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Gamifiying Wikipedia?

Jorge Oceja, Ángel Obregón
University of Cantabria, Santander, Spain
jorge.oceja@unican.es
angel.obregon@alumnos.unican.es

1. Introduction

Although the term *gamification* may sound a little old-fashioned (Fuchs, Fizek & Ruffino, 2014), the use of game elements in non-game contexts has become familiar to us in recent years. Situations in which we are asked to set a happy (or sad) face as a rating for the cleaning service in a public toilet, or in which teachers award points and badges to their students through apps such as ClassDojo, remind us that we live in what Raessens (2006) defined as a ludification of culture. Even in this current edition of the ECGBL programme, 17 works include in their title one of the terms *gamification*, *gamified* or *gamifying.* Several authors have sought to identify the origin of the concept but without reaching a clear consensus. While Werbach and Hunter (2012) mention that the "first use in its current sense occurred in 2003, when Nick Pelling, a British game developer, established a short-lived consultancy company to create game-like interfaces for electronic devices" (p. 24), Deterding, Dixon, Khaled and Nacke (2011) explain that "the first documented use of the term gamification dates back from 2008" (p. 1). In any case, the concept became mainstream around 2010, appearing in mass media and in several MOOCs.

Deterding, Sicart, Nacke, O'Hara and Dixon (2011) define gamification as the use of game elements in non-game contexts. However, academics fail to agree on what a game element is. The CCAE model (Conventions, Components, Actions and Emotions) (Oceja & González-Fernández, 2016) tries to synthetize previous attempted classifications of game elements, such as those of Hunicke, Leblanc and Zubek (2004), Werbach and Hunter (2012) and Brathwaite and Schreiber (2008). This model distinguishes between iconographic conventions (i.e. the most commonly used elements in simplistic gamification practices), components or objectual metaphors of the real world, actions afforded to the players (including their consequences) and, finally, the emotions that they can experience. Paradoxically, conventions have been the most common element, leading to experiences based on rewards and rankings to foster different behaviours. However, different authors have highlighted the risks involved in this behaviourist approach (Bogost, 2015; Fuchs et al., 2014; Versteeg, 2013). Several authors (Werbach & Hunter, 2012; Zichermann & Linder, 2013) distinguish between two kinds of gamification: the one that is used in business contexts (in order to increase productivity or sales or to improve customers' experience) and the one that aims to promote positive behaviours in what has been called "gamification for good". Recently, apps have appeared for promoting a healthy lifestyle (Fitocracy, Inc., 2016), improving social and emotional well-being (McGonigal, 2015) or even for classroom management, such as ClassDojo (Class Twist, Inc., 2016).

Wikipedia, the popular free-content encyclopaedia, and the Wikimedia Foundation (the project of which Wikipedia is part) have not ignored this trend. For instance, Magnus Manske, an author, editor and software author, developed a set of games to improve Wikidata[1], the knowledge base that nourishes Wikipedia and other projects from the Foundation (Manske, 2018). Also, the Wikipedia community and especially the different chapters at the Wikimedia Foundation have created contests and game-like experiences to promote participation all over the world.

Since the creation of Wikipedia in 2001, numerous scientific articles have been published on topics such as vandalism (Kittur et al., 2007), neutrality (Göbel and Munzert, 2016), reliability (Rodrigues, 2012), "editing wars" (Iñiguez et al., 2014), access inequalities (Lanamäki et al., 2015), the gender gap (Antin et al., 2011) and the racial gap (Graham, 2011). However, there is a lack of studies focusing on the possibilities that gamification offers for promoting participation.

[1] https://tools.wmflabs.org/wikidata-game/

This work reviews attempts by Wikimedia Spain to analyse the impact of including different game elements to promote participation and proposing strategies to improve results in the future.

2. Methodology

This work is based on a quantitative approach. First, we identified every game-based event organized by Wikimedia Spain, targeting both standard editors and photography uploaders. We identified the game elements present in each activity and we used descriptive statistics and graphics to understand their evolution in terms of numbers of participants.

In the case of standard contests, we also calculated the total amount of information generated (in bytes), as well as the effectiveness of each event per user (by dividing bytes by the number of editors) and per week.

Then, inferential statistics (Levene's test for equality of variances and independent samples t-test) allowed us to compare the effectiveness of different rewards, namely non-tangible (such as badges) vs. economic.

