УДК 378.147:371.3
DOI: 10.32342/2522-4115-2022-1-23-25

A.V. TOKARIEVA,
PhD in Pedagogical Sciences, Associate Professor,
Foreign Philology, Translation and Professional Training Department
University of Customs and Finance, Dnipro

I.V. CHYZHYKOVA,
Senior Teacher,
Foreign Philology, Translation and Professional Training Department
University of Customs and Finance, Dnipro
postgraduate student,
Alfred Nobel University, Dnipro

UNDERSTANDING EDUCATORS' EXPERIENCE AND ATTITUDE TO GAMIFIED LEARNING APPLICATIONS

This article is devoted to the analysis of the experiences and attitudes of Ukrainian educators to gamified learning applications (GLAs) in the context of a new educational paradigm formation. With the meta-skills (collective intelligence, a variety of thinking styles, empathy, etc.) coming to the foreground, the development of innovative technologies and teaching approaches that would enhance students' cognitive, motivational and social potential, skills of team-working, problem-solving, and critical thinking are becoming important. As the result, the necessity of educational paradigm's change and of designing new learning models that will be relevant for students of the XXI century are obvious. To meet this challenge, digital pedagogy, playful learning, gamification and educational digital games are gradually getting their part in everyday toolkit of educators.

The present article attempts to analyse how educators from Ukraine interact with and relate to gamified learning applications. Gamified learning applications (GLAs) in this research are defined as a wide spectrum of digital tools that includes educational games (for example, "Pandemic", game "Fake News", "Backpack", "Trivia Time"); interactive quizzes (for example, "Kahoot", "Quizlet", "ClassDojo", "Edmodo"); virtual game universes (for example, "Minecraft Edu", "Second Life", "Hytale"); gamified learning management systems (for example, "Classcraft", "Lingua Attack", "Socrative", "DyKnow").

The principal tasks of the authors' investigation in this work are: 1) the experience of educators from Ukraine in using gamified learning applications: frequency, titles and the main purposes of GLAs' application; 2) the attitude of the educators to GLAs: skills that gamified learning applications can develop in students, the educators' outlook on gamified learning applications; 3) educational potential of GLAs as seen by the educators: advantages of GLAs, possible difficulties that prevent teachers from using gamified learning applications as an educational tool.

To solve the present tasks, a qualitative research method was used based on the questionnaire compiled and conducted within the frame of "Digital Technologies' Application in the Process of Students' Professional Skills' Development in Ukrainian Universities" research project implementation (Department of Innovative Technologies in Pedagogy, Psychology and Social Work, Alfred Nobel University). The sample of the participants included 74 respondents. The research took place in December 2021 – January 2022.

The results obtained can be summarised as follows: 1) gamified learning applications (GLAs) are becoming a part of an instructional toolkit of the Ukrainian educationalists; 2) the most popular GLAs used by educators from Ukraine are interactive quizzes, educational games and gamified learning systems; 3) the majority of the respondents see educational role as the main purpose of GLAs. The ability of GLAs to motivate, entertain and to create "communities of learning" are on the second place according to our data; 4) more than a half of the interviewed educators expressed their willingness to use gamified learning applications in their practice. At the same time, 16,7% are satisfied with the traditional methods and 4,2% feel

it risky to use new teaching methods; 5) among the main obstacles to wider application of GLAs in practice are the absence of knowledge about GLAs, the low level of digital skills and technical challenges.

The authors conclude that Digital Pedagogy formation as a new strong branch of Educational Sciences is on the stage of its formation globally, as well as in Ukraine. The need to develop serious video games' and digital learning applications' courses for educators with an integrated teacher-training program to help educators understand, design, evaluate and apply serious video games and GLAs into their practice, a Digital Learning Unit creation as an indispensable part of a contemporary Ukrainian Higher Educational Institution are seen as the vectors of further research and work.

Key words: gamified learning applications, new learning models, students' academic autonomy.

Статтю присвячено аналізу досвіду та ставлення українських педагогів до гейміфікованих навчальних додатків (GLAS) у контексті нової освітньої парадигми. Зараз на перший план виходять метанавички (колективний інтелект, різноманітні стилі мислення, емпатія тощо), тому стають важливими інноваційні технології та навчальні підходи, які б покращили когнітивний, мотиваційний та соціальний потенціал студентів, навички роботи в команді, уміння розв'язувати проблемні завдання та мислити критично. Як результат, стає очевидною необхідність зміни освітньої парадигми та розробки нових моделей навчання, які були б актуальними для студентів XXI ст.

