

Gamification as a tool for developing soft skills in high school students

Zh. Baigozhina¹, G. Gauriyeva², Kh. Omarova³, B. Matayev^{4*}

^{1,2} L.N. Gumilyov Eurasian National University, Astana, Kazakhstan.

³ Astana International University, Astana, Kazakhstan

⁴ Pavlodar Pedagogical University named after A. Margulan, Pavlodar, Kazakhstan

*matayevba@pspu.kz



Abstract. The present study is devoted to the development and experimental substantiation of the psychological and pedagogical model of gamification of the educational process aimed at the development of soft skills in high school students. In the conditions of a modern school, the need to integrate innovative approaches that promote the formation of meta-subject competencies such as communication, organizational skills, stress resistance, self-esteem and teamwork is becoming more and more obvious. Gamification as a teaching method is considered in the study as an effective tool for increasing student engagement and motivation, as well as a stimulator of cognitive and personal growth. The methodological basis of the study includes a set of quantitative and qualitative methods: literature analysis, pedagogical observation, interview, modeling and pedagogical experiment followed by psychodiagnostic testing. Two groups of high school students (experimental and control) took part in the experiment in order to identify changes in the level of soft skills development after the introduction of game elements in the educational environment. The results showed that pupils of the experimental group demonstrated a noticeable improvement in the development of key soft skills compared to the control group. There was an increase in the level of communicative and organizational abilities, formation of more adequate self-esteem, improvement of emotional stability. The developed gamification model is characterized by flexibility, adaptability to academic subjects and age characteristics of students, as well as active inclusion of teachers in the process of assessment and support. It can be effectively integrated into teaching practice in both social humanities and natural science disciplines.



Key words: soft skills, gamification, high school students, soft skills development model, learning motivation, educational technologies.



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Introduction

The relevance of the problem arising from the research topic is based on modern requirements to the education system. Since modern education involves both the transfer of knowledge and the development of students' skills and competencies necessary for their successful socialization

and adaptation in constantly changing conditions, which are usually referred to as soft skills. They are especially important for high school students, as they become more and more important for them in the process of preparation for their future professional activity. However, traditional educational programs often do not provide a sufficient level of development of these skills, which

makes the problem of finding effective pedagogical tools urgent.

One of such innovations that allow to develop soft skills is gamification, which is based on the introduction of game elements into the educational process. In recent years, the gamification approach has increasingly attracted the attention of educators and psychologists due to its ability to increase student motivation, improve learning, and also contributes to the development of soft skills. The application of gamification technologies in schools opens up prospects for a comprehensive impact on the personality of the upper grade student, while taking into account the psychological and pedagogical aspects of learning.

Previous studies in the field of gamification have already proved its effectiveness for educational purposes. It is necessary to note the works of such foreign scientists as H. Hsiao describing the importance of gamification in improving the effectiveness of learning [1], E. Marell-Olsson investigating gamification and motivation of learners in an interactive learning environment [2]; B. Eickelmann, J. Ger. Eickelmann, J. Gerick, C. Koop on the role of ICT in mathematics lessons and mathematical achievement of secondary school students [3]; A. Fitria, D. Utomo, T. Mutia, A. Gadeng on the quality of learning through flow and immersion, regarding gamification and critical thinking [4]; J. Takács evaluation of cooperative learning in a gamified environment [4]. Takács assessment of cooperative component of gamification in learning [5] and others. And also the works of Kazakhstani scientists and researchers who consider gamification and soft skills as a possible method of learning in the system of Kazakhstani education: N. Fominykh, B. Matayev [6], A. E. Mukhametkairov [7], E. S. Tastankulova, A. R. Daniyarova [8,9] All of them confirm that gamification can significantly increase the involvement of learners and stimulate their cognitive development.

Nevertheless, most studies focus on younger age groups or higher education, leaving insufficiently explored various possibilities of gamification for soft skills

development in high school students. In addition, the present study aims to address this gap by developing gamification models that take into account the psychological and pedagogical characteristics of older adolescents.

The aim of the study is to develop and experimentally substantiate a psychological and pedagogical model of gamification of the educational process aimed at the development of soft skills in high school students.

To achieve the goal, the following tasks were set:

1. To study the existing theories and approaches to gamification and soft skills development in the context of senior school age.
2. To develop a game-based educational model that takes into account the age and individual characteristics of high school students.
3. To conduct an experimental test of the effectiveness of the proposed model in school conditions.
4. To evaluate the dynamics of soft skills development in the participants of the experiment using psychological diagnostics.
5. Analyze the obtained data and develop recommendations for the implementation of gamification in the educational process.

