

Gamification in e-learning: a game-changer?

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Paris Diderot University, September 2016

Abstract

According to the Oxford dictionary, gamification “is the application of typical elements of game playing”, such as point scoring, competition with others or rules of play, to other areas of activity to encourage engagement. Gamification is a critical methodology in education and yet, many consider its implementation as a mere source of entertainment. Our modern society has been drastically influenced by the technological revolution that began in the late 1990's. New forms of training have emerged, in the shape of Massive Open Online Courses (MOOCs) or e-learning courses hosted on Learning Management Systems (LMS).

This article explores the use of gamification in e-learning for professional training. It aims to shed some light on the underlying causes, the needs, and the reasons behind its implementation. It also analyses the motives that provoke skepticism on some people's part and why some companies are therefore reluctant to invest in this type of training.

In addition to readings from experts, we interviewed specialists, and we conducted our own research comparing a gamified e-learning deliverable with its standard equivalent and analyzed their completion rates. We discovered that the learners who followed the standard course were not totally put off by the lack of game elements.

Keywords:

Gamification, E-learning, Interactivity, Skills, Learner, Return On Investment (ROI)

Context

In a fast-paced world ruled by complexity and a culture of immediacy, learners are likely to train themselves in a short time span. To do so, they have to be given the means to achieve their training, knowing that technology morphed their expectations of the new methods at their disposal. E-learning deliverables are frequently used to transfer knowledge, whether they target students or professionals. We will shed some light on the implementation of gamification in such training materials.

This type of application is found in various ways of learning, whether it aims to educate students or train professionals.

In 2013, a survey conducted by a benchmarking data analyst showed that only 25% of learners completed their e-learning training in the case of a traditional content while this completion rate rises up to 70% for a game-based content. Moreover, an international company specialized in training adds that 36% of executives wish their organizations would set up a learning environment associated with play (forMetris, 2013). Therefore, we can wonder if gamification is the answer to counteract these poor completion rates and if learners do gain more skills with game-based training materials.

To tackle these issues, we asked a panel of learners to give us their insight on a game-based training course and a more traditional one, which did not contain any gaming elements. Their inputs helped us understand why the implementation of game elements in e-learning may be the solution to improve completion rates and knowledge retention.

Reasons behind skepticism

During a TED Talk, psychiatrist Stuart Brown (2009), committed defender of gamification, explains that “gaming is not the opposition of work” because if some companies are convinced that game-based learning is a key feature, others, on the other hand, remain defiant. Anti-gamification companies believe that a game-based learning experience cannot be applied to all domains or that one cannot play and learn at the same time.

In an article published on his blog, e-learning manager Ryan Stancey (2016) writes that gamification can trivialize serious issues. It may explain why some professionals think that gamification should not be applied to a user experience, a hiring process or any kind of training, or that game-based courses are not suitable for ‘serious issues’ or fields, such as the medical or nuclear field.

Ryan Stancey explains that even though points, badges and leaderboards may be critical elements of game mechanics, they may have little bearing on real life. “Firefighters do not save people from burning buildings for 200 digital hats, soldiers can’t heal their shrapnel wounds with a beverage and utility workers who die of asphyxiation in confined spaces don’t scrape into the Top 10.” He adds that employees are more focused on winning than learning, which makes us question any beneficiary aspect to e-learning.

Another reason for reluctance to implement gamification in e-learning would involve cost matters. A healthcare company employs an e-learning project manager who has the sole responsibility for creating e-learning content by herself and a limited budget to do so. So far, they do not have any gamification elements since they do not have a designer in their team. Also, they cannot afford to pay for an entire gamified content made by an e-learning content development company as costs can reach 40, 000 euros depending on the length of the course. Moreover, production deadlines have to be respected and creating a game-based content is time-consuming. When companies outsource their production, they have to consider the potential updates and how much they would cost knowing that their e-learning is actually submitted to changes at least twice a year.

Nonetheless, cost restrictions would not be the only factor for reluctance. This healthcare company also lacks the right equipment as specific software is necessary to produce and design content. It is also crucial to have experts of such tools.

Indeed, as the learning manager explains it, this company comprises two different kind of individuals: those who are computer literate and open to change and those who are more defiant.