Невипадково цифрова педагогіка, навчання за допомогою гри, гейміфікація та цифрові ігри поступово входять до повсякденного інструментарію викладачів.

Автори мають на меті проаналізувати, як викладачі з України взаємодіють з гейміфікованими навчальними додатками та яке їх ставлення до них. У цьому дослідженні гейміфіковані навчальні додатки (GLAS) визначаються авторами як широкий спектр цифрових інструментів, що включає навчальні ігри (наприклад, «Pandemic», ігри «Fake news», «Backpack», «Trivia Time»); інтерактивні вікторини (наприклад, «Kahoot», «Quizlet», «Classdojo», «Edmodo»); віртуальні ігрові всесвіти (наприклад, «Minecraft Edu», «Second Life», «Hytale»); гейміфіковані системи управління навчанням (наприклад, «Classcraft», «Lingua Attack», «Socrative», «Dyknow»).

Основними завданнями дослідження авторів у цій роботі постають: 1) дослідити досвід викладачів з України у використанні гейміфікованих навчальних додатків (частота використання, назви та основні цілі); 2) ставлення педагогів до GLAS: навички, які можуть розвинути у студентів гейміфіковані навчальні додатки, погляд педагогів на гейміфіковані навчальні додатки; 3) освітній потенціал GLAS очами педагогів: переваги GLAS, потенційні труднощі, які заважають використовувати гейміфіковані навчальні додатки в освітньому процесі.

Для вирішення поставлених завдань було використано якісний метод на основі анкети, складеної та проведеної в рамках дослідницького проєкту «Застосування цифрових технологій у процесі розвитку професійних навичок студентів в українських ЗВО» (кафедра «Інноваційних технологій з педагогіки, психології та соціальної роботи», Університет Альфреда Нобеля). Вибірка учасників включала 74 респонденти. Дослідження проводилося в грудні 2021 – січні 2022 року.

Отримані результати можна узагальнити так: 1) гейміфіковані навчальні додатки (GLAS) стають частиною інструментарію українських освітян; 2) найпопулярніші GLAS, які використовуються педагогами з України, – це інтерактивні вікторини, освітні ігри та гейміфіковані системи навчання; 3) більшість респондентів вбачають освітню роль як основну мету використання GLAS. Здатність GLAS мотивувати, розважати та створювати «спільноти для навчання» перебуває на другому місці, відповідно до наших даних; 4) більше половини опитаних педагогів висловили готовність використовувати гейміфіковані навчальні додатки у своїй практиці. У той же час, 16,7% задоволені традиційними методами і 4,2% вважають ризикованим використання нових методів навчання; 5) серед основних перешкод для більш широкого застосування GLA на практиці – відсутність знань про GLAS, низький рівень цифрових навичок освітян і технічні проблеми.

Автори роблять висновок, що формування цифрової педагогіки як нової галузі освітніх наук перебуває на стадії формування в усьому світі, як і в Україні. Необхідність розробки курсів із серйозних відеоігор та цифрових навчальних додатків для педагогів з метою допомогти викладачам краще розуміти, розробляти, оцінювати та застосовувати серйозні відеоігри та GLA у своїй практиці, розробка методології цифрового навчання в сучасному українському закладі вищої освіти обговорюються як потенційні вектори майбутніх досліджень.

Ключові слова: гейміфіковані навчальні додатки, нові навчальні моделі, студентська навчальна автономія.

Introduction. Present-day global problems of climate change, population growth, natural resources scarcity, religious, ethnic and racial conflicts require new individual and collective efforts. Today, meta-skills come to the foreground, including collective intelligence, a variety of thinking styles and empathy. In recent years, when contemporary high-

tech enterprises (e.g., Ciklum, Infopulse, N-iX Ukraine) require their employees to demonstrate a good level of mathematics, sciences, engineering, be computer literate and solve complex tasks creatively, the training of a new, competitive generation depends, primarily, on innovative technologies and teaching approaches that would enhance students' cognitive, motivational and social potential, skills of team-working, problem-solving, and critical thinking. At the same time, what we currently see is a growing understanding that educational systems around the world are perceived by students, scholars and the society as those that do not meet the needs of the present and the near future. Discussions around "knowledge of the power" and "powerful knowledge" [1]; "banking" concept of education [2]; "marketisation of education" [3] are gathering pace.

