



GAMIFICATION AS A MEANS OF FORMING SOCIALLY SUCCESSFUL PERSONALITY OF A TEENAGER

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Abstract: *The article outlines the essence of gamification as an innovative means of forming a socially successful personality of a teenager and presents a description of the successful implementation of a curriculum with elements of gamification in the educational process of educational institutions. To achieve the goal of the research, theoretical methods were applied – analysis, synthesis, comparison, systematization, generalization, specification; empirical methods – observation, questionnaires, blitz-surveys, program implementation and evaluation of results.*

The research took place during the 2022/2023 academic year at the Center for Extracurricular Work “Northern Lights” in the Svyatoshyn district of Kyiv. A total of 214 teenagers from grades 7–9, who were participants in the network of extracurricular activities at the Center and general secondary education institutions in the Svyatoshyn district of Kyiv, were involved in the research.

The content and methodical features of the educational program “Social successfulness” are characterized, in particular, its objectives. The design of the program’s experimental implementation is proposed, a comparative analysis of possible formats of its broadcast is provided, and the gamification tools necessary for its implementation are highlighted.

The study carried out a pedagogical reflection and found that, according to the results of the blitz survey, teenagers articulated two most common portraits of a socially successful personality (based on external indicators of success and personal

qualities). According to the results of the questionnaire, the overwhelming number of respondents positively perceived game tools and acknowledged their own activity during training with the use of gamification as productive.

Keywords: social successfulness gamification tools, game elements, mixed learning, portrait of a socially successful personality

INTRODUCTION

Social successfulness is one of the evaluation parameters of an individual and one of their most important values. The need for the formation of a socially successful personality of a teenager is due to the fact that adolescence is the main and turning point for the formation of a system of personal values in adult life. In this age period, the social situation of human development changes significantly: self-awareness is formed, a stable perception of the surrounding world and society is formed, there is an active search for ways of self-affirmation and ways of self-realization, behavior becomes collective and group.

Today's teenagers are children of the digital age, surrounded by the Internet, gadgets and related information and communication technologies. Therefore, in order to form a socially successful personality of a teenager, it is necessary to create an information-rich and developmental environment that fosters their moral and ethical growth, a desire for knowledge acquisition, and the development of teamwork skills. Adapting the educational process to meet the needs of the teenager, integrating the teenager into the system of modern social relations and enabling them to obtain a positive experience of social successfulness are facilitated through contemporary educational and nurturing approaches. In particular, the effectiveness of the nurturing a socially successful adolescent personality in general secondary education institutions is provided by information and communication technologies. A review of both domestic and foreign scientific sources (Antonov, 2022; Dichev, & Dicheva, 2017; Oliveira, Hamari, Shi et al., 2023; Özel, Nelson, Bertram, & Martignon, 2021; Para, 2021; Taspinar, Schmidt, & Schuhbauer, 2016) indicates that gamification, the application of game elements and principles in non-game contexts, is an important means of forming a socially successful student's personality.

The purpose of the article is to reveal the essence of gamification as an innovative means of forming a socially successful personality in teenagers and describe the successful implementation of a curriculum enriched with elements of gamification elements in both extracurricular and general secondary education settings.

Research questions

1. How does gamification affect the social successfulness of adolescents?
2. What are the objectives and distinctive features of the «Social successfulness» educational program in terms of its content and methodology?
3. What is the design of the experimental implementation of the educational program?

4. What is the most effective format for delivering the «Social successfulness» educational program?
5. Which gamification tools are recommended for use in the process of forming a socially successful personality?

1. THEORETICAL FOUNDATIONS

1.1. Gamification in the modern scientific discourse

Games are among cherished forms of human activity, traditionally used not only for entertainment, but also for educational purposes. We agree with the scientific findings of Cypriot researchers who state that „games have been for a long time a part of the culture and play as a medium for entertainment, learning, teaching, and relationship building. Recently, games have been digitized, leading to an increase in the amount of use and implementation in our daily lives” (Al-Dosakee, & Ozdamli, 2021, p. 561).

