

Perception of Gamification: Between Graphical Design and Persuasive Design

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Abstract. We aim at determining Gamification contribution to non-ludic systems. We analyze HCI design evolution and the theories using game design in that scope to finally introduce Gamification. We state that it is perceived through graphics and persuasion concepts without considering usefulness. To demonstrate that, we ask 10 HCI designers to identify and categorize the elements which induce a ludic spirit on Gamification systems. The results show that Graphics and Persuasion aspects are associated with Perceived Gamification, while Usefulness is not. The content and functions associated with the categories are specified. We state that Gamification can become a decisive factor for the design of a successful human-technology relationship beyond classic theories of technology adoption and use. We then question its contribution.

Keywords: Ergonomics, User Experience, Gamification, Persuasive Technology, Emotional Design, Motivation.

1 Gamification and Perception of Gamification

The aim of this communication is to present and discuss the development of games in professional and non-professional interactive systems, so called Gamification. The upholders of that new HCI design concept envision engaging and motivating interactive systems with “*the use of video game elements in nongaming systems*” [5] (p.2).

Games have been a source of inspiration for HCI way before Gamification (e.g., [9]; funology; playfulness; serious games). [4] have differentiated Gamification through four characteristics: game (as opposed to play), elements (not a full game), design (five levels of game design) and non-game context. [5] have defined it as “*An informal umbrella term for the use of video game elements in nongaming systems to improve User Experience (UX) and user engagement*” (p.2).

The study of the influence of video games at work is quite new. The goal is to understand the mutual influence processes between games and work. Some research [14] noted the existence of two processes. First, some game environments facilitate the transfer of learning from video-games to the professional world. Second, playing

online outside of work energizes employees to work as well. It seems that part of this active learning refers to behaviors that provide the experience of competencies with challenge and risk. According to other studies [7], forms of leadership (or other organizational behaviors) could be transferred from video games – especially since serious games. Thus, video games are not only easy and fun to use: it would favor the development of some organizational learning. However, [6] showed all the difficulties faced by users when confronted to leadership redefinition with emails, writings, electronic notes, web pages, etc. All these new forms of communication involve both a good sense of writing and new knowledge related to digital media.

To sum up, [14] highlighted the fact that the leadership, active learning and collaboration can go beyond game to reach work. But the interest of this spillover depends on kind of game and playing techniques (interfaces and scenarios) chosen which can be more or less effective and thus relevant. There are probably interfaces patterns that facilitate or complicate the spillover process. In this paper, we would like to examine closely what is a “gamified” interface and how it’s perceived.

Concerning Gamification methods, [8] have defined a “Gamification Loop” starting with a challenge. Achieving a sub goal triggers a reward system based on a point system. This leads to a leaderboard entry and badges attributions and then a modification of the user’s social and network status. The authors also mention a game-like surface. However, from a design specification point of view, this concept is not clear. Indeed, lots of current examples can be related to the Gamification loop while other authors call for a meaningful design. Kim [3] insists on the need to define the users’ profiles (social style, expertise) to select game mechanics and to create an evolving interaction while relying on intrinsic motivation with autonomy, mastery and purpose as a motto. [12] calls for a user-centered meaningful Gamification as opposed to points and rewards based Gamification that trigger extrinsic motivation.

According to [10] we think that three main aspects underlie Gamification design:

- **Sensory-motor dimension:** the output modes are specific to this kind of systems. Gamification uses extensively games multimodal coding (visual, audio, haptic) for aesthetic purpose and to communicate an atmosphere, a theme or information;
- **Motivational dimension:** one of its most consensual goals. Gamification drives motivation by triggering emotions with game elements that answer users' needs beyond usability (e.g., accomplishment, social). It also exploits game elements that are part of the Persuasive Technology set of tools in order to create engagement;
- **Cognitive dimension:** some authors use Gamification for goal-resolution with guiding elements which are directly related to the task, helping the users solve it efficiently. It implies adapting the interaction to the user profile and communicating relevant and useful information (goal, mean, feedback and outcome).

We will see that the Gamification elements overlap those categories through their several different meaning and functions. The main goal of Gamification is to motivate and engage the users: designers rely on users’ unfulfilled needs. This is a main concern as Gamification is said to be able to turn work into something more interesting and motivating. Its ability to foster productivity is thus interesting to

explore as workers' main concern may be about their work outcome. If Gamification does not participate in this, it might be perceived as either not relevant or interfering with the target.

2 Problem and Method

2.1 General Question

What is Gamification added value when applied to casual systems? Does it help motivating the users performing a task? Does it lead to better performances? Does it contribute to the main goal of the system or does it add parallel tasks and motivators?