Employees who are not computer literate may not be interested in using such method and can be reluctant to something new. Therefore, companies would not get any return on investment, as producing gamified contents is known to be costly; or they would get a poor one, unless they create a culture of learning within their organizations to conduct the change.

But it appears there is a shift in this particular company; they are considering offering a more playful environment to their teams in creating incentives to stimulate them. To counteract the skepticism of computer illiterate users, the e-learning manager of this company highlights the practice of recognition through the award of badges as she believes that people are sensitive to that form of encouragement.

Implementation

In order to stay competitive, companies need to train their employees constantly which means they can transfer knowledge by making them actively part of their learning process or providing information in a passive manner. A survey conducted by an e-learning company (Pappas, 2015) showed that 79% of participants including both corporate learners and university students would be more productive and motivated if their learning environment was more active, similar to the stimulating effect of a game. Consequently, companies tend to gamify their e-learning content. It is necessary to question the benefits for them. Why is fun a prerequisite to learn and how is it actually defined?

Nicole Lazzaro, who benefits from a twenty years' expertise in player experience design, is recognized as one of the leading figures in high tech. She has shared some insights on her experience in this industry and states that there are four types of fun.

- The “hard fun”, where the learner aims to triumph in any situation and is emotionally attracted by challenge
- The “easy fun” which relies on curiosity and can be illustrated by the act of scrolling any kind of documentation. It requires a non-significant involvement
- The “people fun” which requires the most involvement and is commonly found on social networks as it based on amusement through a stimulation of social consciousness
- The “serious fun” which relies on relaxation and excitement through a meaningful act of playing that induces an environmental, social or cultural awareness

The latter would be the one most companies and experts in education want to implement. This taxonomy, Lazzaro says, is how best sellers in the gaming industry frame their design to create emotions and captivate an audience.

Jeroen van Bree, a management consultant and researcher, states in his research paper (2011) that there are “crossing points between organization studies and digital games research” which the former need to enrich themselves. In order to benefit from gamification, e-learning courses need to cover three levels:

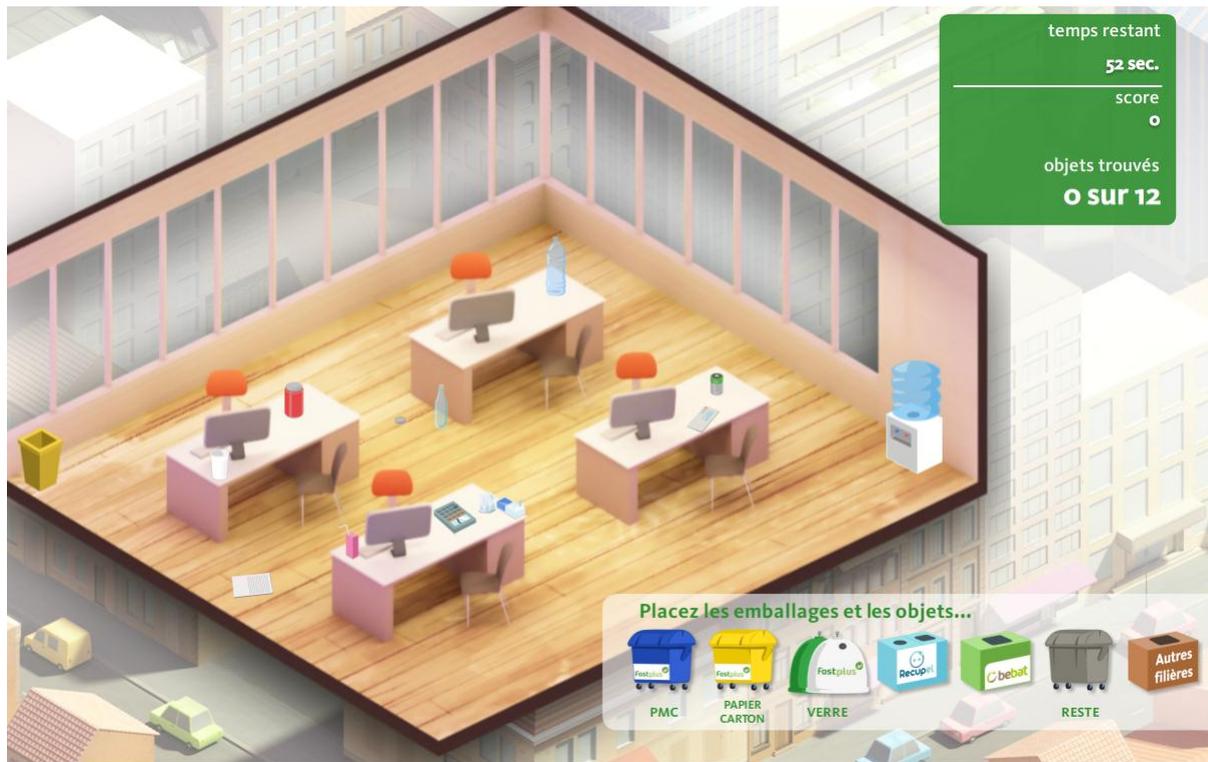
- The personal level, the most common, which relies on the user experience to create involvement
- The societal level which is used to encourage cohesion between teams
- The organizational level which plays a major part of e-learning material to address the objectives of said organization