The hypothesis of the study is the assumption that purposefully organized gamification of the educational process can significantly improve the level of soft skills of high school students, thereby increasing their organizational and communicative abilities, self-esteem and the ability to self-regulation.

Research methods and procedures: literature analysis of scientific publications on gamification, soft skills and psychological characteristics of high school students; observation of the educational process;

conducting interviews with teachers and students to determine the needs and opportunities for the implementation of gamification; modeling and implementation of the experimental game model in the educational process; testing with the help of psychodiagnostic tests to assess the level of soft skills before and after the experiment; static quantitative analysis of the obtained results; analytical and quantitative analysis of the results.

The main parameters of measuring the effectiveness of gamification in students were defined as follows: indicators of soft skills development (communication skills, leadership skills, stress resistance); changes in the level of self-esteem and self-organization of students; quality of academic tasks performance.

The significance of this study is the creation of a psychological and pedagogical model of gamification that promotes the comprehensive development of high school students' personality and prepares them for successful social and professional adaptation. The implementation of gamification model should make the educational process more exciting and effective for the development of soft skills, which are important for high school students in modern conditions.

Materials and Methods

Literature analysis was carried out on the materials of scientific publications on gamification, soft skills and psychology of high school age. Data from specialized library catalogs, journals, both domestic and international databases (Scopus, Web of Science, RINC and others) were used to select the material. The main attention was paid to the works related to pedagogical and psychological implementation, use, impact, etc. of gamification in the educational process.

Pedagogical observation was conducted on the learning process in high schools, where special attention was paid to the change of activity, motivation and engagement of students during classes in mathematics,

physics, chemistry and literature. The materials of the study were records kept in the form of an observation diary recording behavioral reactions and dynamics of students' participation in classes.

Interviews were conducted with high school students and their teachers. In order to identify their opinions about gamification, its impact on the learning process and on the development of soft skills of high school students. The questions concerned both organizational aspects and subjective impressions received from the lessons.

In the process of modeling, an experimental game model was developed, including a series of tasks aimed at the development of soft skills in high school students. The model is based on modern game design, it assumes, in addition, gradual complication of tasks, as well as encouragement and feedback for achieving the goals set by teachers or students. Game platform: includes special tasks aimed at developing soft skills (teamwork, problem solving, decision making and other skills) in high school students.

Psychodiagnostic testing was conducted as part of the pedagogical experiment. For the study were used: the method of diagnostics of communicative and organizational aptitudes (COA); self-esteem test (Dembo-Rubinstein); stress resistance test (Spielberger-Hanin reactive and personality anxiety scale).

The study was conducted in three stages:

At the preparatory stage, the criteria for the selection of participants were determined on the basis of preliminary diagnostic tests to ensure the homogeneity of groups by initial indicators, and as a result, two groups were formed: experimental group (EG) and control group (CG), each of 24 people.

At the same stage, the development of a game-based educational model was carried out for integration into the teaching process, for the development of soft skills required by high school students. In addition, the teachers involved in the study were

instructed in the use of game technologies and familiarized with the methods of conducting lessons, as well as with the elements of games.

At the second stage, the following was conducted: establishing diagnostics of all pupils, based on psychodiagnostic tests to assess the initial level of soft skills of senior pupils. Testing allowed obtaining objective data on the dynamics of development of communicative abilities, leadership skills, self-esteem and stress resistance. During three months in the EG classes were held with the use of game technologies, while the CG was engaged in a traditional training program. During all three months, the educational process was regularly monitored, and conversations with teachers and students were held to obtain feedback.

At the control stage the diagnostics was carried out and all participants of the experiment passed psychodiagnostic tests. Static analysis of the obtained results processing was carried out in order to identify differences between the groups in EG and CG.

Results and discussion

According to L. Zamora-Quintana gamification is the process of introducing game elements and mechanisms into non-game contexts [10]. Such content has quickly become an educational system, business or everyday tasks. Provided they are used to increase users' motivation, engagement, performance or productivity.

The first uses of gamification in education began in the late 20th century. One of the earliest examples of gamification was M. Griffiths introduction of points, levels and rewards system in school programs to motivate children to learn [11]. Then, as P. Gray notes, computer games designed specifically for learning began to be used. These include such games as "Oregon Trail", introduced for the first time in 1971 to study the history and geography of the United States. At the beginning of the twenty-first century U. Rosyidah noted a sharp

increase in the popularity of gamification, which is explained by the emergence of mobile applications and social networks that allowed the introduction of game mechanisms in various training courses and programs. And practical guidelines are also being developed to engage learners in education [12].