We state that Gamification creates a link between the user and the systems that goes beyond traditional criteria, generating an attractive and persuasive interaction. Consequently, the Gamification dimension is considered and perceived through two main dimensions: a graphical one and a persuasive one.

- **Graphics:** As mentioned by [8], Gamification implies having a game-like surface. Indeed, games communicate an atmosphere, a theme or information through visual stimulations, touch and audition. Some Gamification platforms have been designed to look-like a game environment (e.g., *Mindbloom*) while others only have parts of it amongst a more professional-looking user interface (e.g., *Nitro* by *SalesForce*);
- **Persuasion:** First, Games and Gamification fit the dynamic criteria for persuasion set by [11]. Indeed, it implies evolutionary interactions with more demanding tasks through time and motivational messages. Second, a lot of persuasive techniques set by [13] are relevant when talking about Gamification: *Primary Task Support* (*Tunneling*, *Self-monitoring*, *Reduction*, *Tailoring*, *Personalization*, *Rehearsal*), *Dialogue Support* (*Praise*, *Rewards*, *Social role*, *Similarity*, *Reminders*, *Suggestion*, *Liking*) and *Social Support* (*Competition*, *Cooperation*, *Social comparison and facilitation*, *Recognition and Normative influence*).

Through our study, we try to demonstrate that Perception of Gamification lies between Graphical and Persuasive Design, without taking into account the Usefulness dimension of the interaction or “*the extent to which a person believes that the use of a TIC would increase her professional or domestic productivity*” [2] (p.135, own translation).

2.2 Methodology

Our subjects panel consists of ten employees of a software company: five are Visual and Interaction Designers and five are Interface Developers. Most of them know little about Gamification (three have a quite extensive knowledge about it) and they play video games on a regular basis (2 don't play at all).

Ten screenshots of “gamified” systems have been chosen based on their representativeness of that phenomenon (Table1). They contain classic Gamification elements (e.g., badges, points) and game-like visual effects (more or less prominent).

Table 1. Name and description of the screenshots used for the experiment

Name	Description
Nike+	Website : managing running efforts through time
Nitro	Website for selling team : managing work efforts
Mint	Website : managing one's bank accounts online
Foursquare	Mobile application : sharing knowledge of places in a city
LinkedIn	Professional networking website
MindBloom	Website : setting and monitoring healthy-life goals
Ribbon Hero 2	Microsoft office suite plugin : tutorial modules
The Upstream challenge	Website : online recruiting campaign
DevHub	Website : websites/blogs management
HealthMonth	Website : setting and monitoring health goals through time

The experiment consists of two steps. First, the screenshots are presented one by one and the subjects are asked to describe what makes the interface ludic. The “Why?-How?” technique has been used in order to obtain first a free answer followed by a more precise description, the why question revealing the underlying concept, the how question revealing its operationalization [1]. During a second phase, the subjects are asked to summarize the key ideas that arouse out of their analysis by writing it down on blank cards which are then used to perform a conceptual sorting.

The analysis of the outcome of the interview is both quantitative and qualitative: we record the Gamification elements found by the subjects as well as the categories created and its underlying meaning.

2.3 Data Analysis

We conduct a content analysis based on the verbalizations. Content analysis is a systematic and methodical review of texts or transcribed speeches. It is particularly useful in social sciences for the study of social representations.

This method requires every verbalization on the research question (the interviews). We classify all statements and create categories to help differentiating the verbalizations. The categories are related to the content of the document or screens selected. Finally, the interpretation phase aims at giving sense to the categorizations.

3 Results: Gamification Is Perceived through Two Main Dimensions: Graphics and Persuasion

All subjects refer to Graphics and Persuasion (18 and 29 categories). Table 2 sums up the categories created according to our main study dimensions. No subject has explicitly mentioned the classical “Usefulness”: they verbalize about persuasion and aesthetics.

Table 2. Subjects categories per subject and main dimensions (non exclusive *in italic*)

Subject	Graphics	Persuasion
1	Visual, <i>Staging, Immersion System</i> (3)	Support System, <i>Staging</i> (2)
2	Visual, <i>Performance</i> (2)	<i>Performance, Me</i> (2)
3	Visual, Wording (2)	Point System, Social, Personalization (3)
4	Attractive Graphics (1)	Challenge, Self-Image, Social Image (3)
5	<i>Metaphorization</i> , Information Architecture And Graphical Style (2)	<i>Metaphorization</i> , Workflow (2)
6	<i>Environment</i> (1)	Challenge, Progress, Earnings, <i>Environment</i> (4)
7	<i>Cosmetic</i> (1)	<i>Cosmetic</i> , Concepts (2)
8	<i>Game Scenario, Personalization, Game Designer</i> (3)	<i>Game Scenario, Personalization, Community, User Control</i> (4)
9	Immersive Experience (1)	Self-Comparison, Social Comparison, Avatarization (3)
10	Global Layout, Ludic Graphics (2)	Progression, Competition, Virtual Money, Immersion (4)

Graphics. This category is mainly about the visual aspect of the gamified systems.

