

Gamification-How to motivate students in an online environment*

Karin Kollarovičová

Slovak University of Technology in Bratislava
Faculty of Informatics and Information Technologies
`xkollarovicovak@stuba.sk`

28.11.2020

Abstract

The focus of this paper is on analysing a method called Gamification and its use in the e-learning environment. Gamification plays a big role when it comes to successfully motivating students and improving their social interactions with one another while learning via internet. The psychological point of view is crucial to fully understand how educational tools should be developed. According to multiple studies, this method has been practically used in education and has shown some good results. Most of the success exists thanks to well-known mechanics implemented from the video game industry. This article provides arguments on why gamifying education is beneficial and how it works.

1 Introduction

Students' lack of motivation may have always been a problem, but it has never been more noticeable than it is today, in the age of e-learning. Online education is often poorly organized and does not provide the same satisfaction as in-person learning does. Lack of motivation can easily occur when students and teachers cannot or simply do not interact with one another efficiently. To fully understand how we can benefit from gamifying education we also have to understand the psychology behind it. Therefore, section 2 will be focused on how motivation works and what can be done to boost it. Gamifying education has truly proven useful over the past years due to its high interactivity. What makes it so efficient and effective are all the gameplay mechanics if incorporates into learning. We will take a look at what precisely is understood under the term 'Gamification' (section 3) as well as its practical use (section 4).

2 The lack of motivation

To understand how important motivation is and what can be done to improve it (using Gamification), we have to take a look at it from a slightly psychological

*Semestrálny projekt v predmete Metódy inžinierskej práce, ak. rok 2020/21, vedenie: Ing. Michal Hatala, PhD.

point of view. First, we have to understand what motivation actually means. To motivate is to create an *“energizing force that initiates and sustains behaviour and ultimately produces results,”* writes Guyan [3].

Basically, there are 2 main types of motivation: extrinsic and intrinsic. Extrinsic motivation can be found in 4 different forms. According to Edward Deci and Richard Ryan’s Self-determination theory (SDT) and its sub-theory called Organismic integration theory (OIT), the decision-making factor which decides what form each one represents is the level of external control it has over an individual. It varies: from being fully external (e.g. getting paid, not receiving punishment) to being somewhat external where we can talk about people doing something simply to avoid feeling guilt or shame. Other forms of extrinsic motivation are more internally oriented. In this case, the individual either sees the importance and wants to get it done correctly or feels connection between the task and his/her beliefs. Here we can talk about an internal source of motivation.

Intrinsic motivation, on the other hand, comes from the inside. It depends on the enjoyment of the task performed. Simply said, people feel intrinsic (fully internal) motivation once they do something voluntarily and genuinely enjoy it.

Now to transform this into the online learning problematics. Here is what can help students find not only their intrinsic motivation (as it is the most important and long-lasting one), but also help them stay engaged. Competence, autonomy and relatedness. If these three are provided, students will be on the right path to finding enjoyment in the online education process [3]. Precise strategies will be provided in section 3.1.

3 What is gamification

The term ‘Gamification’ simply means applying specific and efficient gameplay mechanics to the education process. It, however, does not necessarily mean creating full games as we know them [4]. A bit more precise definition is creating e-learning tools with the use and application of specific elements from games. These elements are what makes videogames fun, while maintaining the challenging character [1]. It must also be remembered that successful gamification is not solely about the game attributes of it. Equally important are the social and cognitive factors, which are the true sources of education [4]. If executed correctly, the student/learner is given proper motivational, social, and emotional satisfaction [1].

3.1 Engagement and game mechanincs in Gamification

Having user’s full attention or making sure they stay engaged for a longer period of time is something game developers have been mastering for decades. Their knowledge can therefore be helpful. According to Raymer [4], *“essentially, there are two components to the perception of something being rewarding: wanting and liking”*. To put it in other words, being rewarded for something we enjoy and like is what keeps us engaged, excited and motivated. This must naturally be remembered in the development process of a certain gamification tool.

To ensure the student stays active and wide awake, we must think of interactivity. If a certain task is expected to be performed, it should not only

be practical, but also fun. The interactivity, in this case, could mean sufficient communication between a learner and an e-learning tool. Creativity plays a part in this too. Pressing the same gray button for an hour in order to progress simply does not count as interactive or engaging learning [2].

A second method is dividing study materials and setting some short- and long-term goals. This is fully implemented from videogames, where players go through challenges, fights and slowly build and perfect their character by successfully completing them. They are then ready to encounter the final boss, which we can refer to as an important (or final) exam. Performing tasks with enlarging difficulty is essential. Once the tasks are too easy, students become bored and loose interest. In contrast to that, having too complex problems to solve (especially in the beginning) is contra productive and may lead to frustration or lack of interest. Clear instructions are particularly important to avoid confusion and ensure high efficiency [4]. Frustration can also be eliminated by the tasks being relatable and customizable. This can trigger positive emotions and give the learner opportunities to experience something unique, something worth exploring [2].

The graduality of the tasks can often become predictable though. This is why it is always a good idea to let the learner choose his/her own path using a so called "Nonlinear Goal Progression". By having the opportunity to make the whole learning process comfortable, students will modify it so that it fits their needs. This is very efficient for the student. On contrary, for the developer, it is extra work, therefore the cost of such software can climb quite high. [4].

4 Gamification in use

Gamification has been proves very useful over the past few years. As an example, we can take a look at some of the most famous apps or websites which use gamification. Duolingo, Kahoot or even a project from MIT called Scratch. Scoreboards, daily challenges or experience points are something players/learners find in the duolingo app. Same as in while using Kahoot, students are challenged which motivates the to work hared. Scartch is essentially a programming language mainly for youger students or for beginners. It proveds the perfect introduction int ot he programming world by showing colourful command along with real-time fun animations of the created programm. All of these have implemented gaming techniques which ensure that the user learns something while having fun. The all ar every user firendly and well designed.

To prove the theory, a reasearch was done. A team of reseachers used an online learning environment called PeerSpace, which was designed to help with social interaction and engagement but was not as successful as it could be. It included chat rooms, profiles, blog or online repositories for students to use. *"The goal is to improve student motivation in learning through the building of supportive peer networks"*, says the study. This is mainly achieved by using Gamification techniques. Encouraging students to communicate by playing games with each other and build relationships, therefore also be comfortable to go and find help when needed. PeerSpace was modified to feature scoreboards, simple games or a leveling system.

5 Conclusion

References

- [1] S. Abu-Dawood. The cognitive and social motivational affordances of gamification in e-learning environment. In *2016 IEEE 16th International Conference on Advanced Learning Technologies (ICALT)*, pages 373–375, 2016.
- [2] Mohammad AL-Smadi. Gameducation: Using gamification techniques to engage learners in online learning. In Martin Ebner, Kai Erenli, Rainer Malaka, Johanna Pirker, and Aaron E. Walsh, editors, *Immersive Education*, pages 85–97, Cham, 2015. Springer International Publishing.
- [3] Matt Guyan. Improving motivation in elearning. *ELearn*, 2013(10), October 2013.
- [4] Rick Raymer. Gamification: Using game mechanics to enhance elearning. *ELearn*, 2011(9), September 2011.