The term „gamification” itself originated in the realm of digital media. Over time this term has come to describe „those features of an interactive system that are aimed at motivating and engaging end users through the use of game elements and mechanics” (Seaborn, & Fels, 2015, p. 14). It is important to note that gamification is not the process of creating an entire game, but, rather, the transfer of some of its positive elements, mechanisms and characteristics (such as freedom of participation, motivation, clear rules, purpose, tasks, visualization, competitiveness, and feedback) into non-game contexts.

To date, there is no universally accepted definition of this term. As emphasized by British and Swedish researchers, nowadays „gamification is applied in various contexts, such as education, health, business and sustainability. By implementing game elements, gamification initiatives in these contexts often aim to influence people and promote desirable actions and behavior, for example, when they exercise running, shop, teach and learn. In many instances, gamification is deployed to motivate people to become actively engaged” (Langendahl, Cook, & Mark-Herbert, 2017, p. 2247). Simultaneously, gamification has the capacity to make a particular process or object so attractive that individuals remain engaged with it over an extended period of time. In education, the gamification trend is closely related to the concept of interactivity, which opens up opportunities for dialogue, fosters motivation for self-development and, most importantly, actively engages learners in the educational process. Within the context of gamified education, modern online games are proposed as a means to achieve desired results in the study of specific subjects.

„Gamification offers to „enliven” and diversify educational tasks with the help of the Internet and modern multimedia technologies” (Perryer, Celestine, Scott-Ladd, & Leighton, 2016, p. 328). Hence, American researchers consider gamification a new educational theory and conceptualize the game „not as a simple set of techniques and mechanics, but as a pedagogic heritage and an alternative framework for training and shaping participant behavior that has at its core the concepts of entertainment and engagement” (Dichev, & Dicheva, 2017). Ukrainian scholars unanimously contend

that „the main goal of gamified learning is the acquisition and application of knowledge, and not the usual passing of a stage or obtaining a good grade” (Mykhalova, Semenyshina, Krasnoshchok, & Stupenkov, 2023). In addition, gamification enables the gradual adaptation of the scope and complexity of tasks in accordance with users’ acquisition of new skills and competencies.

We share the viewpoint of Ukrainian researchers, who assert that „gamification in education can be considered both as a method of learning and upbringing, and as a form of educational work, and as a means of organizing a holistic educational process” (Pereyaslavskaya, Smagina, 2019, p. 251). In our opinion, gamification in education constitutes a diverse array of tools and mechanics that significantly enrich the educational experience with entertaining, educational, nurturing, motivational, and social-communicative components.

Thus, gamification in education is a natural stage in its development, enabled by the integration of effective information and communication technologies into the educational process and the powerful activation of the potential within developing individuals who grasp and engage with the features of the game and game mechanisms.

1.2. The potential of gamification in the formation of a socially successful personality of a teenager

Shaping a socially successful personality in a teenager is a long and complex creative process aimed at fostering their productive social engagement and developing qualities necessary for social success, such as perseverance, responsibility, initiative, self-control and the ability to construct a step-by-step strategy for social success. Gamification serves as a means to modernize this process through various digital tools (Internet platforms, mobile applications, games), engaging teenagers by „activating their attention, understanding, interest, perception, thinking” (Pereyaslavskaya, & Smagina, 2019, p. 252) and arousing sincere interest in accomplishing educational goals. Gamification elements turn ordinary exercises into exciting activities and equate enjoyment with learning. Gamification not only turns the educational process into a pleasant, exciting event, but also motivates a teenager for self-improvement using various elements. In particular, the competitiveness embedded in the content of the game promotes competition; prize incentives (premium points, badges, leader lists) are external recognition of the participant’s success; excitement and overcoming difficulties and obstacles stimulate the desire for progress.