The subjects mention on average 7 elements out of 9 (min.: 5; max.: 9). 10 subjects have mentioned images and colors, 9 have mentioned effects (e.g., comics look and feel, round shapes) while 7 mentioned theme, metaphor, font, vocabulary and global layout. 4 subjects have associated it to interactive external avatar.

- “to me, the wording part is as important as the the visual part, the icons. (...) the text it’s not really content, I mean I don’t I don’t see it as content but as hm something to beautify, to hm intensify the the immersion, so that you understand better what you must do” (s10)

10 exclusive categories of graphical elements have been created while 8 categories that contain graphical elements amongst others have been created (Table3).

Table 3. Graphics categories by content specificity

Exclusive categories	Non Exclusive Categories
Visual, visual, visual, wording, attractive graphics, information architecture and graphical style, game designer, immersive experience, global layout, ludic graphics	Staging, immersion system, performance, metaphorization, environment, cosmetic, game scenario, personalization

Two categories of functions have been associated with the graphical elements: Attractiveness (by all subjects; i.e., emotions, amusement, staging, immersion, fading the feeling of being in touch with reality, appealing, call-for-use) and Legibility (by five subjects; i.e., prominent graphical representation, clear layout).

- “if it were realistic [visual design], it would be too professional looking and serious” (s1)
- “make it as an experience, not as a tool (...) the suspension of belief, you stop to believe, like, when you see a movie, you don't say ‘it's not possible’ ”(s9)
- “a gauge versus the accurate figure hm which is more immediately read and which recalls the the game or cockpit environments (...) a bit like ‘visual representation at any cost’ ” (s3)

Persuasion. The dimension of persuasion consists of three main concepts: self and social competition, self and social image, freedom of choice.

Self and Social Competition: challenging the player and rewarding his efforts.

The subjects mention on average 10 elements out of 16 (min.: 7; max.: 12). 10 subjects mention points, trophies-medals and leaderboards; 9 mention goals, virtual objects gain, virtual money; 8 mention progress images; 7 mention situation inventory; 6 mention badges; finally 5 subjects mention levels. 6 items are mentioned by less than five subjects (greetings, timer, statistics, instructions, accomplishment, external feedback).

The subjects create on average 2 categories (min.:1; max.:3). 12 categories out of 19 are exclusive. They are not homogeneous and 4 of the non-exclusive categories share items with the other two Persuasion categories (Table4).

Table 4. Persuasion „Self and social competition“ categories by content specificity

Exclusive categories	Non Exclusive Categories
Support system, point system, Challenge, challenge, Progress, Earnings, concepts, self-comparison, social comparison, Progression, Competition, virtual money	Performance, me, social image, metaphorization, cosmetic, game scenario, avatarization

The function of self and social completion is to support a workflow that consists of three steps: (1) Goals: to take up a challenge; (2) Evaluation elements: to progress, completion needs; (3) rewards: incentive. As suggested by the label of that category, it both concern self and social motivation through competition.

- “We can feel that it... that they try to prompt the users with points earnings (...) assuming that earning points is ludic” (s3)
- “I would say that having this percentage of profile completeness always puts me in a a status of anxiety, I would like to see it 100% so I thought many times to add what's missing, in my case a picture (...) it's a good way to push you to improve your profile” (s6)
- “track run : the history allows you to monitor your progress, compare with yourself” (s10)

Self and Social Image: a gathering of elements which are typical of social websites – linking people together, allowing them to communicate and express themselves.

The subjects mention on average 4 items on 8 (min.:1; max.:6). 6 subjects mention avatars and 5 mention sharing and personalization. Some items are mentioned two times only: taking care of growing artifacts, nickname, newsfeed, comments and social network. The fact that some social platforms elements are not identified by

most of the subjects could be due to a generational issue. “Old gamers” are not used to it and are reluctant classifying it ludic as it has spread recently and is not game specific.

- “I’ve been playing a lot but, let’s say, offline video games (...) For me it’s not normal at all to play a game and share my results on Facebook (...) but maybe, ten years ago (...) I would have ” (s6)

The subjects have created on average 1 category (max: 2). 4 categories out of 10 are exclusive. They are not homogeneous and 3 of the non-exclusive categories share items with the other two Persuasion categories (Table5).

Table 5. Persuasion „Social system and self-image“ categories by content specificity

Exclusive categories	Non Exclusive Categories
Social, personalization, immersion, self-image	Me, social image, environment, personalization, community, avatarization

9 subjects have identified an identity function behind those elements which can be split into two subcategories: Self-image (about self-identity, expression and existence through it; e.g., personalization elements, verbal expression elements, the caring of growing artifacts) and Social image (about relationship, community, sharing and collaboration, one’s image to the group).

