

**Volodymyr But** 

Deputy Director,

Institute of Innovative Educational Technologies,

Kiyv, Ukraine

**Anastasiia Horozhankina** 

Head of Laboratory of electronic means for distance learning,

Institute of Innovative Educational Technologies,

Kiyv, Ukraine

## **IMPLEMENTATION OF GAMIFICATION ELEMENTS IN ONLINE LEARNING USING LMS MOODLE**

***Annotation.** This article discusses means of gamification elements, used in order to achieve higher learners, satisfaction level in the online studying process. Moodle is represented as an exemplary system, due to its widespread usage in educational institutions. First, premises of desirable learner; behavior is set up, and the second means of creating a dynamic environment for both students and teachers, mostly for receiving quick feedback and therefore boosting motivation. Moodle plugins for gamifying the environment are laid out along with proposed factors for analysis of their influence.*

***Key words:** e-learning, gamification, Moodle, motivation*

***Introduction.** Gamification as an methodology in learning triggers rewards system in order to achieve higher learners' satisfaction level, which is crucial in a reality of online learning due to reduced social interactions. Elements of the gamification are relatively easy added to Moodle, as this system already offers features, which can be set in a way to provide learners with gamified interface.*

Gamification potential lies in harnessing motivation and involvement, which suffered greatly once students involuntary became online learners. Most educational

institutes in Ukraine are using traditional methodology in education process, that are suited for a face-to-face communication, and this concern not only teachers but students as well, because online learning requires different set of both teaching and learning skills.

The basic principle of adding gamification elements to Moodle is identifying desirable learners' behavior and setting some type of reward. But in order to implement working system it is crucial to consider major areas that are influenced by gamification.

First of all, it's cognitive system. It is implied, that games have some set of rules and mechanisms, that are discovered by players through active discovery in order to win. Plus, it is possible to success in different ways, so player can choose the most suitable strategy. Another important point is that game propose immediate rewards and prospective (next level), which might help students establish their study trajectory.

Secondly, emotional sphere. Games trigger wide spectrum of emotion, such as joy, curiosity, frustration etc. For sure, players aka learners experience failures sometimes, even repeated failures, but in game space failure is a part of discovery process, the feedback is quick and stakes are relatively low, thus player can keep experimenting. When it comes to educational institutions, stakes are usually quite high, which results in anxiety.

Thirdly, social interactions. Games might or not might imply interaction between students, but creating shared discourse is one of the educational institutions merits. Online learning provides a unique opportunity to try new identities for participants and explore new way to interact with each others.

In order to illustrate gamification phenomenon Kevin Werbach proposed a pyramid scheme, that represents three key elements of gamification:

- Dynamics (structure of the game, e.g. rules: limitations, emotions, narrative, progression, etc).
- Mechanisms (progression routes).
- Components (avatars, points, achievements, leaderboards, levels, etc).

Moodle is a popular open platform, designed for module-oriented study. It provides lots of application in order to manage learning process and allows to create dynamic environment for both students and teachers. LMS also collects data on participants, which can be used to identify struggles and build objective assessment of learner's progress.

Thus, this work is concerned with a way to provider quick and effective feedback in order to increase online learning efficiency and increase students' s satisfaction level in LMS Moodle.