The necessity of educational paradigm's change and of designing new learning models that will be relevant for students of the XXI century has become obvious [4]. If we address the recent founding documents for the educational policies "Class of 2030 and Life Learning: Technological Imperative", "Global Program for the Future of Education", "Skills of the Future: How to Prosper in a Complex New World," we may single out the key competencies of today and the future: a) social/emotional intelligence; b) media literacy/information hygiene; c) ecological intelligence; d) development of creativity and thinking on the basis of available opportunities; f) cooperation and joint problem solving; g) metacognition/ability to learn.

Therefore, the societal needs, the contemporary scholarly discourse and the new competencies dictate a revision of the very concept of "education". More and more often, education is being viewed as a process of supporting individual development, building up our relationship to and empowerment with knowledge from birth to death that involves interconnectedness and interdisciplinarity as the base-line, a self-guided learner facilitation, amplified learning for self-guided education, choice of learning methods, problem-oriented learning, project-oriented learning, game/play-based learning [5]. The concepts and practices of "learning ecosystems", "holacracy", "connected curriculum", "mentoring" now constitute the key driving forces behind transformations in education.

We think it is important to mention here that the young generation of today is growing up in networked interactive media world where high-speed information acquisition, graphic images, instant rewards and multi-tasking are omnipresent [6], and, as such, they favour expression through producing (rather than simply consuming) a content, collaborative problem-solving, shaping the flow of peer-to-peer activities, as opposed to passive audience relationships of one-way teacher-students information flow [7].

Consequently, digital pedagogy, playful learning, gamification and educational digital games are gradually becoming a part of everyday toolkit of educators on a wide global scale. For example, teachers have got an access to "Arcademic Skill Builders" – a multiplayer educational games' platform with math, language games, etc. to boost engagement and fact fluency; "BrainPOP" – a tool that offers curriculum-based animated movies, learning games, interactive quizzes on topics of science, social studies, English, math, engineering, and tech, health, arts and music; virtual gaming universes like "Minecraft Edu", "Second Life", "Eve Online"; "Classcraft", "Gradecraft", "Lingua Attack" – gamified learning management systems that encourage positive behaviour while students build knowledge and develop communication and collaboration skills, etc. Most recently, instructional designers have been examining how best to use digital games and gamified learning applications as a learning tool [8].

In a broad context, video games have fitted perfectly well in the globalised spider-web of information flows and have generated revenues as high as €22 billion in Europe in 2020 according to Global News Wire, with the number of people playing video games 1.553.5 million worldwide. 51% of the EU's population play video games, which equals to some 250 million players in the EU, the average playtime per week is 8.6 hours [8].

In Ukraine in 2019, video games' revenue accounted for $75 million, 97.3% of male players, 2.7% of female-players (from 2000 interviewed), 75% of "full age" players, and 3.7% of younger than 15 years players. The number of gamers in Ukraine in 2019 increased to 15.5 million people, who spent a total of $203 million (Kyiv Post, 2019).

Literature review. Literature review also supports the statement that on the international level the scope of scholarly works about video games is wide. For example, the focus of queries of P. Zemliansky [9] falls on game design. M. Prensky [6] investigates D-generation and ar-

gues for a partnering pedagogy. More recent studies, including works of S. Arnab, et al. [10], K. Becker [11], discuss the formal design paradigm for serious games. P. Wouters, Ch. van Nimwegen, H. van Oostendorp and E. van der Spek [12] present the analysis of motivational and cognitive effects of video games. Questions related to the game-based curriculum are analysed in articles by A. Alklind Taylor [13] and B. Marklund [14].

Theoretical analysis would be incomplete if we do not mention the material related to pedagogical aspects and reflected in such works as "Digital Games in Schools: A Handbook for Teachers" [15], "Supporting Teachers in the Process of Adoption of Game Based Learning Pedagogy" [16], "Production of Creative Game-Based Learning Scenarios: A Handbook for Teachers" [17].

There also are several projects that exemplify the gamification process and video games' application to different social and educational contexts. We can name "Beaconing" – Breaking Educational Barriers with Contextualised Pervasive and Gameful Learning [18], "Nutriciencia" – a research project to increase the food and nutritional literacy of high-risk populations [19], "Serious Games in Higher Education: Impacts, Experiences and Potential" [20], "KidCOG" – Prevention of Online Sexual Grooming of Children' project [21], Ukrainian project "Gamehub" within Erasmus+ Program, 2015–2018 [22].