Regarding the relationship between gamification and soft skills, we can refer to the opinion of K. Fuentes-Riffo, who emphasizes the influence of gamification on psychological aspects that should be developed in students. In the author's opinion, the use of game elements in the learning process helps to create a more comfortable environment in the learning process, besides it relieves anxiety and increases stress resistance. Since in game conditions a student, unlike traditional ones, is not so much afraid of failure [13].

According to D. Alsuhaymi gamification used for educational purposes plays an important role in the development of soft skills. For example, adaptability helps learners to cope with a variety of game situations and tasks in lessons that require quick reaction and adaptation to changing conditions [14]. Introducing game elements into learning promotes adaptive and resilient skills as learners are faced with different challenges and levels of difficulty, through which they acquire perseverance skills that are useful in real life.

In addition, as L. Jaramillo-Mediavilla problem solving in game tasks are often puzzles that require creativity and out-of-the-box thinking. In this way, problem solving skills and finding alternative ways to achieve goals in many subjects can be encouraged. Gamification also promotes not only critical thinking, but also develops skills in analyzing information, identifying key points and making informed decisions. All of these are useful both in learning academic material and in everyday life [15].

Gamification and soft skills with a focus on the age characteristics of older learners are considered by L. Altomari considering that this process in education helps to develop

soft skills in high school students, taking into account their age characteristics [16]. In addition, she, as F. Sujarwo, describing the psychological perspectives of motivation through gamification, stimulates the development of indicators such as independence, self-esteem, responsibility and teamwork. These skills are important for high school students regarding successful socialization in higher education and future professional activity [17].

The results of observation of 10th grade students at the lessons of mathematics and physics of Abay gymnasium of Pavlodar city.

Gamification elements are almost rarely used at the lessons. Several lessons were selected to determine the interest and level of activation of pupils' learning activity. For example, in algebra, when studying the topic "Application of combinatorics

formulas to calculate the probability of an event" in grade 10, the teacher used an interactive whiteboard to demonstrate a visual solution of both simple and complex tasks with game elements, which aroused a lively interest of the majority of pupils. Only then did the teacher move on to the main topic of the lesson. This led to actively asking questions, trying to understand the algorithm of solving such tasks. At the physics lesson, when studying the topic "Galileo's Principle of Relativity", the teacher began by demonstrating an experience of how this law works in practice. This aroused the interest of all students, especially those who like to conduct experiments. The teacher then explained the theoretical basis of relativity using multimedia presentations. The students participated in the discussion of the experiments, asked clarifying questions and actively shared their impressions of the lesson topic.

Table 1. Pupil observation results, in percent

Criterion	Result, %
Insufficient level of soft skills development	62,5
High interest in gamification	84,4
Increased activity in lessons	56, 25
Increasing engagement in lessons	56, 25
Increased interest in independent work, with elements of gamification	37,5

In the course of observation it was found that the level of soft skills in students is not high. The means of gamification are rarely used at the classroom lessons. When they are used, there are positive changes in the activity and involvement of students in lessons, as well as an increase in interest in independent creative work.

Results of the interview. The interview was conducted among high school students (24 people) and teachers (10 people) with the aim of identifying opinions about gamification of the learning process, its impact on learning and soft skills development in schools, and the level of satisfaction with their soft skills. Its results are summarized in Table 2.

Table 2. Interview results, in percentages

Evaluation parameter	Students	Teachers
Positive evaluation of gamification	70	60
Impact on soft skills development	60	60
Satisfaction with students' soft skills level	50	80
Difficulties of integration	—	50

Scheme of the model of the game educational program for the development of soft skills in high school students. Its goals and objectives are to develop soft skills of high school students (communication skills, leadership, self-esteem, stress resistance and others). The stages of the process: preparation, organization, implementation,

evaluation and correction. The main elements are academic disciplines divided in two directions: natural-mathematical and social-humanities. Formats of games for high school students: team, individual, online platforms, which are reflected in the model (see Figure 1).