- « you are giving your contribution (...) it is concrete, the proof of your experience, so: the proof of your existence » (s9)
- “I have the social part (...)it’s also the private part (...) when we have a ludic intent hm we need an account, a name, a picture, an avatar, we often need that personalization part” (s2)

Freedom of Choice: giving options to a user within a system; the idea of control.

Two kind of freedom of choice are mentioned: Participating willingly (i.e., taking action) on the reward and point system as well as on the social system and Controlling the sequence of events.

- “We don’t have to be competitors, we can be if we want” (s1)
- “I control the way I get involved at a ludic level” (s2)
- “The start button on the playstation (...) it’s either ‘I stop’ or ‘I take a break’ (...) notion of game mastery, I have control over the website. I don’t feel like I have to go through 10 pages and if I don’t the website is gonna crash and tell me ‘no, you shouldn’t have done that” (s8)

Four subjects mention that characteristic. One has created an exclusive category. As for the others, the items associated and the categories are heterogeneous (Table6).

Table 6. Persuasion „Freedom of choice“ categories by content specificity

Exclusive categories	Non Exclusive Categories
User Control	Staging, Me, Metaphorization, Workflow

Usefulness. The subjects do not mention explicitly this notion. However, they relate the elements we have classified in “Graphics” and “Persuasion” to the users’ tasks.

The “self and social competition” part of “Persuasion” (Table4) is said to motivate the users during task resolution. In here, Gamification does not aim at increasing the performance per se, but at increasing the motivation of the users at getting better at what they do. Indirectly (without modifying the actions needed to perform a task), those Gamification elements are supposed to participate to productivity increase.

However, the attractiveness function of Graphics could be seen as opposite to usefulness as it implies immersion and stepping back from reality.

— “[nike+ is] the most ludic of all as it seems to be the most useless” (s4)

4 Discussion

Through that presentation, we have tried to determine the contribution of Gamification to non-ludic systems. We have analyzed HCI design evolution and the theories using game design in that scope to finally introduce Gamification. We state that it is perceived through Graphics and Persuasion concepts and that Usefulness is not part of the scope. In order to demonstrate that, we have asked HCI designers to identify and categorize the elements inducing a ludic spirit on Gamification systems screenshots. We have then presented the results that we will discuss on that next section.

The results of that study are consistent with our hypothesis. Indeed, the Graphics and Persuasion aspects of the interfaces have been associated with a ludic spirit and thus Perceived Gamification (Figure1). Usefulness has not been mentioned explicitly.



Fig. 1. The Two dimensions of Gamification Design

Graphics. Every subject has mentioned that component. It mainly concerns the visual aspect of the interfaces and it carries two functions: Attractiveness (triggering emotions, leading to appealing and immersive experience) and Legibility (through a clear user interface). Some subjects have mentioned a potential infantilization.

— “It’s immersive, offbeat, sometimes even childish” (s8)

— “What’s that?! Is it for kids?” (s5)

Persuasion. Again, that component of Gamification has been pointed at by every subject. Three sub-dimensions have been mentioned:

- Self and social competition: motivation through a workflow that foster self and social competition and that rely on three steps: (1) Goals and challenge; (2) Evaluation elements; (3) Rewards;
- Self and social image : motivation through identity and expression elements;
- Freedom of choice: engagement through voluntary participation and the control of the sequence of event [11].

Perception of Gamification. These results give weight to the concept of “Perception of Gamification” that introduces persuasive technologies and graphic design to explain the interfaces appearance and users commitment.

To a certain extent, Gamification will increase the use of professional software. It would thus appear as a decisive factor for the design of a successful human-technology relationship beyond classic theories of technology adoption and use.

However, it relies on motivators dealing with nonfunctional needs; the usefulness of a system is not covered despite its importance, notably on work context. It thus questions the contribution of Gamification to casual systems, especially considering the kind of motivation triggered [12]. We state that Gamification is about creating an interactive universe that would be simple, beautiful, appealing and engaging. It implies a will to mislead the user by modifying the core meaning of work: the conflicting relationship between men and work.

Two limitations of that study have been identified. First, our choice of Gamification systems implies a vision of what it consists of which could constitute a bias despite our will to be neutral. Second, screenshots cannot render the interactive and acoustic part of the systems which impoverish our sample of Gamification elements.

Some Gamification upholders are currently mentioning the concept of meaningful Gamification [12], calling for user-centered game elements selection. It would be interesting to apply our study to several different contexts of application of meaningful Gamification in order to identify design rules that could be generalized.

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