The work accomplished by us so far lets us state that educational digital games – computer-based games with a primary purpose other than solely entertainment that let players explore, experiment, interact in a safe immersive environment [9] – proved to hold great promise for instruction that is appropriate for today's learners. Based on our previous research, we may state that video games present a different learning environment (with a wide spectrum of built-in assistive features) where players interact, experiment, discover and research. They are good at helping to memorise studied material (at "grinding" things). The material studied in games is stored longer in players' memory. Games let play through the same situation applying different behavioural models, methods and approaches. Games are cost-effective and efficient in training for hazardous situations (firefighters, ambulance, pilots). Games appeal to different learning styles (visual, audio, kinesthetic). Games are adaptable to a particular player's level (with the increase of difficulty based on the player's performance). Games help develop movements' coordination and spatial sensation. As a novel educational instrument, games increase motivation. Games stimulate players' interaction, participation, discussion and reflection [23].

Addressing a far-reaching perspective, contemporary instructional designers approach learning as a fluid, holistic, seamless set of experiences that include inquiry-based, project-based, challenge-based, phenomenon-based personalised education optimised and augmented by technology [4]. Therewith, AI (artificial intelligence), ICTs (information communication technologies) and the digitalisation of education are viewed as important elements of the learning process that assist in the development of students' cognitive, social, motivational skills and abilities. This is especially topical in the present context of COVID lockdown and after-pandemic era when pedagogies turn from in-personal to virtual instructions, computer-mediated communication, including distance learning and e-learning to maintain the barrier-free educational environment. This, in turn, leads to the re-evaluation of the teaching process in terms of how to teach with modern digital tools, including digital games and gamified learning applications.

Across the EU, there still remains a high need for pedagogic training that may empower teachers with the required skills to help their students become digitally competent. Today, only 39.4% of teachers feel well or very well prepared for the use of digital technologies (Interactive Software Federation of Europe, 2020). At the same time, on average in the EU, 46.9% of teachers report that they frequently or always let their pupils use ICT for projects or class work. For example, teachers in Denmark (90.4%) are most likely to let their pupils use ICT, while teachers in Belgium (28.9%) are least likely to let their pupils use it [24].

Despite an increasing academic interest in digital pedagogy, gamification and educational digital games, teachers' experience and attitude towards gamification and actual use of gamified learning applications requires further investigation and analysis.

The goals of the article. The aim of the present work is to analyse how educators from Ukraine interact with and relate to gamified learning applications. Gamified learning applications (GLAs) in this research are understood as educational games (for example, "Pandemic", game "Fake News", "Backpack", "Trivia Time"); interactive quizzes (for example, "Kahoot", "Qui-

zlet", "ClassDojo", "Edmodo"); virtual game universes (for example, "Minecraft Edu", "Second Life", "Hytale"); gamified learning management systems (for example, "Classcraft", "Lingua Attack", "Socrative", "DyKnow").

Stemming from the aim, the following research questions were formulated:

1) What is the experience of educators from Ukraine in using gamified learning applications: frequency, titles (what GLAs are used), the main purpose of GLAs' application?

2) What is the attitude of the educators to GLAs: skills that gamified learning applications can develop in students, the educators' outlook on gamified learning applications.

3) What is the educational potential of GLAs as seen by the educators: advantages of GLAs, possible difficulties that prevent teachers from using gamified learning applications as an educational tool.

Results. *Research Design and Instruments.*

To address the purpose of the article, a qualitative research method was used. For this reason, we collected the data related to the experiences and attitudes of educators to the use of gamified learning applications in various educational contexts.

The main source of the data collection was a questionnaire compiled and conducted within the frame of "Digital Technologies' Application in the Process of Students' Professional Skills' Development in Ukrainian Universities" research project (Department of Innovative Technologies in Pedagogy, Psychology and Social Work, Alfred Nobel University). The questionnaire was developed by the research team and was based on the previous findings about Serious Video Games (SVGs) and gamified learning applications [23]. The questionnaire was presented in a Google Form and was based on multiple choice or unlimited choice questions. The questions asked included the following: How often do you use gamified learning applications? What gamified learning applications do you use? What, in your opinion, is the main goal of gamified learning applications? How would you describe your attitude to gamified learning applications? What are the benefits of gamified learning applications as a learning activity, etc.

On the later stage of the present research, IBM SPSS programme and an online-charts tool were used for the statistical processing and presentation of the data.

Participants.

The sample of the participants included 74 respondents. Among them were the university faculty – 54.2% (41.7% – state higher educational institutions; 12.5% – private higher educational institutions; schools – 41.7%; colleges – 4.1%). Areas of teaching comprised Languages – 62.5%, Educational Sciences and Sciences – 12.5%; other – 25%. The years of professional educational activity of the participants varied from more than 10 years – 33.3%; more than 20 years – 33.3%; more than 30 years – 12.5%, 1 to 5 years – 12.5%.