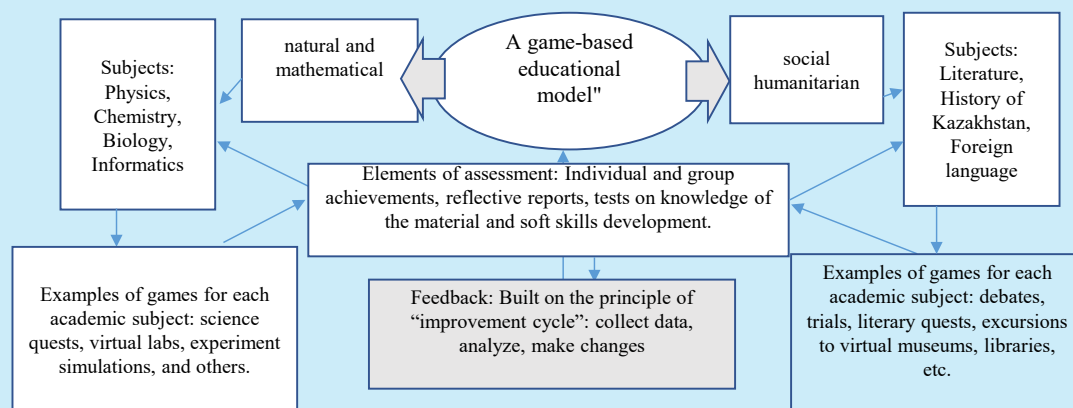


Figure 1 - Structure of the model "Game-based educational model for high school students" on the principles of gamification

The model of soft skills development is designed to introduce game technologies into the educational process to stimulate communication abilities, leadership skills, self-esteem and stress resistance in high school students. The target group of this model are high school students (10th grade pupils); teachers of science and social and humanitarian subjects

Formats of game activities: team games (quests, business games, simulations of situations and others); individual tasks (quizzes, puzzles, creative projects and others).

It utilizes online platforms, where real-time problem solving and interactions are also possible.

Special scenarios and materials are developed for each subject, taking into account the specifics of academic disciplines

and the goals of soft skills development. For example: physics - solving cases on mechanics and electricity in a quest format; chemistry - team experiments with virtual laboratory works; biology - simulation of environmental problems and search for solutions; computer science - programming mini-games to solve logical problems; literature - script writing and theatrical performances based on works of literature; and so on.

Conducting such games should be conducted according to the scenario of the event, distribution of roles and tasks within the team, preparation of tools for assessing the progress of students. During the direct realization of events, where pupils work on tasks individually or in teams, the necessary soft skills are developed. Pupils' achievements are assessed: both academic knowledge alone and improvements in soft skills development. Teachers are able to

receive and implement detailed feedback, highlighting both strengths and identified problems. Based on the data obtained, it is possible to carry out the effectiveness of the conducted lessons, to make changes in the scenario and in the content of the games in order to improve their results.

For example: the game-quest “Scientific discoveries” is used in the study of such subjects as physics, chemistry and biology. It aims to develop students' communication skills, leadership and critical thinking. Game activity description: several teams are tasked with a series of challenges related to solving scientific problems. Each stage requires

teams to coordinate actions, assign roles and make joint decisions.

Testing was carried out within the framework of the pedagogical experiment EG and CG of 24 people each. The results of establishing and control diagnostics of pupils of both groups, on the basis of psychodiagnostic tests (method of diagnostics of communicative and organizational aptitudes (COA); self-esteem test (Dembo-Rubinstein); stress resistance test (Spielberger-Hanin Reactive and Personality Anxiety Scale), assessment of soft skills level are reflected according to Figures 2-4.

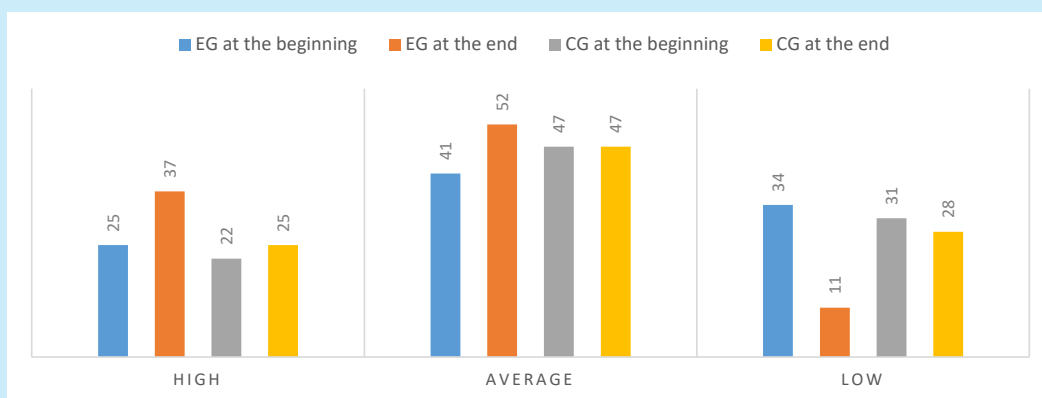


Figure 2 - Results of pupils' testing (in %) for communicative and organizational aptitudes (COA)

