Using Gamification to Engage Users in Social Media Applications

Cátia Alexandra Bento Almeirão – 69590
Departamento de Engenharia Informática
Instituto Superior Técnico

Abstract. The difficulty that organizations have to maintain user engagement to their social media applications is one of the biggest problems they face. Lack of user engagement, for the particular cases of content sharing and social networking applications, leads to an eminent decrease of the quality and novelty of the available contents, that will result in the abandonment of the system. This research proposes the development of a gamification method that uses game elements and game design techniques to create new user behaviors and change and promote existing ones, providing real-time feedback in a enjoyable way and thus promoting user engagement. Design Science Research Methodology (DSRM) was the chosen methodology to guide this research. Two iterations were used to the development of our proposal, each one characterized by a set of gamification elements. The demonstration of our proposal was conducted in a real environment, in an application of content sharing and social networking, called SKAN. In order to evaluate our proposal, we used an evaluation framework and techniques to measure user engagement that include data collection from user interaction with the application, surveys conducted to analyze the usability and adoption of the proposal and feedback from the users and SKAN management team. Although the limitations we faced during the evaluation of our proposal, the method developed appears to be promising in increasing the engagement of the users in social media applications of this type

Keywords: Social Media, Content Sharing, User Engagement, Gamification, Game-Design, Behavior-Change.

1. Introduction

The growing number of Information Systems (IS), as is the case of social media, that fails to maintain user engagement is one of the biggest problems that organizations face when developing applications to support their business model [1].

Social media, in particular content sharing and social networking applications, which will be the main focus of this research, rely on the active participation of its users to contribute to the growth of quality, reliability and reputation of these applications. If the organizations fail to keep their users engaged and motivated to use the system, the users will gradually cease to contribute to the community interests, which will lead to an eminent decrease of the quality and novelty of the contents available, ultimately leading to the total abandonment of the system [2][3].

Gamification is a recent and popular approach that uses game thinking and game design techniques in non-gaming context to engage and motivate the users to achieve
their goals, by changing their behaviors. This approach is widely used in a variety of context, such as education and health, being the social media an area with greatest investment these days [4][5].

To overcome the lack of user engagement, which leads to an absence of dynamism that is created when users actively participate and contribute to the interests of the community and ultimately the abandonment of the system, we propose to develop a gamification solution that will use the current user activity to motivate and change user behavior by providing real-time feedback in a enjoyable and engaging way. With our proposal we intend to understand how it is possible to use gamification to change the behavior of the users, causing them to have a more active participation and contribute to the interest of the community, thereby promoting their engagement.

We adopt the Design Science Research Methodology (DSRM) to guide this research since this methodology provides to researchers a set principles and procedures that produce valuable and high quality design science research. DSRM focuses on the development and evaluation of artifacts, in our case a method that is applied to solve the problem identify for this research [6][7].

The demonstration of our proposal was conducted in an application for the community of researchers, investors and professionals in the food, environment, forest and sea industries, called SKAN. We have two iterations, created based on two different, but complementary, set of gamification elements to demonstrate the proposed solution.

To evaluate our proposal we used Design Science Research Evaluation Framework and some techniques to measure user engagement. We collect data based on users interaction with the application, conducted surveys to analyze the usability and adoption of our solution and gather feedback from the application management team [8][9].

2. Related Work

In this chapter we present the results and literature from previous research related to the context of this research.

2.1. Social Media

Over the last few years, social media has become ubiquitous and crucial for social networking and content sharing, emerging as an online discussion category where people create content, share it, bookmark it and network at a prodigious rate. Due to its ease of use, speed and range, social media is rapidly changing public discourse in the society, establishing new trends and becoming a new form of collective wisdom [10].

Social media Applications can be distinguished into six types according to how organization can achieve their goals and make use of their efficiency. For this for the scope of this research will focus on two types [2]:

...
- **Content Communities**: enables the share of media contents between users with a set of rules for banning and remove illegal contents. Users in this type do not need to create personal profiles pages and if they do, only the basic information is required.

- **Social Networking**: enables users to interact and connect to each other by creating personal profile pages, inviting other users to have access to these profiles and exchange messages between them.


![Figure 1 – Honeycomb of Social Media (adapted from [11])](image)

### 2.2. User Engagement

User engagement has emerged as a process and a product of interactions, with distinct attributes on each stage and whose intensity changes during the interaction. This intensity changes according to the needs, goals, emotions and actions of the user and visual presentation and structure of the computer interface[12].