The research took place in December 2021 – January 2022.

Ethical issues.

As the research involved human participation, the following ethical issues were observed: the participation was entirely voluntary with participants' free and full consent obtained in advance.

Data Analysis.

The quantitative data analysis included Google Form statistics, the IBM SPSS programme data processing and online-charts, which also gave the information for the qualitative results' analysis and the follow-up discussion.

Results.

Addressing the first research question about the experience of educators from Ukraine in using gamified learning applications (frequency, titles, the main purpose of GLAs' application), we received the following statistics.

Related to the frequency of GLAs' application in a classroom, the majority of the respondents use GLAs several times a week – 29.2%, followed by several times a year answer – 25%, several times a month – 20.8%.

As for the hours of GLAs application, the most typical was less than 2 hours choice – 33.3%, followed by more than 2 hours per week – 16.7% and more than 5 hours per week – 12.5%.

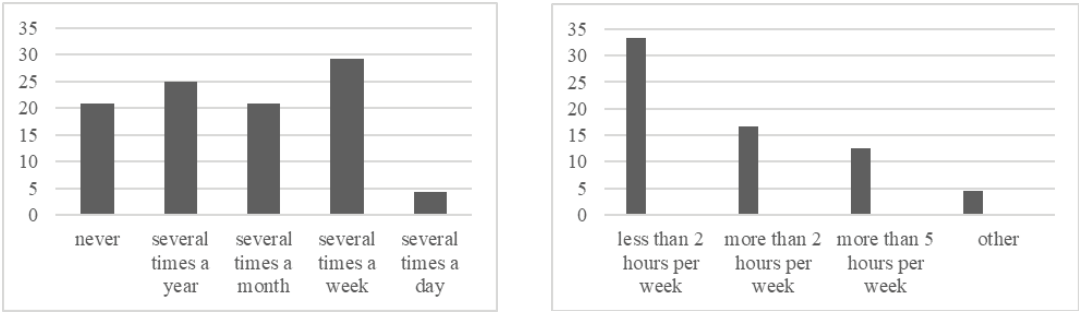

Fig. 1. Frequency of GLAs application in a class-room

It is interesting to remark that the most popular GLAs among Ukrainian educators appeared to be the interactive quizzes – 45.8%, followed by educational games – 16.7% and gamified learning management systems – 12.5%. It is also important to emphasise here that none of the respondents uses virtual game universes. The percentage of those educators who do not use GLAs equals 41.7%.

Among the purposes of GLAs' application, the educators from Ukraine named: 1) to educate – 70.8%; 2) to motivate – 54.2%; 3) to entertain – 45.8%; 4) to create a community – 45.8%, etc. (Fig. 2).

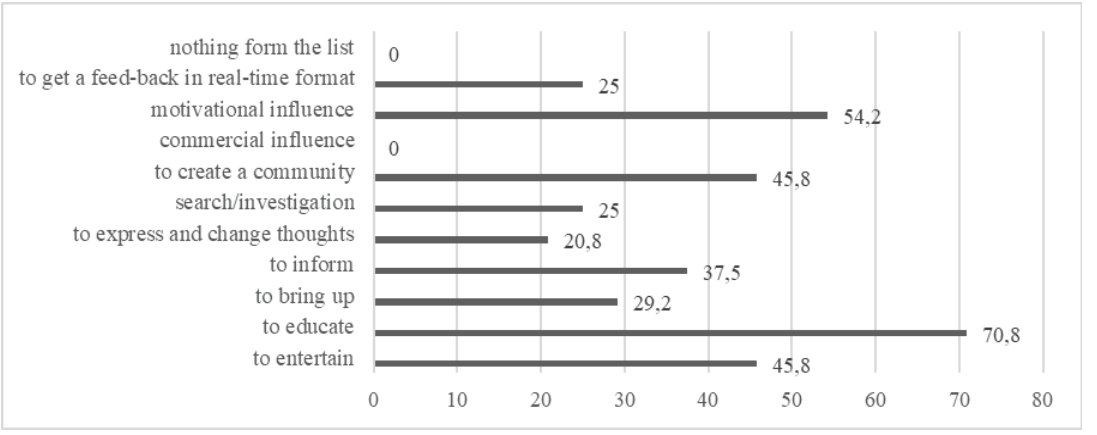

Fig. 2. Main purposes of GLAs

Addressing the second research question: What the attitude of educators to GLAs is. What skills gamified learning applications can develop in students, we received the following statistics (Fig. 3).

