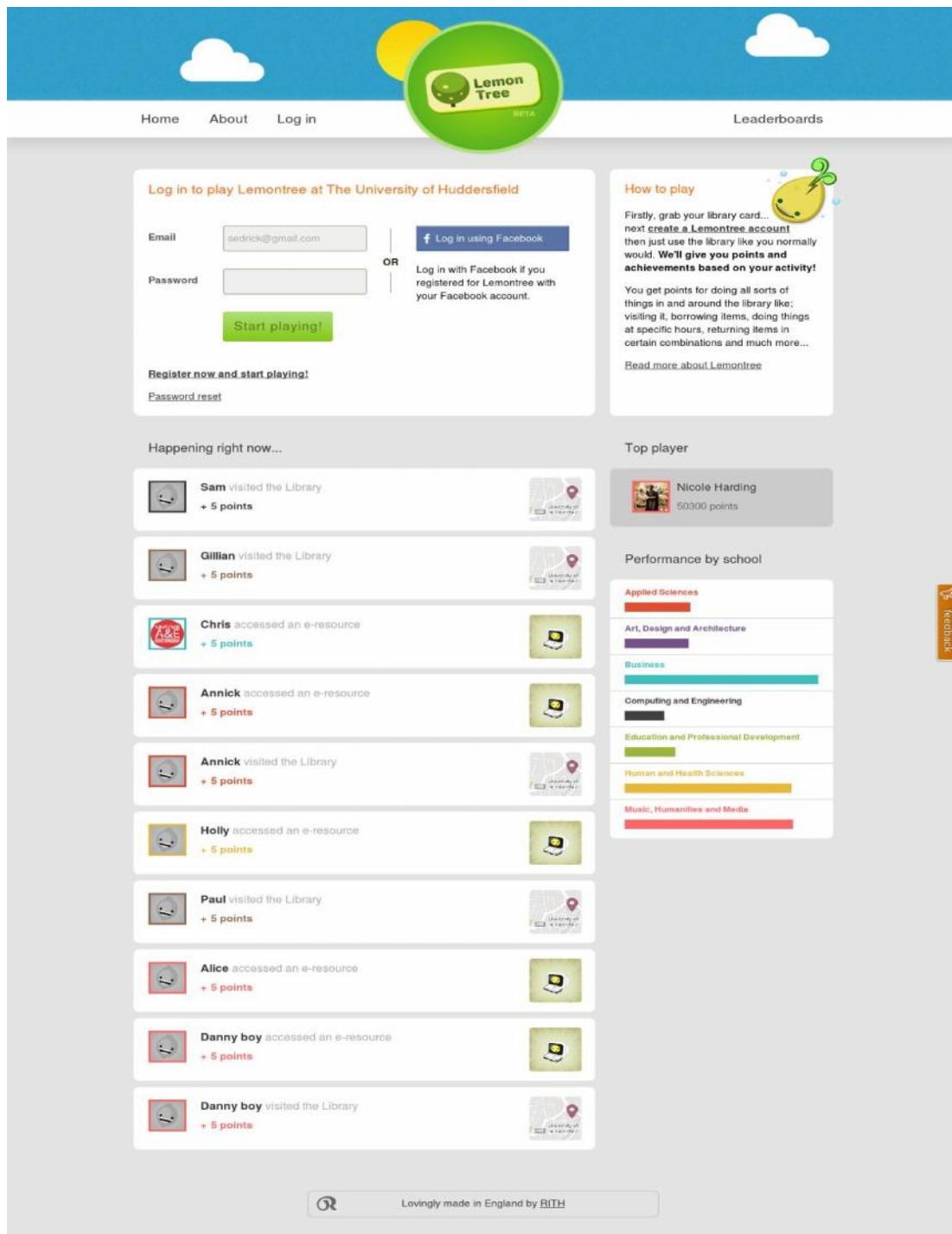


Figure 6. Lemon Tree Project

In fact, the aim of these projects and other related gamified library websites is to encourage the library users/players to use services more (Pho & Dinscore, 2015). Malon (2013) claimed that “the result of using gamification elements in library websites may lead to increased users engagement, productivity, loyalty, and finally joy and happiness on behalf of users”.

Discussion

Today, gamification has become a new way to think about users and customers (Kuutti, 2013). Also, recent years have seen the emergence of Generation G (Zichermann & Cunningham, 2011) or the Net Generation. According to Ing and Azizi (2009) this generation is inseparable from computers, tablets, and the internet. In addition, they spend a lot of time in playing video and online games. As Zickermann and Cunningham (2011) remarked “the net generation have a deep understanding of games, how they work, and what it can give them in term of value”. It can be said that the aim of games and gamification is to help the user to complete a task more efficiently or to make it more enjoyable.

Gamification experts believe that games could influence organization’s staff and users’ operations in three ways:

- Games could help people to do a task better;
- Games provide feedback loops and motivational actions for people;
- Incorporating games with new-presence technologies could help personnel and users to form new experiences (Burke, 2012).

Library website is one of the most appropriate platforms that web designers and gamification specialists could invest on to attract more customers. So, it is essential to discover what kind of improving effect gamification can have on library websites and users’ engagement. In this way, library web designers should focus on characteristics that could absorb users through librarygame websites. However, the question is how should gamification be able to achieve this? Undoubtedly, one of the most potential key elements is motivation.

Brühlmann (2013) asserts that “motivation is the force that causes people to act; so, when interacting with a digital system, motivation plays an important role”. Although there are a great number of motivation theories addressing various facets of the phenomenon, two motivation theories are particularly of interest in gamification research: self-determination theory and flow theory.

Both theories focus on enjoyment of the task itself and it should be considered that flow occurs when a task is intrinsically motivated. It’s an important point that if librarygame planners and gamification specialists design a fantastic and well-designed interface for users, then it would be likely that gamified library website users would visit and use website frequently. The good example of this librarygame website is Lemontree project in Huddersfield University (Walsh, 2014).

Mekler et al (2013) indicated that using game elements in a non-game context may increase a desired behavior. In contrast, the study of Thom, Millen, and DiMicco (2012) showed that removing a gamification system can reduce the activity of its users significantly.

According to Brühlmann (2013) there are three factors which can influence the behavior change gamification in motivational theories: 1) personal factors (causality orientation); 2) situational factors (informal or controlling aspect of reward); and 3) contextual factors (the systems' properties to fulfill needs, goals and setting of application). Librarygame designers should focus on these parameters to attract more users/players and increase their website visibility and users' engagement.

Conclusion

Playful engagement is an important approach to help librarians to attract maximum audience in the new information landscape. To achieve this, gamification and its related motivational theories can play an important role. If accepted that the library future will depend on its ability to engage, innovate and change, then we, as librarians, should change our attitude towards traditional methods. In this way, gamification has an undeniable potential to help librarians and library website designers to make library operations more enjoyable for users.

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