Gamification of School Education in Russia: Case Study

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ABSTRACT

The article is devoted to the description of the gamification system, which will be introduced in fifteen of Russian schools in the fall of 2019 (schools in Moscow, the Republic of Tatarstan, and Kaluga, Lipetsk, Novgorod and Nizhny Novgorod regions). The system was developed by the Sberbank Gamification Lab within the framework of the Sberbank Charitable Foundation "Investment to the Future", whose main mission is to support the development of modern Russian education in front of the challenges of the digital age. The system had to be compact, fairly simple to implement, and maintain the values of teamwork and cooperation. It also had to comply with the basic principles of the new educational model for Russian schools: personalization, the development of soft skills and real-life relevance. As a result, the Gamification Lab decided on a cyclical gamification system built on the basis of six game elements: avatars, quests, points, levels, achievements and stickers. In the autumn of 2019, the system will be introduced into Russian schools and the Gamification Lab will analyze the system in real-life conditions (directly in schools), where the main 8 hypotheses underlying the developed gamification model will be tested (hypotheses are given in the article).

Author Keywords

Gamification; gamification in education; school gamification; gamification in Russia; gamification model; gamification system.

ACM Classification Keywords

K.3.m. Computers and Education: Miscellaneous.

INTRODUCTION

According to the prevailing definition, gamification is the use of game elements and game mechanics in a non-game context [1]. Game elements are points, badges, leaderboards, avatars, guilds, levels, quests, skill trees, etc. Non-game contexts – education, marketing, health, culture, tourism [9]. That is, gamification is the use of game-based thinking in order to transform routine, non-game environments through the introduction of game-based

principles.

It should be noted that gamification can be interpreted more broadly. According to Hamari et al., gamification is equally applicable in both non-player and game contexts [7]. Therefore, we can agree with Dichev and Dicheva, who propose considering gamification as not so much a technology as a fully-fledged methodology, in fact, replacing behaviorism [2]. Indeed, like behaviorism, gamification is intended to correct and sometimes change the user's behavior (which gamification does well [6]). In contrast to behaviorism, gamification is aimed at creating a positive emotional environment, giving additional meaning (and therefore value) to the actions performed by the person [8].

It is not surprising that educational institutions look at gamification with heightened interest. As successfully noted by Dichev et al., gamification in education is the use of game elements in learning activities to increase student engagement [3]. And the fact that the level of involvement is directly related to the level of development of the material, has so far been confirmed [5].

That is why Russian schools participating in a large project to introduce innovative forms of education did not neglect gamification (we are talking about fifteen schools in Moscow, the Republic of Tatarstan, and Kaluga, Lipetsk, Novgorod and Nizhny Novgorod regions). One of the project participants is the Sberbank Gamification Lab, whose collaborators are the authors of this article.

The central task of the Laboratory was to create a gamification system that is embedded in the school Learning Management System (LMS). In this article, we describe the key aspects of the developed gamification system, and also formulate a number of research hypotheses, which we will begin testing in September 2019 (in September, the system will begin to be piloted in schools).

GAMIFICATION OF SCHOOL EDUCATION

The term "gamification" was introduced into scientific and research terminology in 2008. And although it became widespread only after 2010 [4], already in 2009 a New York City school, Quest to Learn, opened with full-fledged game training program, which was developed by the Institute of Play. During its existence, the School has managed to give a good account of itself and still remains a model for the

successful combination of educational tasks and game thinking.

It is worth noting that schools like Quest to Learn, which gamify not only the form of education, but also the content itself, are still a rarity. Most examples of the gamification of education are structural gamification, that is, gamification that does not affect educational content, but is built on top of it, with the goal of making learning faster and more efficient. It is worth noting that the spread of such gamification is largely due to the development of online education and the introduction of automated LMS into schools and universities, that is, to the already existing digital platforms that play the role of an intermediary between the student and the educational structure.

In Russia, gamification educational systems are just beginning to be introduced. Of the most famous examples of the game approach in education, we note a gymnasium (high school) near Moscow named after E.M. Primakov, which opened in 2017. It has a command-competitive system that can be described as a cross between Harry Potter and Game of Thrones: each student is attached to one of four houses (each with its own emblem and motto), of which only one becomes the winner (the house that scores the most points).

NEW APPROACH TO SCHOOL EDUCATION

As part of the activities of the Sberbank Charitable Foundation "Investment to the Future" (whose activities are focused on supporting the development of a modern Russian educational model), a set of principles and recommendations was developed for 21st century Russian schools. Three key principles were recognized: personalization, the development of soft skills and real-life relevance. In addition, a special emphasis was placed on cooperation and mutual support among students. That is, it was specifically stated that in no case should competitiveness be encouraged.

It was decided that this educational model would be supplemented with gamification. For the Gamification Lab, this meant one thing: there should not be leaderboards in the system. Consequently, there could be no talk of any PBL gamification. It should be a new gamification system, built on new values – values of mutual aid and mutual support (as rightly noted by van Roy and Zaman, it is around individualistic values that all Western educational systems are built [10]). In addition, as decided by the staff of the Laboratory, the system should help learning, and not just be an afterthought.

GAMIFICATION MODEL

The Laboratory had to develop a model of a gamification system that would support cooperation, be suitable for education and at the same time be compact enough that its programming would not take too long. An additional limitation was the lack of real incentives in the form of, for example, visits to the company based on the interests of students (note that such activities are planned for the next stages of the project).