3. Results

As already mentioned, Wikimedia Spain organizes two kinds of contests. One type of contest aims to generate new textual content, and therefore it targets standard editors. The other type of contest is looking for new high-quality photography uploads. Contests of the first type are based on a simple use of game elements, focusing on conventions such as points (the number of bytes, the references created or the number of articles act as points), rankings (sometimes shown at the end of the content and sometimes constantly updated by a bot[2]) and rewards. Most often, these rewards translate into a sum of money that ranges from 75 to 200 euros, clothes or books, but sometimes intangible rewards such as badges are given instead. This is the case in the *Mes de la Antártida* and *Desafío Wikificar* competitions. In the photography contests, a jury selects certain images for their quality, according to certain criteria, and rewards the winners with money (100 to 800 euros), books or technology gadgets.

3.1 Descriptive statistics

Figures 1 and 2 show the evolution of these two types of contests in terms of numbers of participants.

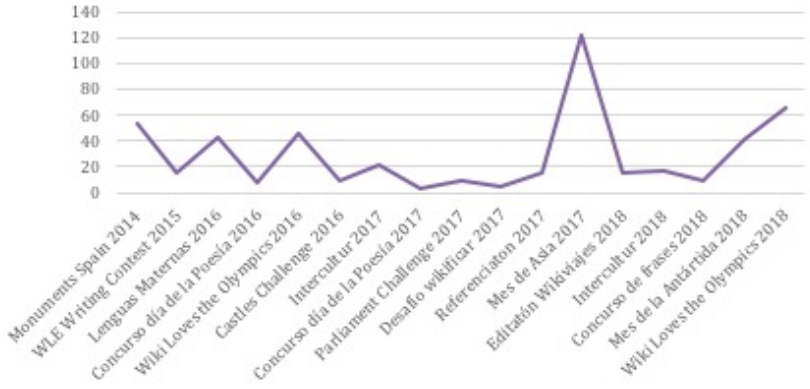

Figure 1: Numbers of participants in the editing competitions organized by Wikimedia Spain.

The first contest took place in 2014, with 54 editors generating 12,328,000 bytes of new information. Since then, participation has remained fairly stable, although the number of editors is still relatively small and the amount of bytes generated has varied significantly. The most successful competition in

[2] https://tools.wmflabs.org/superzerocool/desafio/wikificar2017

terms of participation was *Mes de Asia,* with a total of 122 editors generating 2,875,407 bytes, followed by the 2018 *Wiki Loves the Olympics*, in which 66 editors generated 16,164,476 bytes of information. Some events in 2017 had the smallest participation, namely *Concurso día de la Poesía*, with only three participants and 90,000 bytes, or *Desafío wikificar*, with five participants and 14,616 bytes.

Although the number of participants may be a good measure of the success of a contest, we also looked at the effectiveness per user, by dividing the total bytes of content generated by the number of editors. According to this variable, *Wiki Loves the Olympics 2018* was the most successful event (bytes per editor (b/e) = 244,916), followed by *Monuments Spain 2014* (b/e = 228,296) and *Wiki Loves the Olympics 2016* (b/e = 207,578).

We also took into consideration the fact that the length of the contest may vary slightly. To calculate the effectiveness per week, we took the previous quantity and divided it by the number of weeks. The results indicated that *Monuments of Spain Challenge 2014* (b/e/w= 57,074) was the most productive competition, followed by *Wiki Loves the Olympics 2016* (b/e/w = 34,596) and *Wiki Loves the Olympics 2018* (b/e/w = 30,614).

It was striking that the two contests with badges instead of tangible awards (money, books, etc.) ranked among the less successful, with *Desafío wikificar* being the least effective per user and per week (b/e = 2,923 and b/e/w = 1,461), followed by *Mes de la Antártida* (b/e = 27,960 and b/e/w = 6,922). Therefore, we considered it relevant to investigate whether there was any significant difference between the use of tangible (money or products) and non-tangible rewards (badges).

In the case of the photography events, although they were referred to as competitions, game elements were lacking. This competition offers only tangible awards (namely money) to the winners who have submitted the best images. Conventions such as rankings or badges are absent, much less any kind of playful action or emotion.

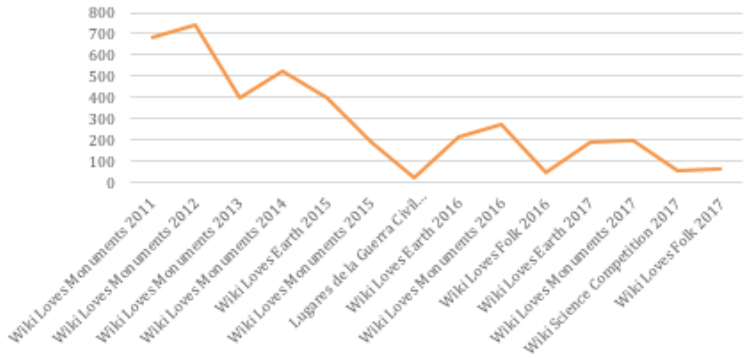

Figure 2: Numbers of participants in photography competitions organized by Wikimedia Spain.