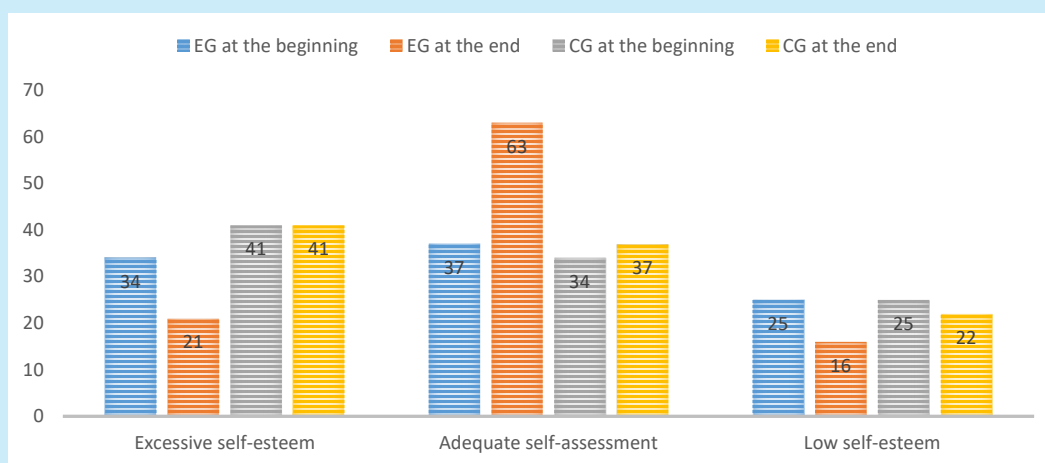


Figure 3 - Results of pupils' self-esteem testing (in %) according to the Dembo-Rubinstein methodology

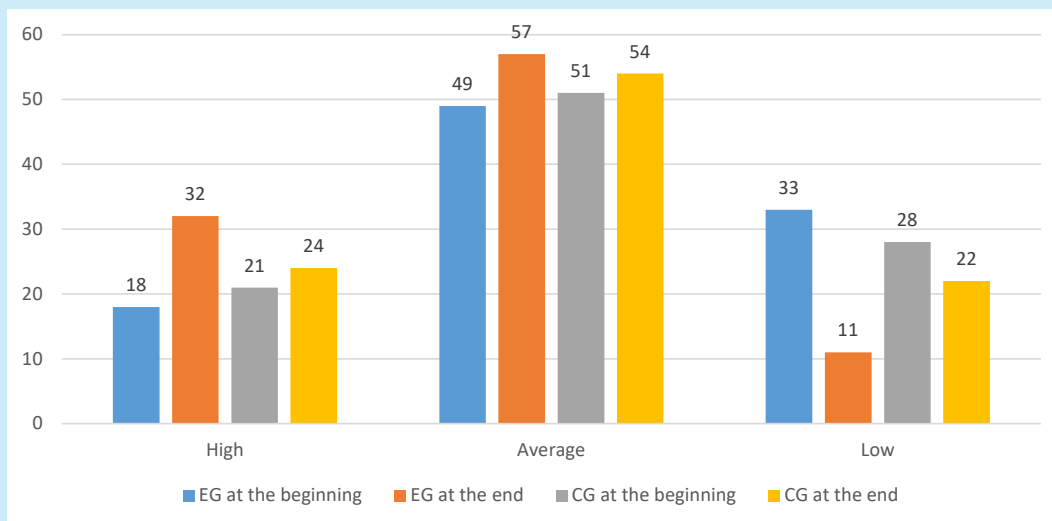


Figure 4 - Results of stress tolerance (according to Spielberger-Hanin)

The testing results confirm the positive effect of the conducted experiment on soft skills development in EG pupils. Improvements touched both communication and organizational abilities, adequate self-

esteem and stress resistance, which is confirmed by the dynamics of significant improvements in this group, according to Figure 5.