Regarding the completion of a gamified training course, the objectives must remain the evolution of a trainee as a collaboration partner who respects the values of the organization. This organizational level aims to foster the involvement of the learners where they study or work, and aims to reinforce their user experience.

As Van Bree expresses it, the strategy of organizations is to create a bond between a brand and its community of users. Playing becomes the meeting point of an audience and the strategic objectives of its stakeholders.

E-Learning gamification gives learners the boost in motivation they need to become active participants in the learning process. It is therefore essential to respect some gamification codes that include the concept of reward. For example, scores or badges are often set up at the end of a training material. Julien Carbuccia writes that this is the best way to communicate with learners and reward them for the usage of a service (2015). It is a form of recognition that motivates learners and helps them achieve their goal. As Christopher Pappas states it, the human body actually releases endorphins, hormones produced when our bodies or minds are stimulated by the activities we take part to (2014). The release of these endorphins, which occurs when the learner is challenged, is what makes the learning experience memorable. The excitement that is felt is what helps make the situation memorable and therefore highlights the retention of knowledge. Therefore, gamified training materials arguably become an important return on investment when they stimulate the emotions of their learners.

A panel of learners to the test



In order to test our hypothesis, we asked a panel of people to go on the Internet and play “a game” on recycling to learn how to recycle waste at one’s workplace. It consists of placing newspapers, apple cores, cans, plastic bottles, light bulbs and foil trays and so on in the correct bin within a time limit. This e-learning course was created by a Belgian company specialized in waste recycling, with the aim to raise awareness about recycling. Various organizations have their employees follow this course to encourage them to sort out waste at their workplace assuming they will do the same at their homes.

Our idea was to render this interactive content into a static one. So we took screenshots of this game and pasted them into a PowerPoint. Therefore, learners could no longer drag and drop the different elements into the correct bin. They needed to make an effort to remember in which bin the waste had to be disposed in by simply looking at the slides. In addition, we created a small quiz made of six questions in order to know what our learners remembered from the slides and the game. We also made a survey in which we asked the learners whether they had met any difficulties in recalling certain information, if they thought the content was adapted to the context and if they had met any difficulties in the learning process. In

order to have a fair and unbiased judgement, learners would only be allowed to either drag and drop the elements or watch the slides.

Question 1 : Dans quelle poubelle les piles usagées vont-elles ? *

- La PMC
- La Recupel
- La bebat
- La Fostplus

Question 2 : Que signifie PMC ? *

- Poubelle mètre cube
- Plastique Métallique Cartons
- Poubelle matériaux et cartons

Question 3 : Le pot de yaourt se jette dans la poubelle classique.

*

- Vrai
- Faux

Our personal observations with multiple e-learning modules made it clear that there is a way to design modules to make them compelling and engaging. Creating an e-learning content is more than just having game elements or transposing an offline content to an online learning management system.

One of us works in a start-up specialized in e-learning contents which enabled us to gain insight into the design of online courses, from the writing of the storyboard to the global production. We noticed that most online learning courses were not focused on action or activity, but on content reading instead. If the goal of the training is to make learners gain skills, and not simply acquire knowledge, learners need to practice their skills; gamification provides a great possibility for learners to do this. This means that high levels of interactivity and engagement allow learners to gain more skills than traditional learning.