The following aspects of gamification become relevant in shaping a socially successful personality: dynamics (incorporating scenarios that require the user’s attention and reaction in real time); mechanics (using elements characteristic of gameplay scenarios: card drawing, bargaining, attack, competition, cooperation); aesthetics (creating an overall gaming experience); social interaction (using techniques that ensure effective communication).

It is worth noting that gamification simplifies the achievement of goals related to shaping a socially successful teenager’s personality without imposing physical and psychological strain. These objectives include increasing learning productivity; recognizing and encouraging leadership, defining each teenager’s personal development

direction, fostering improved communication in the educational environment; uniting teenagers around common ideas, involving them in team activities; supporting reflection regarding their contributions to joint activities, minimizing conflicts; and cultivating moral values, and a desire for self-development.

2. RESEARCH METHODS

The following methods were used to achieve the goal and fulfill the tasks of the research: *theoretical* – analysis, synthesis, comparison, systematization, generalization of materials from psychological and pedagogical sources; specification – enhancing the understanding of the concept of „social successfulness”, coordination of the content of the „Social successfulness” educational program and other relevant documents related to the program and its implementation; *empirical* – observation of teenagers during classes in the program, surveys (questionnaires) to collect empirical information, blitz surveys aimed at gauging awareness of the characteristics of a successful personality, and the implementation of the educational program and evaluation of its impact as perceived by the respondents.

The research was conducted during the 2022/2023 academic year at the Center for Extracurricular Work „Northern Lights” in the Svyatoshyn district of Kyiv. A total of 214 teenagers from grades 7–9 participated in the study. These teenagers were drawn from the network of circles at the Center for Extracurricular general secondary education institutions within the Svyatoshyn district of Kyiv.

The diagnostic tool used for the survey was the „My participation in the „Social successfulness” Program” questionnaire. Among the interviewed teenagers, 59.1% (n=126) were boys, 40.9% (n=88) were girls. 15.2% (n=32) of the teenagers lived in villages, 22.2% (n=48) live in urban-type settlements, 25.3% (n=54) in small towns, and 37.4% (n=80) in larger cities.

3. RESEARCH RESULTS

3.1. Content and methodological particulars of the educational program „Social successfulness”

The educational program „Social successfulness” was elaborated by the Ukrainian researcher K. Bezruk to provide the comprehensive program and methodological support for the education and personality development of teenagers in extracurricular education institutions (hereinafter referred to as the Program). The program’s objectives are centered on the formation and development of soft skills in learners, fostering a mindset of a successful personality in teenagers, and motivating them to strive for success.

The program is designed to facilitate the close interaction between the educational institution and stakeholders in shaping the foundational aspects of social successfulness for learners. It aims to cultivate a range of competencies: cognitive; social; information; life-creating skills. The scope of the Program is designed for one year of study at the basic level, amounting to 144 hours per year (with weekly planning

involving two sessions, each lasting a total of 4 hours. It is aimed at learners in grades 5–9, with a recommended group size of 15 to 20 participants.

The program consists of an explanatory note, the main part and appendices. The main part of the Program contains 7 sections. The first four cover various aspects of creating a basis for social successfulness (self-knowledge, development of social and emotional intelligence and communicative leadership, acquisition of media literacy). The following three sections outline important steps in the personal journey toward success (creating value orientations, recognizing the responsibility of choice, prioritizing goals and setting time limits in a multitasking environment, productive teamwork, and self-development and improvement of the qualities of a successful personality).

The organization of educational activities for adolescents under the Program is planned to include various forms and methods such as training sessions, mini-lectures, individual and group work, brainstorming, role-playing games, discussions, debates, and presentations using the „PechaKucha” method (training brevity and accuracy in communication) (Bezruk, 2022). The effectiveness of the Program’s implementation is assessed through formative evaluation methods, which may include the defense of creative works, the presentation of portfolios, the defense of educational projects or conducting research for a scientific society.