According to O’Brien & Toms (2010), user engagement can be influenced by media richness, with the use of animations, audio and video, interactivity, communication with other users, aesthetics and sensorial appealing, challenges and emotional involvement [9].
2.3. Gamification

Gamification can be defined as the process of transforming applications out of the game context as the areas of education, health care or social media into a kind of a game, applying some of the game design elements and game design thinking techniques available to encourage specific behaviors, improve the user experience and increase user engagement [5][13].

Gamification, is related to the qualities of games (playing structured by rules and competitive strife toward goals) with little space for open, explanatory, free form of play (paidia) [14][15].

Gamification is all about the users and once they become a part of the gamified application they will be treated as players. To build a successfully gamified application and to shape the desired users behavior, it is important to know the types of player that exist and will interact with the system.

According to a study conducted by Bartle in a multiplayer game online, we can divide players into four types based on their behavior and personalities [16]:
- **Achievers**: those who play to collect points, level up and gain status.
- **Explorers**: those who like to spend time exploring new features, repeat tasks to unlock new levels and understand how things work.
- **Socializers**: those who enjoy interact with other players rather than playing the game itself.
- **Killers**: those who enjoy seeing other players to lose and use tools in the game to cause distress to other players.

When it comes to gamification, not all game elements are suitable and effective to encourage specific behaviors, improve user experience or enhance user engagement. We have to be able to select the most desirable elements according to their functionality and features. We can divide the game elements present in gamification into three categories [4][17][18]:
- **Mechanics**: composed with the primary elements that we should focus on when designing gamified. Those are the points, levels, leaderboards, challenges and quests, onboarding, engagement loops and feedback.
- **Dynamics**: human desires that we can create with a gamified experience. Those are the reward, status, achievement, competitiveness, altruism and self-expression.
- **Aesthetics**: emotional responses displayed by the players when they interact with the gamified application. Those can be the sensation, fantasy, narrative, challenge, fellowship, discovery, expression and submission.

Nicholson develop a theoretical framework called of Meaningful Gamification that states that users should be placed in the center of gamified project and the application needs to provide to their players the ability to learn and present mastery in different ways. By benefiting the user first, the chances of long-term engagement will be highly improved [19].

3. **Research Proposal**

This chapter represents the third step of DSRM, which corresponds to the design and development of the artifact. At this stage, we will present a description and explanation of our proposed solution to address the problem identified for this research, along with its objectives.

The purpose of this proposal is to understand how is possible to use gamification to change users behavior, so that they become to have a more active participation and contribute to the interest of the community. In order to achieve this, we will study which are the game design techniques available through the use of gamification that are the most suitable for social media applications.

In order to fulfill the previously mentioned objectives and solve our research problem, we intent to develop an effective method, using gamification that can be integrated in social media software and that will increase the overall user engagement of the application.

To summarize how we intend to promote specific user behavior in our proposal with the use of the gamification elements presents, we create the following table:

<table>
<thead>
<tr>
<th>Behavior we want to promote</th>
<th>Gamification elements choose to promote the behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having returning users</td>
<td>Points and badges for login and real-time feedback.</td>
</tr>
<tr>
<td>Having users spending time in the application</td>
<td>Points for activities, progress to levels, badges for achievements, leaderboard for being the top user, real-time feedback and awards for participation.</td>
</tr>
<tr>
<td>Having users viewing publication of other users</td>
<td>Points earned, progress through levels and badges to encourage the participation by searching for interesting and quality information.</td>
</tr>
<tr>
<td>Having users publishing information</td>
<td>Points, progression through levels and badges for participation. Reputation through position</td>
</tr>
</tbody>
</table>

**Table 1 – Summary of behavior and gamification elements used to promote those behaviors**
Having users participating with comments or votes in existing topics | Points, progression through levels and badges for participation. Reputation through position achieved in the leaderboard. Real-time feedback.

Having users staying on the application after seeing one page | With all elements of gamification we hope to improve the reliability and quality of the information, keeping the interest of the users in using the application.

---

4. Demonstration

In this chapter, we will describe the demonstration of our proposal. Demonstration corresponds to the fourth step of DSRM and we will describe the two iterations performed to achieve the proposed solution. Each iteration is characterized by the development of a set of gamification elements and respective specification on the demonstration environment.

To demonstrate our proposal, we incorporated our gamification method in a social media application that combines both content-sharing and social networking features. The application chosen to test and validate our proposal is SKAN.

4.1. First Iteration

In the first iteration, we develop the first set of gamification elements described in our proposal. We start by the identification of the target behaviors and core activities. Then we assigned points to those activities and create user level areas to represent the progress as player. We give badges to the users when they accomplish a set of core activities. The badges earned are displayed in their user profiles along with the activity record of the last ten actions made by the users.