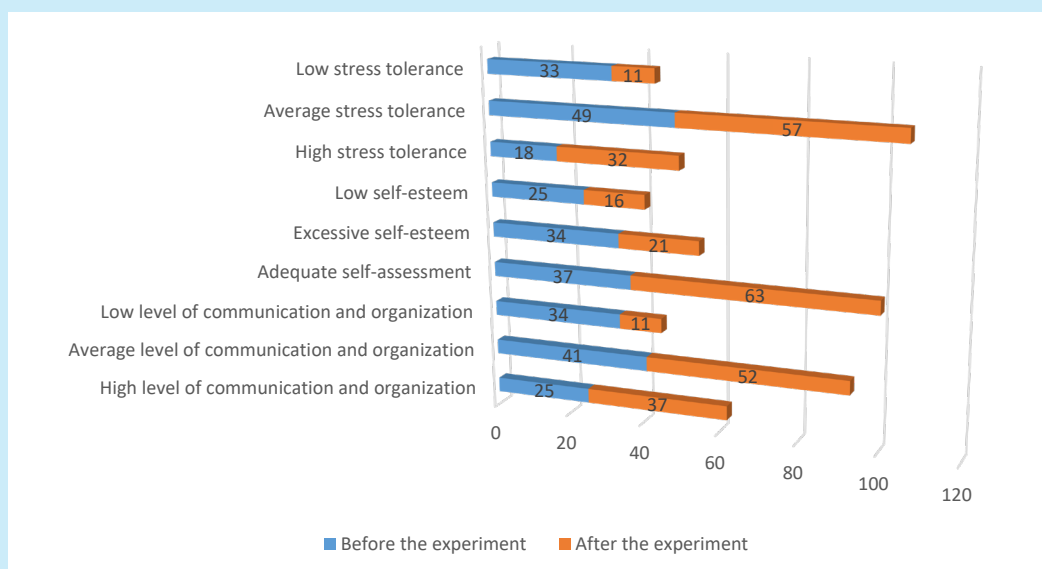


Figure 5 - Dynamics of soft skills change in the experimental group, in percentages

While the CG indicators either remained stable or improved to a lesser extent, which allows us to conclude that the implemented pedagogical strategies are significant.

The indicators noted during the observation indicate that it is necessary to develop soft skills in high school through the use of gamification, because in practice there are positive trends from its application. They are reflected immediately in some aspects of the learning process: increased activity in lessons; increased involvement in lessons; increased interest in independent creative work.

According to the results of the interview, the following conclusions were made: 70% of the interviewed pupils positively perceived gamification, and they noted an increase in motivation to learning due to the introduction of game elements. They also pointed out that such classes are more interesting and diverse and, moreover, contribute to better learning of educational material. Teachers (60%) confirmed the opinion of pupils and pointed out that the use of games contributes to the activation of students' cognitive activity and improves their engagement and attention to the learning material.

The impact of gamification on soft skills development was indicated by 60% of respondents (both students and teachers), as they believe that game techniques contribute to the development of critical thinking, teamwork and decision-making skills. At the same time, 80% of students noted improvement of communication skills through participation in team games and projects.

Only half of pupils (50%) were satisfied with soft skills, while the rest pointed out the need for additional attention to this aspect, especially taking into account the fact that they need to prepare for their future professional activity. At the same time, the majority of teachers (80%) believe that they have developed soft skills in pupils.

When answering the questions concerning organizational moments: half of teachers

(50%) noted difficulties with integration of methods gamification techniques into traditional curriculum, especially in the conditions of limited time allotted in the lesson for learning new material and questioning students.

Conclusions based on the results of testing at the ascertaining and control stages. At the same time, it should be noted at once that at the ascertaining stage the indicators of both groups were similar. Thus, according to the diagnosis of students for communicative and organizational aptitudes, the proportion of students with a high level of communicative and organizational aptitudes was 25% in EG and 22% in CG, the average level was 41% in EG and 47% in CG, the low level was 34% in EG and 31% in CG. Thus, the initial positions were quite comparable. After the classes, there was a significant improvement in the experimental group: the high level increased to 37%; the average level increased to 52%, while the low level decreased to 11%. In the control group, the dynamics was less pronounced, as the high level remained almost unchanged, increased by only 3%, the average remained at the same level, and the low level decreased by only 3%. Such results indicate the positive impact of gamification on the development of communication and organizational skills among the students of the experimental group.

Diagnosis of self-esteem (using the Dembo-Rubinstein method) also showed similar initial values at the beginning: adequate self-esteem was 37% in EG and 34% in CG; overestimated self-esteem was observed in 34% in EG and 41% in CG; underestimated self-esteem was found in 25% in both groups.

According to the results of the control section, the indicators changed significantly: in EG, adequate self-esteem increased by 16%, overestimated decreased by 13%, and underestimated decreased by 9%. In the control group, the changes were minimal: adequate self-esteem increased by 3%, overestimated remained the same (41%), and underestimated decreased, respectively. The data obtained indicate that the students of EG have successfully developed the indicator as an adequate self-assessment.