It seems that monetary rewards boosted participation by photographers during the first years (680 in 2011 and 739 in 2012, both within *Wiki Loves Monuments*), but that users tired of competing and participation decreased, with only 68 participants in *Wiki Loves Folk 2017* and a mere 58 in the *Wiki Science competition 2017*.

3.2 Inferential Statistics

First, the means of bytes generated in contests with economic rewards (either money or physical products) and those with game-like rewards such as badges were calculated.

Table 1

Means of bytes generated in contests with badges vs. contests with economic rewards

	Rewards	N	Mean	Std. Deviation	Std. Error Mean
Bytes	Economic	460	99,132.89	344,043.56	16,041.12
	Badges	46	24,998.02	85,749.57	12,643.08

As the difference between the means was quite noticeable, we performed both Levene's test for equality of variances and an independent t-test to assess if there was any significant difference between the means of bytes generated in contests with economic rewards (either money or physical products) (M = 991,332.89) and those with game-like rewards such as badges (M = 24,998.02). Table 2 presents these differences, based on the production of each user in these two different kinds of competitions.

Table 2

T-test results comparing the means of bytes generated per user in the two kinds of contests

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Dif.	95% Confidence Interval of the Difference	
									Lower	Upper
Bytes	Equal variances assumed	5.87	.016	1.46	504	.146	74,133.87	50,926.1	-25,919.72	174,187.45
	Different variances not assumed			3.63	244.4	.000	74,133.87	20,424.61	33,903.14	114,364.59

Levene's test was significant ($p < .05$), meaning that different variances cannot be assumed. Thus, we have to pay attention to the test statistics in the second row of the table, which confirm that the difference between the two groups is significant $t(244.4) = 3.63$, $p < .05$.

4. Discussion and future lines of research

Wikimedia Spain has tried to motivate its editors to create content in several ways, including the use of contests. However, some of these events, although they may appear to be game-based, do not gamify the user experience in any rich or complex way. Photography contests do not include game elements and standard editing competitions focus only on conventions (the most basic game elements), failing to afford any meaningful playful actions to the participants or, more importantly, the possibility of experiencing emotions. As several authors have pointed out (Hunicke et al., 2004; Malone & Lepper, 1987), when participating in any experience, users want to explore and investigate; they want to discover for themselves the territory that the representational systems offer them. In addition, they want this process of discovery to challenge them and push them to find solutions to problems. The simplistic use of conventions (rankings, points, rewards, etc.), reveals a lack of understanding of the

complexity latent in games. This imbalance between the richness of the medium and the simplicity of most gamification practices appears frequently in the scientific literature (Bogost, 2015; Fuchs et al., 2014).

Because of the decisions adopted by the organizers, the contests have attracted modest numbers of participation and achieved only moderate effectiveness, particularly the events that do not include game elements, which show an alarming downward trend. The tendency is not as worrying in the gamified editors' competitions, but even these competitions are at a standstill.

We also explored to what extent the presence of tangible rewards vs. badges impacts the user's behaviours. The two contests using badges ranked among the less effective ones, and our inferential statistics confirm that participation and output are higher when money or goods are present. Still, previous studies showed that experiences based exclusively on rewards (whether tangible or non-tangible) may not be effective in the mid- and long term. Some of their risks are the hedonic adaptation of the users (Frederick & Loewenstein, 1999) or the overjustification effect (Tang & Hall, 1995), which may explain why economic awards, although they may yield better results in the short term, are not consolidating and increasing participation significantly.

In recent years, some authors have used words such as *exploitation* (Bogost, 2011) or *dictatorship* (Escribano, 2013) to refer to practices where only behaviourist rewards are given. Furthermore, self-determination and cognitive evaluation theory propose that intrinsic motivation for an activity can only be promoted by fulfilling the basic psychological needs of autonomy, competence and relatedness with others (Deci & Ryan, 2008). In addition, recent studies have shown that, in order to achieve this goal, gamified practices should provide users with meaningful actions to be executed and emotions to be experienced (Oceja & González-Fernández, 2017).

We are aware of the limitations of this study, namely that some variables (themes, dates, etc.) have not been deeply analysed. In the future, it would be interesting to carry out design-based research (or even some action research) in order to test the effectiveness of real game-based strategies that focus on playful actions, challenges and discovery and that take the figure of editors as real players.

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