Researches we made showed that engagement led to learning. Throughout the design process of an e-learning course, it is critical to use elements from games with the main goal of driving engagement.

An e-learning course about security safety on a plant site or telecommuting needs to be designed with specific themes in mind and adapted for both the platform and the audience. For example, a course about eco-driving is way more effective when

tangible examples are provided to the learner. Displaying text and video screens is a way to give information, but driving a virtual car on your own, speeding up and braking by yourself, is highly interactive in comparison. An effective gamified content would, in this sense, be readapting displayed information and video game contents to support the subject's interactive learning. Personalization of the design remains the major issue. Thinking the interaction and the evaluation for the support and the audience is the remedy for a better involvement of the learner, even if it requires a longer reflection and the use of adapted tools. Completion rates tend to prove this point. In the startup mentioned earlier on, up to 95% of learners tend to finish this course, with an ultimate 80% success rate. When one adapts the message to the support, gamification can be an effective way to engage learners into the training.

Our research led us to several interrogations. Could any type of learning platforms benefit from gamification codes? At a conference, one of France's leaders in defense, transportation and security explained that e-learning courses comprising playful ways of learning were part of their training materials. E-learning contractors we met told us that they provided services to professionals in the nuclear industry. They offered us some samples of their work in this field industry, which require an enormous amount of attention to avoid contingencies and therefore depend upon the work of extremely trained field experts. These contractors delivered a serious game where the learner could be immersed in a technical environment through the actions of a character in a nuclear power plant. It proved essential for trainees to actually see their work environment and see the consequences they could face in such complex situations where mis-manipulations could lead to major catastrophes.

Results

The game-based content we used for our research gave learners the possibility to act as they would in real life, as most people were once confused by the choice of dedicated bins when recycling. Learners who dragged and dropped different elements of the gamified presentation all said that the content was really well designed. Surprisingly, though, people who had a wrong answer were the ones who actually got to play. One of the learners spent 10 minutes on the game and made one mistake whereas all the learners who watched the slides kept a clean sheet. Furthermore, all the learners found the content adapted to the context whether it was the PowerPoint or the game on the Internet. One learner, for example, usually does not pay too much attention to the way things are presented and claims he is satisfied as long as he can find the information he is looking for. One learner pointed out that it was hard for him to remember the names of the bins, such as Bebat, Recupel, PMC, though he played the game. We can suppose that if the content is tricky to remember, playing a game will not make it easier for the learner to remember the information. One learner actually claimed that the game-content course was missing its point as learners have to do an exercise before they are presented the rules. She added that there should have been a feedback even in the case of a good answer since the choices learners made could be random as the instructions were not clearly stated in the first place. In general, when learners do things randomly, they do not recall information as there is no knowledge transmitted. As a research conducted by IBM and the University of Pittsburgh found it (2016), gamification initially drives engagement and sharing on social networks, but the benefit decreases over time to the point where it makes no difference. We quickly realized it as people who took part to our test were more willing to learn by playing but they did not remember the content more easily though.

Clearly, game elements of an e-learning course cannot diverge too far from the organization it aims to train or educate on. For the most skeptical members of our panel, playful elements in this training material sometimes overshadowed the initial learning goal. The implemented gamification codes became a simple tool to build social ties, although it aimed to improve knowledge retention. A learner reckoned

that a company that aims to promote recycling in their own buildings would implement this kind of gamified material to encourage cohesion in a team. It becomes a way to socialize, participate and work for a common cause.

These results tend to prove that gamification is efficient when it is based on the content and not only on the structure, as Karl Kapp assumes it in *The Gamification of Learning and Instruction: Game-Based Methods and Strategies for Training and Education* (2014). Conceptualization is the key: written in an engaging way, an e-learning course can inspire the learner. Diverting from the idea of content with strict objectives is another opportunity to take. According to Kapp, reflection and personal enrichment involve adaptive conception, not only badges and points. “Adding elements of challenge, story, sense of progress and mystery to online learning would make it much more engaging than most e-learning. [...] Learners respond to instructional challenges and are motivated by a sense of progress much more than conventional e-learning.”