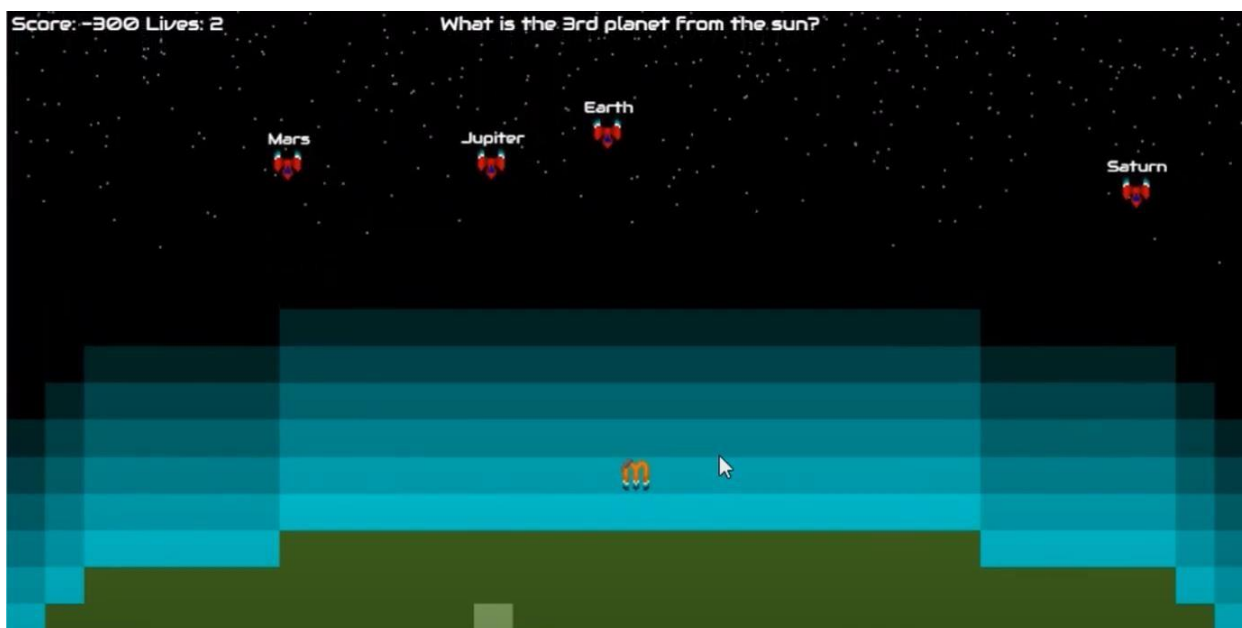
*Gamification elements in LMS Moodle.* Analyzing Moodle plugins following table of gamification elements were conducted (Table 1).

**Table 1**

**Gamification elements**

<b>Elements</b>	<b>Moodle system</b>	<b>Plugins</b>
Avatar	X	X
Collections		X
Content unloking	X	X
Combat		X
Teams	X	X
Social graphics	X	X
Easter eggs		X
Badges	X	X
Time limits	X	X
Misions		X
Levels		X
Points	X	X
Leaderboard		X
Gifts		X
Tutorials	X	X
Feedback	X	X
Certificate		X

Moodle have a variety of plugins, that allow to enrich user learning experience, such as Quizventure, that transform test into spaseship shooting game (Figure 1).



**Fig. 1. Quizventure gameplay**

Plugins as Mootivated and Motrain allows student to collect virtual points and spend them in Moodle website. Level Up! allows students to upgrade in their courses, Adaptive Quiz offers creating test with adaptive level of difficulty, not to mention H5P, which offers a wide variety of interactive content, including interactive videos and presentation.

*Methodology.* As was mentioned above, Moodle is an open platform, that's why every educational institution may modify it according to its needs. Every plugin offers its unique features, that can be utilized in learning. It's important to develop methodology in order to achieve desirable results, though. Proposed method in this work is SCRUM, that provides needed agility and updated information on every step. During the implementation of gamification elements some changes will be observed and chosen methodology will help to fulfill students' needs.

In order to test added elements it's necessary to identify desirable behavior and results so it's possible to track it down.

On this premise, the test environment is developed with selected gamification elements it should be tested for a few months and after that participants should be questioned about their experience and the data provided by Moodle should be

analyzed and compared with similar course without gamification elements. These are proposed factors to analyze with their weight in (Table 2).

**Table 2**

**Factors for analysis of course elements**

<b>Factor</b>	<b>Weighting</b>
Clarity of instructions	15 %
User Interface experience	15 %
Usability	15 %
Human factors	15 %
Comprehensability	15 %
Volume	15 %
Documentation	10 %

In order to get values for each criteria following scale could be proposed to students (Table 3).

**Table 3**

**Scale for evaluating criterias**

<b>Scale</b>	<b>Value</b>
Strongly agree	5.0
Agree	4.0 – 4.9
Neutral	3.0 – 3.9
Disagree	1.0 – 2.9
Strongly disagree	0.0 – 0.9

Plus Moodle track and record students' activity within the system, thus information conducted from questionnaire should be analyzed alongside with given data about students' actions, for example number of average interaction with course content, the highest and lowest numbers of interaction, aggregated dynamic of

student activity during the month, typical time for engaging in the system, tables of comparison number of student's interaction with system and scores.

*Conclusion.* This work discuss the complex understanding of gamification in educational process and possible ways of implementing following elements and estimating the results. There are lots of plagins for diversifying experience within Moodle platform, therefore it is crucial to develop understandable methodology for selecting and adding mentioned gamification element to achieve desirable behavior and results. Another aim of this and further study is to offer teachers understandable scheme of managing and improving gamified learning process through constant monitoring and estimating data.