As is seen from Fig. 3, educators perceive GLAs as capable to motivate to learn – 66.7%, they help organise team work – 62.5%, they help to develop useful skills – 45.8%, they are engaging – 41.7%. It is worth noting here that nobody of the respondents said that GLAs are "waste of time" or a "boring activity".

One more important aspect to discuss here is what skills GLAs develop. Skills of understanding: interpretation, classification etc. – 75%; skills of self-guided learning – 50%; skills of creativity: to create hypotheses, to plan, to build – 41.7%; memory skills – 41.7%. 8.3% answered that GLAs develop nothing from the given list.

Moving on to the third research question: What educational potential of GLAs the Ukrainian educators see: advantages of GLAs, possible difficulties that prevent teachers from using gamified learning applications as an educational tool, we received the following statistics.

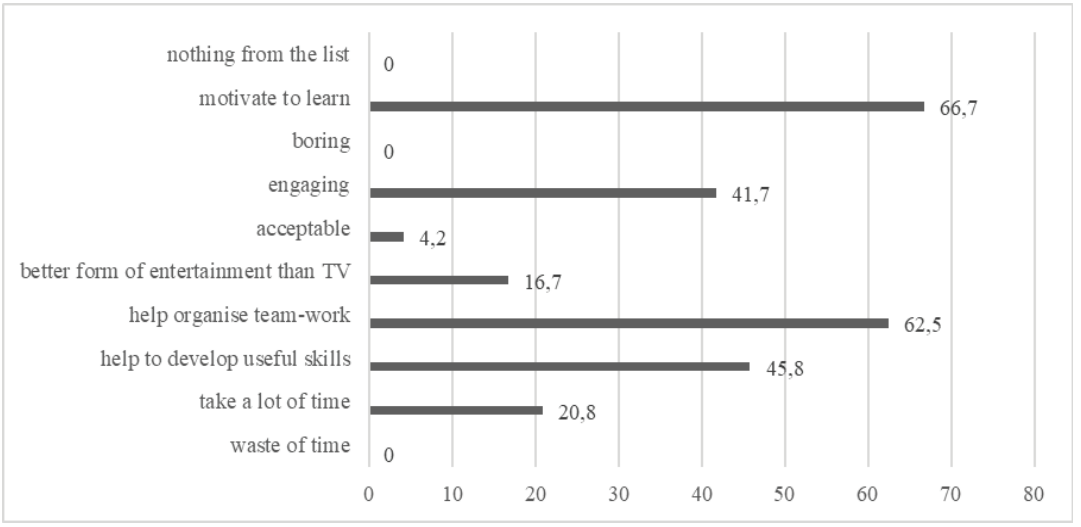

Fig. 3. Attitude of educators to GLAs

What are the advantages of GLAs in education?
They develop skills of cooperation – 62,5%.
They develop skills of decision taking – 54,2%.
They develop skills of mutual decision-taking – 45,8%.
They develop skills of problem-solving – 41,7%.
They develop short-term memory – 33,3%.
They develop skill of self-control – 29,2%.
They develop long-term memory – 25%.
They develop skills of planning – 25%.
They develop skills of understanding other people – 25%.
They develop negotiation skills – 20,8%.
Nothing from the list – 8,3%.

One of the most important result obtained from the questionnaire is the respondents' answers to the question – "What prevents educators from applying GLAs to their practice?" (Fig. 4).