As a result, the Gamification Lab decided on a cyclical gamification system built on the basis of six game elements: avatars, quests, points, levels, achievements, stickers. The consistency of this model is easy to describe by means of three cycles connecting the elements with each other (Figure 1).

Internal cycle: avatar => quests => achievements => avatar.

Middle cycle: avatar => quests => stickers => avatar.

External cycle: avatar => quests => points => levels => stickers => avatar.

In order to describe in more detail the systematic nature of the gamification system, consider each element separately:

An avatar is a complex element. It consists of two types of images - character and background. At first, the images are all the same, but over time, they can be modified. These images are taken from the collection of accumulated stickers (each sticker contains an image that can be placed on the student's personal page). Thus, each page is customizable and personalized (the theory of self-determination has long indicated the importance of such things).

Quests are also a complex element. Quests are of three types: basic (what each student must do), side (what students performs if they feel like it) and boss fights (the most difficult and important tasks; they can also be basic and side quests). In addition, quests are individual and cooperative (cooperative is designated as more important). The role of quests is to turn the educational process into an epic, meaningful journey.

Points are an element of positive feedback. For completing quests student receives points. The more important the task, the more points earned. The value of points – instant feedback, gives meaning to even the most simple, routine tasks.

Levels are an element of positive feedback that characterizes student progress. Levels are achieved by obtaining a certain number of points. For each received level, the student receives a set of stickers and a status.

Achievements – are a type of positive feedback, marking the special, exceptional merit of the student. The most important badges are given for special merit in matters of cooperation and mutual assistance. That is, if a student receives a badge for helping others, it does not just set him/her apart from the rest, but also obliges him/her to

continue assisting those who need help. The remaining (more traditional) badges are achieved for special services performed in completing quests, points earned, levels earned and stickers found.

The sticker is a digital card containing an image, minimal text, as well as metadata indicating when and for what action it was received. Images are of three types: personalities (real and fictional, for example: Napoleon or Don Quixote), events (natural and cultural, for example: the emergence of life or the beginning of the Second World War) and artifacts (the most important things and accessories, such as a wheel or a camera obscura). The main function of stickers is to be collectible (stickers are related to quests, but not directly "complete such and such quest – receive such and such sticker", and within a certain range: "complete such and such quest – receive one of the possible stickers in this case"). Another function: individualization (stickers are not only collected, but also set as an avatar). In addition, each sticker is associated with the material of the school educational program; therefore, it is simultaneously a mnemonic device. Viewing, collecting and exchanging stickers seems to lead to better memorization of new, as well as a fixation on fascinating older material.

HYPOTHESES
In September 2019, the system will be launched in fifteen Russian schools. The Gamification Lab will move on to the data collection phase, focusing on the operation of the system, its success and how it is perceived by teachers and students. Both quantitative and qualitative research (for example, interviews with teachers, actively involved parents and students) is envisaged. In the course of research, we plan to test the following set of hypotheses:

H1: Having a customizable and personalized avatar increases student engagement and affects the desire to complete more tasks;

H2: Exercises submitted in the form of quests increase the level of student involvement and positively influence his/her desire to complete them;

H3: Exercises submitted in the form of quests help students to be more tolerant of failures and not be afraid to make mistakes;

H4: Points have a positive effect on the students' perception of the educational process, helping them to measure their progress;

H5: Levels have a positive effect on the students' perception of the educational process, helping them to measure their progress, and also provide a tangible goal to be achieved;

H6: Achievements instruct students to have additional goals that go beyond the educational process, forming a clear system of benchmarks and values related to support and mutual assistance;

H7: Stickers have a positive effect on the memorization and assimilation of the material studied;

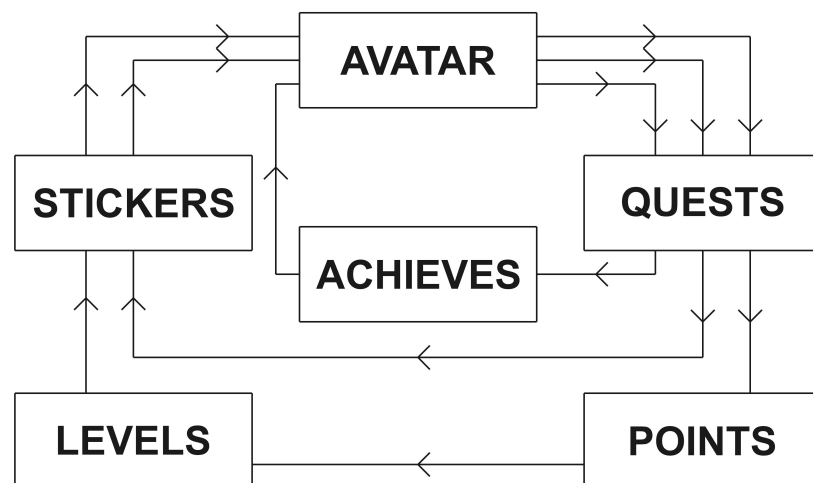H8: The system as a whole contributes to building stronger ties between students.

Figure 1. Gamification model by Gamification Lab

CONCLUSION

In order for gamification to become an integral part of school education in Russia, it must demonstrate its effectiveness and suitability. We want to believe that the first step on this path has already been taken. Starting in autumn, the Gamification Lab will proceed to active research, during which we will try to answer how successful the proposed gamification system as a whole has turned out, and how well or poorly it works in its component parts.

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