The results of stress tolerance (according to Spielberger-Khanin) showed that the baseline stress levels in both groups were also close, which also made it possible to compare both groups. However, after the experiment, noticeable changes were noted: in EG, the proportion of students with high resilience increased to 32%, average to 57%, and low to 11%. In CG, high rates remained almost at the same level (24%), average rates increased slightly (54%), and low rates increased (22%). Such indicators indicate that the experiment had a positive effect on the emotional stability of the EG students.

Analyzing the results of this study in comparison with previous studies, it is worth noting that the findings are in the context of existing trends and research in the field of educational gamification. Let's consider the key aspects of the results obtained in relation to previous work. For example, N.Y.Fominykh [6, p.113] emphasized the importance of the potential of gamification and soft skills as a teaching method in technical and vocational education in Kazakhstan. The present results confirm this point of view by adding new data on the effects of gamification on cognitive processes in high school students. While A.E. Mukhametkairov [7, p.200] focused on the soft skills of the educational process, noting its impact on increasing the motivation of high school students. The findings are consistent with their results, as they show that gamification can have a positive impact on the development of soft skills, which expands the scope of the previous study. P.Peiris reviewed the improvement of gamification methodology in the digital educational environment, while ours supports some of their ideas and delves into specific practical aspects of the introduction of gaming technologies into the educational process [18].

B. Bourke focused on gamification as a way to increase students' motivation. The present study develops this aspect as well, providing empirical evidence of the influence of gamification on the motivational component, which is important for high school students in the educational process when developing soft skills. Thus, the conclusions and comparison of the proposed study confirm many provisions of

previous works, while enriching them with new data and observations [19]. For example, the conclusion about the positive effects of gamification on the cognitive development of students coincides with the opinion of most researchers, but important elements have been added regarding specific organizational ways of development. This allows us to better understand how gamification contributes to improving the quality of learning.

Conclusion

The conducted research confirmed the hypothesis that the purposeful introduction of gamification into the educational process contributes to the effective development of soft skills among high school students. Based on an experimental model adapted to the psychological and pedagogical characteristics of adolescents, it was possible to achieve significant results in the formation of such competencies as communication and organizational skills, adequate self-esteem, stress tolerance and teamwork.

Observations, interviews, and test results have demonstrated that gamified approaches not only increase motivation to learn, but also enhance cognitive activity, build confidence, initiative, and critical thinking among students. The experimental group showed significant improvement in all key soft skills indicators, in contrast to the control group, where the changes were insignificant.

When observing high school students in the educational process, there is a low level of soft skills and a high interest in gamification.

The interview was conducted among high school students and teachers, and established the importance and interest in the gamification of the educational process, a high level of influence on the learning and development of soft skills in schools, as well as the level of satisfaction with their soft skills. According to teachers, there are many problems with their implementation in the educational process.

The proposed model is an effective tool for introducing gaming technologies into the educational process in order to comprehensively develop soft skills and the personality of a high school student as a whole. The advantages of the model are defined by:

- complexity expressed in the development of a wide range of soft skills through a variety of gaming activities;
- relevance, indicated by the fact that all games adapt to modern real-world conditions and the needs of high school students;
- flexibility, characterized by the ability to vary the complexity and subject of the games depending on the topic of the subject, the age and level of training of students;
- participation of both students and teachers. At the same time, teachers are actively involved in the game educational process, providing students with high-quality support, and they also evaluate the achievements of students.

In addition, the study revealed organizational difficulties: lack of time, low willingness of individual teachers to apply innovative methods and the need for additional methodological support. These aspects should be taken into account when scaling the model to other schools and regions.

The results of the work expand scientific and practical ideas about the possibilities of gamification in school education, contribute to the development of pedagogical theory and practice, and the proposed model can be recommended for replication as an effective tool for developing soft skills in high school students.

Of particular value is the developed game educational model, which has been successfully integrated into the subjects of humanities and natural sciences and mathematics. The model has proven its flexibility, versatility and practical applicability in the conditions of a Kazakh school. Feedback elements, structured

encouragement, adaptation to educational topics and the level of training of students ensured the sustainable development of personal and social competencies.