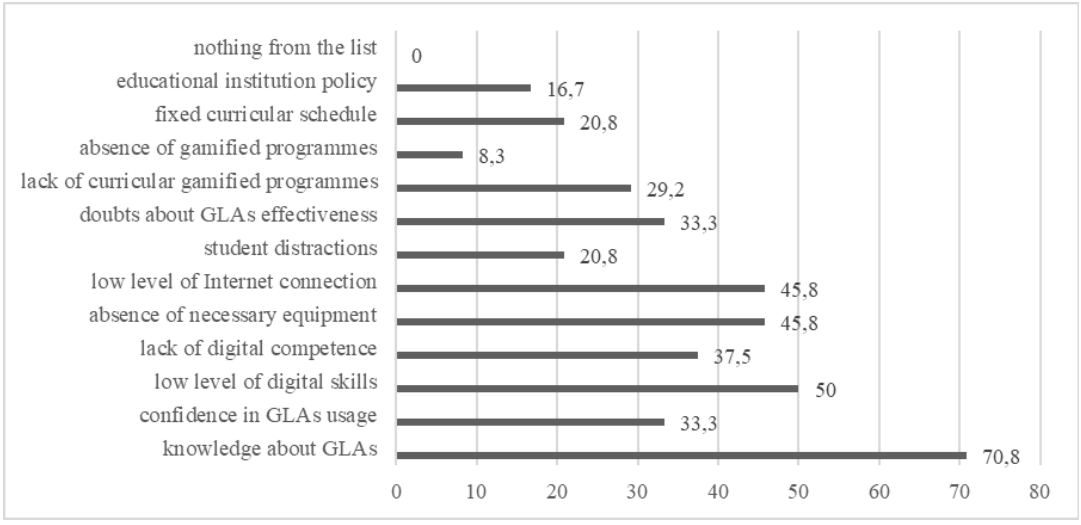

Fig. 4. Challenges of GLAs' application

As is seen from Fig. 4, the main obstacles to introducing GLAs into educational process on a wide scale are the absence of knowledge about GLAs – 70.8%, low level of digital skills – 50%, followed by the low level of Internet connection – 45.8% and absence of necessary equipment – 45.8%. The least challenging appeared to be the fixed curricular schedule – 20.8%, the policy of an educational institution – 16.7%, the absence of accompanying teaching materials – 8.3%.

As for the readiness of educators to use GLAs in their practice, the statistics looks very optimistic. 58.3% of the respondents would like to use GLAs in their practice; 20.8% feel that they are confident with GLAs. At the same time, 16.7% are satisfied with the traditional methods and 4.2% feel it risky to use new methods.

Discussion.

We chose as the aim of this work to understand the experiences and attitudes of Ukrainian educators to gamified learning applications (GLAs). The three main research areas (reflected in the research questions) included: a) understanding the professional experience of educators with GLAs; b) their attitude to GLAs as an educational tool; c) educational potential of GLAs as is seen by the Ukrainian teachers. We applied a mixed-method methodology of qualitative and quantitative analyses. The questionnaire developed by the research team served as the source of data collection.

As a summary of the experimental study, we can state the following.

– Gamified learning applications (GLAs) are becoming a part of an instructional toolkit of the Ukrainian educationalists. According to the statistics obtained in this study, 41.7% of the respondents do not use GLAs in their practice, leaving 58.3% for those who apply GLAs in their teaching. If we compare our results with the EU statistics, then the percentage of educators that use GLAs in Ukraine is a little higher (around 58,3% in Ukraine against average 46.9% in the EU). The typical frequency that GLAs are applied to teaching is several times a week and less than two hours a day.

– The most popular GLAs used by educators from Ukraine are interactive quizzes, followed by educational games (both digital and analogue) and gamified learning systems. We would conclude that “mixed reality” scenario that combines the elements of online environment and personal interaction, involving mobile technologies and the use of separate elements of a game as an additional task scenario are the preferable modes of GLAs’ integration into educational process. In this context, the first scenario yields itself well to problem-based, experimental and collaborative tasks, while the second is a good way to attract less motivated and less active students to study [25].

– The majority of the respondents see educational role as the main purpose of GLAs. The ability of GLAs to motivate, entertain and to create “communities of learning” are in the second place according to our data.

– According to our results, GLAs can develop skills of interpretation and classification; skills of cooperation; skills of creativity: hypotheses generation and planning i.e., can be used to support and develop the set of “soft skills”. It is also important to emphasise here that 50% of the respondents highlighted the potential of GLAs to build skills of self-guided learning, leading to the academic autonomy development in students.

– More than half of the interviewed educators expressed their willingness to further use gamified learning applications in their practice. At the same time, 16,7% are satisfied with the traditional methods and 4,2% feel it risky to use new teaching methods.

– Among the main obstacles to wider application of GLAs to practice, according to our respondents, are the absence of knowledge about GLAs, low level of digital skills (as only 20.8% feel that they are confident with GLAs as compared to 39.4% in the EU) and technical challenges as most important. This conclusion confirms the outcomes of our previous research [23, 26] that many educators are not familiar with the game-based learning concepts and gamified learning applications’ processes. At the same time, the previous statement popular several years ago that many educators see video games and GLAs as a leisure time activity with no pedagogic value, nowadays does not hold true.

In the present study we analysed gamified learning applications in educational context as are seen by the educators from Ukraine. However, our present research holds certain limitations as for the generalisability of its results. Among them are the size of the sample, which makes

the comparison between Ukraine and the EU results as the first approximation. There is also a need for further tests of the questionnaire's reliability and validity.