3.2. Design of the experimental approbation of the Program

The experimental implementation of the „Social Successfulness” Program was conducted during the 2022/2023 academic year at the Center for Extracurricular Work „Northern Lights” in the Svyatoshyn district of Kyiv. Classes were conducted twice a week, with each session lasting 2 study hours for each group. To ensure scientific and methodological support, an expert group was formed, consisting of 4 scientists, 5 methodologists, and 8 teachers. A reevaluation of prior scientific research and the reflection on observations made during the educational process proved that, under modern conditions, the „Social Successfulness” program can be implemented in three organizational formats: contact (offline), mixed (offline + online), remote (online). A comparative analysis was performed to assess the advantages and disadvantages of each format (as presented in Table 1), leading the experts to select a mixed format for the experimental implementation.

Table 1. Comparative characteristics of possible delivery formats of the „Social successfulness” program

Advantages	Shortages
<i>Offline</i>	
<ul style="list-style-type: none"> • Building friendly relations, development of communication skills • Interaction with the reference environment, obtaining real experience of cooperation with peers and teachers. • Fast feedback and the possibility of immediate help from the teacher. • Participation in the implementation of group social projects. • Organization and holding of events; visiting museum and theater locations, cinemas, etc. 	<ul style="list-style-type: none"> • A security issue, especially in war zones or during air raids. • Physical and geographical limitations, the need for a room for classes. • Limited access to technical material and resources that facilitate interactive learning. • Additional costs for providing a working office and office resources. • Lack of time to ensure an individual approach to each teenager.
<i>Offline + online (mixed)</i>	
<ul style="list-style-type: none"> • Interaction with the teacher and peers. • The possibility of additional visualization. • Safety of the educational process. • The ability to choose a learning format and choose a convenient schedule. • Use of a wide range of materials and resources. • The opportunity to improve technical skills in working with computers and using online tools. • Promptness, ability to track progress and provide feedback. • Effective time allocation. 	<ul style="list-style-type: none"> • The need for fast Internet connection, new and effective technical support. • The need to focus on high responsibility, self-organization and self-discipline. • Information overload is possible. • Technical difficulties; problems with the operation of Internet platforms. • High requirements for computer skills. • Additional time and effort to prepare and implement mixed learning.
<i>Online</i>	
<ul style="list-style-type: none"> • The ability to choose the time and place for classes and your own learning pace. • Free access to educational resources, video lessons, interactive materials and tools to improve learning. • The possibility of completing additional tasks and studying materials at one's own pace. • Self-organization, self-upbringing, self-discipline. • Expanding the circle of acquaintances. 	<ul style="list-style-type: none"> • The possibility of free social communication is limited. • Lack of quick feedback. • The need for stable hardware and software. • The need for personal space to perform tasks. • Developed time management and concentration. • Possible alienation and feeling of loneliness.

Source: Own work.

3.3. Gamification tools

During the implementation of the Program, various gamification tools were used to enhance the learning experience: creation of a thematic promotional video, visualization of rules of interaction, visualization of successful narratives, chat or forum discussions of the course and results of joint activities, competition and rating, obtaining badges, statuses, certificates, etc. They are presented in detail below.