Field specialists' interviews

Valérie Boudier, educational expert and lecturer at university, assures that she has never seen the level of concentration in a subject that players experience when playing video games. She believes that we should not wonder if they are being entertained or having fun while studying. We should ask ourselves what video games do to foster that level of focus during hours that lecturers do not. In “*Serious Games - Révolution pédagogique*” (2010), she states that there are methods to revolutionize education. Society is facing unparalleled changes and leans towards the digitalization of everyday things.

Valérie Boudier underlines that “the so called ‘Generation Y’, born in the 1992 - 2000 era”, is currently getting educated and will soon enter the labor market. They have different needs and expectations than learners born before the digital revolution and they are looking for new learning tools. According to Boudier, gamification is a trend that increases the involvement of the learner. The essential factor would be to immerse the learner in a particular situation or environment that he or she is likely to work in.

Karl Kapp also insists on what he considers a major issue: an engaging module needs to be attractive and a learner need to be immersed, not only by the addition of gamified elements but also by a content reshaped to its core. According to him, gamification is a remedy to help learners in the learning process. Therefore, he distinguishes two ways of thinking about this concept: structural gamification and content gamification.

Structural gamification can be compared to a simple implementation of gaming elements to an existing content, such as points or rewards for answering questions or watching videos. The content does not become game-like, only the structure around the content is modified to be more compelling. As Karl Kapp emphasizes it, “the primary focus behind this type of gamification is to motivate the learner to go through the content and to engage them in the process of learning through rewards”. It is therefore clear that this kind of gamification creates an artificial motivation. “The learner gains points by completing an assignment where provided media had no

game elements associated with them. It is just about the learner receiving good points for watching or completing such material”. It is therefore clear that this concept can create emulation around the idea of learning by achieving subsidiary goals, but it also needs mastery and a reflection on education with a notion of seduction.

The other type of gamification is content gamification. “This is the application of game elements and game thinking to alter content to make it more game-like”, Kapp says. This kind of gamification does not focus on the learner’s entertainment. It tends to completely adapt the material itself to serve another purpose: put the learner into another perspective by directly confronting knowledge with tangible examples. “Adding these elements makes the content more game-like but doesn’t turn the content into a game”, he insists. It is interesting to note that the main benefit of implementing content gamification is to put the learner in a specific context, to do activities in games that include the content that should be learnt. “For example, adding story elements to a compliance course or starting a course with a challenge instead of a list of objectives are both methods of content gamification”, Kapp adds. It is another way to engage the learner: by giving priority to a stimulating content instead of a well-designed structure.

Conclusion

In her interview, Valérie Boudier explains that, as professionals, we learn how to react in real-life situations. That was the aim of the e-learning material about recycling: offering practical applications. Playing does not mean that the learner does not have to make an effort recalling and it does not mean that one does not have to practice either.

Concretely, if one of our panel members had spent more than 3 minutes on the drag and drop exercise, he might have maintained a clean sheet. Making recycling at work a funny subject was not an easy task and still, people need to be trained at a time when environment is a real concern. Gamification, in this example, made learning not only informative, but also fun and compelling. It shows how, in an e-learning course, learners must be able to access knowledge when they actually need it in the real world. When learners go home, they were more likely to reproduce the actions they had learned during the course and throw their waste in the right bin.

It is worth recalling Christopher Pappas's answer to those who are the most skeptical, as he explains that gamification gives learners "a chance to explore a topic at length and get a firm grasp on how they might be able to apply that information outside of the virtual classroom, while they are in a fun and risk-free environment. Then, when they do venture out into the world, they will have the power to put that knowledge to good use in professional or personal settings." Applications of game-based courses in serious businesses, such as the medical or the nuclear fields should therefore be seen as a tool to illustrate use cases.

As mentioned earlier, not all companies can afford game-based courses to train all their employees, but it does not mean that they neglect their training programs. The deliverables they produce contain numerous exercises or concrete examples of things one can or cannot do, making the learners actively participate. Storytelling is also another effective way to stimulate learners and it facilitates the incorporation of gamified elements in a training program.

To conclude, it is worth adding that gamification may just be a learning trend and soon, there might be alternative ways to hold a learner's attention. Keeping the learners motivated is the real issue at stake when one designs a training course. Learners want to feel as if they are an integral part of the overall learning process and one can only achieve this thanks to a learning content of good quality.

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