Real-time feedback with detailed information is given every time users perform an activity, level up or accomplish an achievement.

To motivate the user to complete their virtual profile information, we created a progress chart that represents the percentage of completed information and when users complete all basic information required, they win a special badge.
4.2. Second Iteration

In the second iteration is described the second set of gamification elements that were not developed in the previous iteration. The second iteration begins with an adjustment to the levels of user progress, since users start to have a fast progress as players.

To promote the daily login behavior, we start by assigning point when the user login in the application and we created a badge for set of daily logins.

For users with more competitive nature, we decided to add leaderboards, allowing users to compare their performance with other users activity.

![Figure 3 – User profile with user points, level and profile progress chart](image)

![Figure 4 – Leaderboard with top ten users](image)

To motivate the users to continue their behavior and active participation, we will give both physical and virtual awards, giving something of value to the users.

Every game has rules and our proposal of gamification is not an exception. We established a set of rules and moderation of content that will occur during the interaction of users with the application.
5. Evaluation

In this chapter, we will evaluate whether the demonstrated artifact indeed supports the proposed solution with an analysis of the results obtained during both iterations.

5.1. Usability Survey Result Analysis

This section presents the results of the first evaluation conducted in SKAN before the integration of our proposal.

According to the results obtained one of the first goals of our proposal is to increase the number of user that visit the application on a daily basis and improve the value and credibility of the information by promoting a more active participation of the users. Although one of the main objectives of SKAN is to acquire new users, it is important to create conditions to retain their current ones, whose level of engagement is relatively low.

5.2. Data Result Analysis

With these results obtained, we can conclude that with our proposal, there was a slight increase in user engagement during the evaluation period, giving indications of higher interest of users in the application contents, with an increase of the average of pages seen by the users and in the time they spend in the application.

These results suggest that our method has not failed, it did not however increase exponentially the user engagement, but was able to keep its level more constant compared to the same period without gamification, also reducing the abandonment of the system in this period.

Concerning the overall user participation, with the results obtained, although the total of publications per month was not the expected, the analysis give evidence of a motivation that reinforces this behavior among users. With the integration of our proposal, there was an increase in the participation, which leads to the conclusion that our gamification method may result in changing users behavior, contributing to a more active participation.

5.3. Gamification Survey Analysis

From the results obtained and considering the user experience collected from this survey, although there was a good user adoption to the method proposed and the users consider that with gamification the application became more appealing and prefer to use it with the new features, their focus continues to be the interest of the community.

Gamification adds more value to the application, being able to motivate the users to participate by providing real-time feedback of their activities, a feature considered by most users as the most important one. The main concern of the users remains the sharing of reliable and high quality information, where gamification acts as support to make it possible to happen.
The overall goal of this proposal was never to change the priorities of the users it was only to enhancing them and acting according to the interests of the community.

5.4. Feedback from Management Team Members

To complete the evaluation of our proposal, we collected feedback from SKAN management team members, responsible to regularly publish new contents and share events to stimulate and encourage the participation of the users.

Overall, the team believes that with the integration of our gamification method, the application become more interesting, enjoyable and appealing and that will encourage the users to participate more and communicate more with each other.

6. Conclusion

In this chapter, we summarize all the work done during this research. We also describe the lessons learned and the contribution that results from this study. Limitations faced during the research are also presented. The communication of this research to relevant audiences, which represents the last step of DSRM, is also described. We end this study with some future work suggestions.

This research was elaborated for the purpose of solving the problem of the lack of user engagement and therefore their participation in social media applications. This problem is faced by most of the organizations when they developed their systems and it is important to maintain their users engaged, otherwise they will gradually leave the system, stop contributing to the community interests and the organizations end up not achieving their goals.

In order to overcome this problem, our research proposed the development of an artifact, using gamification, that can be integrated in social media software and that will increase the overall user engagement of the application. The goal of this research proposal is to understand how is possible to use gamification to change user behavior, so that they have a more active participation and contribute to the interest of the community.

To develop a valuable, publishable and high quality design science research we adopted the Design Science Research Methodology. This methodology divides the demonstration of our proposal into two iterations, each one characterized by a set of gamification elements integrated in our demonstration environment.

At the end of the development of our proposal we performed an evaluation based on the Design Science Research Evaluation Framework, designed to help researchers perform evaluation on their studies and metrics to measure user engagement to evaluate the results of our proposal. The evaluation was composed with two surveys conducted before and after the development of the artifact, continuous feedback obtained from the management team of the application used to demonstrate our proposal and data records analysis of the users activity and performance.
References