1. *Creation of a thematic promotional video.* To promote the Program as widely as possible and encourage teenagers to engage in it, a promotional video with a motivational mini-video „To success on your own wings!” was created. This video highlighted the program’s objectives and features, piqued interest with appealing effects, and outlined potential benefits of mastering the Program. The promotional video was shared on popular platforms or channels among teenagers, including YouTube, Instagram, Telegram, Viber, and Microsoft.
2. *Visualization of interaction rules.* In order to successfully implement the Program, it is important to develop a training algorithm that is attractive to teenagers. For this purpose, it is advisable to use simple but effective animations (comics). This could be easily created using online resources featuring a wide selection of bright templates and elements: Canva, Biteable, Powtoon, Vyond (GoAnimate), Moovly, Brush Ninja, FlipAnim, video editor with „Renderforest” templates, Wick Editor. Interactive tools like «word clouds» visual representations of key words in the text were used, with tools such as WordArt or TagCrowd employed to create these „word clouds”.
3. *Visualization of successful narratives.* It is better to convey complex material and explain it in simple words using an example of a well-thought-out story with characters known to teenagers from movies, cartoons, video games, or real life. An example can be the creation of a digital museum „Pantheon of successful personalities” in the form of an interactive page or slides about various famous personalities, where the stories of their success will be told. To implement this task, the participants were offered to use such ideas as:
 - *the virtual exhibition hall*, where each teenager creates his own page about a famous person (with text, images, videos and audio files);
 - *multimedia presentation*, creation of multimedia presentations about famous figures (in PowerPoint or Google Slides programs);
 - *didactic game*, interaction of teenagers with success stories of different personalities (platforms for creating games: Kahoot!, Genially, LearningApps.org, Scratch, Flippity);
 - *the comic or animation* is an opportunity for teenagers to show their creativity and create a comic or animation (resources with a simple and accessible interface: Pixton, ToonDoo, Powtoon, Scratch, Animaker);
 - *video stories* are pupils’ creation of short video stories, videos about the life and achievements of famous and successful personalities (online tools for creating video stories: Clipchamp, WeVideo, Animoto).
4. *Use of mental maps.* Such maps can be used as part of a narrative or as a means of visualizing stories. These maps often contained moving elements, anima-

tions, media elements, hyperlinks, videos and interactive elements. You can use the following online resources: Coggle, MindMup, Canva, Lucidchart, Draw.io.

5. *Chat or forum discussions of the progress and results of joint activities.* The possibility of joint communication is ensured through groups (communities), chats or forums, while the system of individual messages can also be used in parallel. To create a community, you should choose a common platform, for example: Telegram, Viber, WhatsApp, Facebook Groups, Slack, Microsoft Teams and others.
6. *Use of means of stimulation and competitiveness* (receiving premium points, badges, statuses, certificates). A system of scoring points was implemented to encourage active participation, responsible conduct, and task completion within the „Social Successfulness” educational program. Points were awarded for aspects such as engagement in training sessions, participation in mass events, responsible behaviour, conscientious task completion, persistence in achieving set goals, reasoned views, optimism, productive group work, patriotism. For a set of productive actions, it is advisable to use such incentives as badges, trophies or statuses, certificates. For this, a solemn or humorous procedure for the public presentation of the award should be considered.

3.4. Learning results under the Program

In order to carry out a pedagogical evaluation of the participants’ educational outcomes in the Program and to assess the teenagers’ awareness of issues of social success, first of all, a blitz survey was conducted (teenagers answered the question: „What does it mean for me to be socially successful?”). Their answers were quite concise and defined this concept from various facets of personality development. Based on the results of the blitz survey, it can be concluded that teenagers articulated two prevailing portraits of a socially successful person: the first is built on the basis of external, socially recognized indicators of success; the second – personal qualities that reflect individuals’ perspectives on successful activities.

One of the tasks of the experimental implementation of the Program was to gauge the participants’ opinions regarding the influence of game elements (gamification) on their emotional state and productivity. The survey findings revealed that over three quarters of the respondents positively perceived gamification tools. Notably „score incentives” (91%, n=195), „ratings” (84%, n=180) and „discussions on chats/forums” (83%, n=178) were the most well-received elements, which can be explained by the correspondence to the leading types of age-related activities of teenagers – communication and competition. „Mental maps” received fewer selections (69%, n=148), possibly due to the lack of experience in group work on associations in distance learning settings.

A significant majority of the participants (91%, n=195) considered their engagement in training with gamification to be productive. Such self-assessment seems important considering the fact that about half of the participants (43%, n=92) indicated their previous experience with personality development training programs, and therefore, they can make accurate comparisons.

Answers to the question „What do game elements of learning work for?” were distributed as follows (Figure 1):



Figure 1. What do game elements of learning work for?