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Геймификация жоғары сынып оқушыларының икемді дағдыларын дамыту құралы ретінде

Ж.М. Байгожина¹, Г.М. Гауриева¹, Х.С. Омарова², Б.А. Матаев³

¹Л.Н. Гумилев атындағы Еуразия ұлттық университеті, Астана қ., Қазақстан Республикасы

²Астана Халықаралық Университеті, Астана қ., Қазақстан Республикасы

³Әлкей Марғұлан атындағы Павлодар педагогикалық университеті Павлодар қ., Қазақстан Республикасы



Аңдатпа. Бұл зерттеу жұмысы жоғарғы сынып оқушыларының soft skills (жеке құзыреттер) дамуына бағытталған білім беру үдерісін ойын әдістерімен жетілдірудің психологиялық-педагогикалық моделін әзірлеуге және оның тәжірибелік негіздемесіне арналған. Қазіргі мектеп жағдайында коммуникация, ұйымдастырушылық қабілеттер, күйзеліске төзімділік, өзін-өзі бағалау мен топта жұмыс істеу сияқты метапәндік құзыреттерді қалыптастыруға ықпал ететін инновациялық тәсілдерді біріктіру қажеттілігі барған сайын айқындалып келеді. Зерттеуде ойын элементтерін қолдану білім алушылардың белсенділігін және мотивациясын арттыратын, сонымен қатар танымдық және тұлғалық дамуын ынталандыратын тиімді әдіс ретінде қарастырылады. Зерттеудің әдіснамалық негізі сандық және сапалық әдістер жиынтығын қамтиды: әдебиеттерге шолу, педагогикалық бақылау, сұхбат, модельдеу және психодиагностикалық тестілеумен қатар жүргізілген педагогикалық эксперимент. Экспериментке екі топ: тәжірибелік және бақылау топтары қатысты, мақсат — білім беру ортасына ойын элементтері енгізілгеннен кейін soft skills даму деңгейіндегі өзгерістерді анықтау. Нәтижелер тәжірибелік топтағы оқушылардың негізгі жеке құзыреттерінің дамуы бақылау тобымен салыстырғанда едәуір жақсарғанын көрсетті. Коммуникативтік және ұйымдастырушылық қабілеттердің артуы, өзін-өзі бағалаудың дұрысталуы, эмоционалдық тұрақтылықтың жақсаруы байқалды. Әзірленген геймификация моделі икемділігімен, оқу пәндеріне және оқушылардың жас ерекшеліктеріне бейімделе алуымен, сондай-ақ мұғалімдердің бағалау және қолдау процесіне белсенді қатысуымен ерекшеленеді. Бұл модельді

қоғамдық-гуманитарлық және жаратылыстану ғылымдары пәндеріне тиімді түрде енгізуге болады.



Кілтті сөздер: soft skills, геймификация, жоғарғы сынып оқушылары, жеке құзыреттерді дамыту моделі, оқу мотивациясы, білім беру технологиялары.

Геймификация как инструмент развития гибких навыков у старшеклассников

Ж.М. Байгожина¹, Г.М. Гауриева¹, Х.С. Омарова², Б.А. Матаев³

¹Евразийский национальный университет имени Л.Н. Гумилева, г.Астана Республика Казахстан

²Международный университет Астана, г.Астана Республика Казахстан

³Павлодарский педагогический университет имени Әлкей Марғұлан г.Павлодар, Республика Казахстан



Аннотация. Настоящее исследование посвящено разработке и экспериментальному обоснованию психолого-педагогической модели геймификации образовательного процесса, направленного на развитие soft skills (гибких навыков) у старшеклассников. В условиях современной школы все более очевидной становится необходимость интеграции инновационных подходов, способствующих формированию метапредметных компетенций, таких как коммуникативные и организационные способности, стрессоустойчивость, самооценка и умение работать в команде. Геймификация рассматривается в исследовании как эффективный метод повышения вовлеченности и мотивации учащихся, а также как стимул когнитивного и личностного роста. Методологическая основа исследования включает комплекс количественных и качественных методов: анализ литературы, педагогическое наблюдение, интервью, моделирование и педагогический эксперимент с последующим психодиагностическим тестированием. В эксперименте приняли участие две группы старшеклассников — экспериментальная и контрольная, с целью выявления изменений в уровне развития гибких навыков после внедрения игровых элементов в образовательную среду. Результаты показали, что учащиеся экспериментальной группы продемонстрировали заметное улучшение в развитии ключевых soft skills по сравнению с контрольной группой. Отмечено повышение уровня коммуникативных и организационных способностей, формирование более адекватной самооценки, улучшение эмоциональной устойчивости. Разработанная модель геймификации отличается гибкостью, адаптивностью к учебным предметам и возрастным особенностям учащихся, а также активным участием учителей в процессе оценки и сопровождения. Ее можно эффективно интегрировать в образовательную практику как в гуманитарных, так и в естественнонаучных дисциплинах.



Ключевые слова: soft skills, геймификация, старшеклассники, модель развития гибких навыков, учебная мотивация, образовательные технологии.

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