Source: Own work,

It is noteworthy that here the first two positions were also occupied by „gambling competitiveness” (92%, n=197) and „exchange of positive emotions” (91%, n=195), with „better assimilation of new knowledge” (89%, n=190) coming third.

4. DISCUSSION

We concur with the opinion of American scientists that the introduction of gamification elements is fundamentally important for the effectiveness of personality development programmes, in particular, „addressed to related attitudes, activities, and behaviors, such as participatory approaches, collaboration, self-guided study, completion of assignments, making assessments easier and more effective, integration of exploratory approaches to learning, and strengthening student creativity and retention” (Dichev, & Dicheva, 2017). The results of our curriculum testing, „Social successfulness”, with gamification elements further validate this, as it, motivated adolescents to be active and interact with each other, fostering creativity, attentiveness, and clarity in building and implementing their plans.

Additionally, we believe that the findings of British and Swedish scientists, emphasizing the necessity of incorporating additional elements of game mechanics, are worth considering in our future research. Specifically, we intend to explore the use of mobile applications to ensure the monitoring of learning progress, as well as the introduction of the storytelling method to receive feedback communication, which will assist „to encourage students to engage in learning activities, make decisions on what to explore, and crucially to be exposed to consequences of making poor decisions” (Langendahl, Cook, & Mark-Herbert, 2017, p. 2247).

We agree with German and British researchers regarding the leading role of gamification in distance learning, which has gained relevance during the Covid-19 pandemic (Özel, Nelson, Bertram, & Martignon, 2021). „The extended pre- and post-

test, including psychological questionnaires” proposed by the scientists provide a comprehensive means of assessing the effectiveness of learning using gamification in various ways contributing to the development of gamified lessons. Their conclusions correlate with the results of research conducted by Polish scientist A. Para, who emphasizes that the social, economic and technological changes that have occurred due to COVID-19 will have long-term consequences for education, therefore, in the post-pandemic period, distance learning with elements of gamification will become increasingly important: „The use of gamification in distance education brings positive effects not only in the form of increased pupil motivation and engagement, but also contributes to the development of their competencies such as problem solving, critical thinking and team collaboration” (Para, 2021, p. 28).

We are also drawn to the insights of German researchers on the positive effects of gamification in shaping the successfulness of a modern learner: „Learner success is a process that requires from the teacher the ability to combine both useful and enjoyable, didactic elements along with interactive ones. Tools based on the typical mechanics of gamification are not only fun, which is why they are popular among pupils, but also add to the teacher’s toolbox effective means of increasing motivation to learn and developing soft skills” (Taspinar, Schmidt, & Schuhbauer, 2016, p. 101). Similar to the authors of this study, German scientists believe that mixed learning represents the most optimal format for making a positive impact on the behaviour and knowledge levels of participants.

CONCLUSIONS

Thus, based on the results of our theoretical exploration of the problem, the elucidation of the essence and resources of gamification, as well as the implementation of the educational program „Social successfulness”, we can assert that gamification: helps the adaptation of a teenager within their peer groups, promoting socialization and self-improvement; creates favorable conditions for living and discussing various difficult life situations and effective interaction with peers; expands the possibilities of working with information; stimulates independent and informed decision-making regarding one’s life stance and pathways to achieving social successfulness; increases motivation for success and enables self-monitoring of progress.

The optimal program delivery format is mixed learning, which combines the advantages of offline and online learning, offering students greater flexibility, individualization and access to a variety of resources. In the context of modern information and communication technologies, this approach can provide an effective and engaging learning solution in Times of increased risk, such as during martial law or other crisis scenarios.

The introduction of gamification tools into the practice of forming the social success of a growing personality allows advancing and modernizing the educational process, making it both interesting and useful for teenagers. It is necessary to further research the issues of using gamification tools for children of different ages, filling game technologies for teenagers with content that will allow them to overcome fears

caused by war and losses, and will help them to develop resilience, optimism, and prosocial behaviour in teenagers.

REFERENCES

- Al-Dosakee, K. & Ozdamli, F. (2021). Gamification in Teaching and Learning Languages: A Systematic Literature Review. *Revista Romaneasca Pentru Educatie Multidimensionala*, 13(2), 559–577. <https://doi.org/10.18662/rrem/13.2/436>.
- Antonov, Ye. V. (2022). Heimifikatsiia osvithnoho protsesu: analiz poniattia [Gamification of the educational process: analysis of the concept]. In *Innovatsiini transformatsii v suchasni osviti: vyklyky, realii, stratehii. Zbirnyk materialiv IV Vseukrainskoho vidkrytoho naukovo-praktychnoho onlain-forumu* (pp. 250–252). Kyiv: Natsionalnyi tsentr «Mala akademiia nauk Ukrainy». ISBN 978-617-7945-04-7.
- Bezruk, K. O. (2022). *Sotsialna uspushnist. Navchalna prohrama dlia pozashkilnoi osvity* [Social success. Curriculum for out-of-school education]. Retrieved from <http://surl.li/kgnsk>.
- Dichev, Ch. & Dicheva, D. (2017). Gamifying education: what is known, what is believed and what remains uncertain: a critical review. *International Journal of Educational Technology in Higher Education*, 14(9). <https://doi.org/10.1186/s41239-017-0042>.
- Langendahl, P.-A., Cook, M., & Mark-Herbert, C. (2017). Exploring Gamification in Management Education for Sustainable Development. *Creative Education*, 8(14), 2243–2257. <https://doi.org/10.4236/ce.2017.814154>.
- Mykhailova, L. M., Semenyshyna, I. V., Krasnoshchok, I. P., & Stupenkov, S. O. (2023). Heimifikatsiia yak innovatsiinyi keis profesiinoi pidhotovky pedahohichnykh pratsivnykiv ZVO v umovakh dystantsiinoho navchannia [Gamification as an innovative case of professional training of teaching staff of higher education institutions in conditions of distance learning]. *Akademichni vizii*, 18. <http://dx.doi.org/10.5281/zenodo.7795391>.
- Oliveira, W., Hamari, J., Shi, L., Toda, A. M., Rodrigues, L., Palomino, P. T., & Isotani, S. (2023). Tailored gamification in education: A literature review and future agenda. *Education and Information Technologies*, 28, 373–406. <https://doi.org/10.1007/s10639-022-11122-4>.
- Özel, E., Nelson, J. D., Bertram, L., & Martignon, L. (2021). Playing Entropy Mastermind can Foster Children's Information-Theoretical Intuitions. *Frontiers in Education*, 6. <https://doi.org/10.3389/educ.2021.595000>.
- Para, A. (2021). Możliwości wykorzystania grywalizacji w zdalnej edukacji. *E-mentor*, 1(88), 21–29. <https://doi.org/10.15219/em88.1499>.
- Pereiaslavskaya, S. O., & Smahina, O. O. (2019). Heimifikatsiia yak suchasnyi napriam vitchynianoi osvity [Gamification as a modern direction of national education]. *Open educational e-environment of modern University, special edition*, 250–260. ISSN: 2414-0325.
- Perryer, Ch., Celestine, N., Scott-Ladd, B., & Leighton, C. (2016). Enhancing workplace motivation through gamification: Transferrable lessons from pedagogy. *The International Journal of Management Education*, 14, 327–335. <https://doi.org/10.1016/j.ijme.2016.07.001>.

- Seaborn, K., Fels, D. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 74, 14–31. <https://doi.org/10.1016/j.ijhcs.2014.09.006>.
- Taspinar, B., Schmidt, W., & Schuhbauer, H. (2016). Gamification in Education: A Board Game Approach to Knowledge Acquisition. *Procedia Computer Science*, 99, 101–116. <https://doi.org/10.1016/j.procs.2016.09.104>.