Conclusion. To conclude our present research, we think it necessary to say that in the context of a new educational paradigm's formation based on the principles of individual learning trajectories' development, subjects' interconnectedness and interdisciplinarity, self-guided learner facilitation via problem-oriented, project-oriented and game/play-based learning, digital pedagogy, gamification, educational digital games come to the foreground in the international methodology of teaching and learning. Based on the data of the presented research, gamified learning applications (GLAs) are gradually becoming a part of an instructional toolkit of the Ukrainian educationalists as well.

As an educational instrument, GLAs are seen as capable of developing skills of team-working, problem-solving, critical thinking; to enhance students' motivation and self-guided learning skills – indispensable competencies of today and the future. Most preferable, according to our data, turned to be interactive quizzes, educational games (both digital and analogue) and gamified learning systems and two modes of their integration into educational process – "mixed reality" mode and the usage of separate elements of a game as an additional task.

At the same time, our data showed a strong need for pedagogic training that may empower teachers with the required knowledge and skills about gamified learning applications, educational digital games and digital competencies development.

This brings us to the conclusion about the topicality of Digital Pedagogy formation as a new strong branch of Educational Sciences, the need to develop serious video games' and digital learning applications' courses for educators with an integrated teacher-training program to help educators understand, design, evaluate and apply serious video games and GLAs into their practice, Digital Learning Unit creation as an indispensable part of a contemporary Ukrainian Higher Educational Institution.

Bibliography

1. Young M. Bringing Knowledge Back. *From Social Constructivism to Social Realism in the Sociology of Education*, 1st. ed., Routledge, 2007.

2. Friere P. Pedagogy of the Oppressed. US: The Continuum International Publishing Group Inc., New York, NY, 2005.

3. Ball S. J. Policy Mobility: Education, Globalisation and Neoliberalistion. Presentation at VIII International Seminar of the Doctoral Program in Educational Science, Porto, Faculty of Psychology and Education Sciences, University of Porto, 2016.

4. Technology Imperative, Microsoft and McKinsey & Company's Educational Practice. The Class of 2030 and Life-Ready Learning, 2017. URL: https://education.minecraft.net/wp-content/uploads/13679_EDU_Thought_Leadership_Summary_revisions_5.10.18.pdf

5. Luksha P., Cubista A., et. al. Global Education Futures Report: Educational Ecosystems for Societal Transformation, Global Education Futures, 2018.

6. Prensky M. Teaching Digital Natives: Partnering for Real Learning, CA, Corwin, Thousand Oak, 2010.

7. Jenkins H. Confronting the Challenges of Participatory Culture, Media Education of the 21 Century, Chicago, The MacArthur Foundation, 2012. doi.org/10.17231/comsoc.17(2010).1017

8. Interactive Software Federation of Europe (ISFE): Games in Society, 2020. URL: https://www.isfe.eu/

9. Zemliansky P., Wilcox D.M. (Ed.). Design and Implementation of Educational Games: Theoretical and Practical Perspectives, 1st edition, Information Science Reference, Hershey, 2010.

10. Arnab S., de Freitas S., Bellotti F., Lim T., Louchart S., Suttie N., Berta R., De Gloria A. Pedagogy-Driven Design of Serious Games: An Overall View on Learning and Game Mechanics Mapping, and Cognition-Based Models, British Journal of Educational Technology. 2015. 46 (2). 391–411. doi.org/10.1111/bjet.12113

11. Becker K. Choosing and Using Digital Games in the Classroom, Springer International Publishing Switzerland, 2017. 411. doi.org/10.1007/978-3-319-12223-6

12. Wouters P., van Nimwegen C., van Oostendorp H., van der Spek E.D. A meta-analysis of the cognitive and motivational effects of serious games. *Journal of Educational Psychology.* 2013. *105* (2). 249–265. doi.org/10.1037/a0031311

13. Alkind Taylor A. S. Facilitation Matters: A Framework for Instructor-Led Serious Gaming, Doctoral dissertation, University of Skövde, Sweden, 2014.

14. Marklund Björn B. Unpacking Digital Game-Based Learning: The Complexities of Developing and Using Educational Games, Dissertation Series, University of Skövde, Sweden, 2015, no. 8.

15. Felicia P. Digital Games in Schools: A Handbook for Teachers, 2010. URL: https://hal.archives-ouvertes.fr/hal-00697599

16. Emin-Martinez V., Ney M. Supporting Teachers in the Process of Adoption of Game Based Learning Pedagogy. *ECGBL 2013 – European Conference on Games Based Learning*, ACPI, Porto, Portugal, 2013, pp.156–162.

17. Production of Creative Game-Based Learning Scenarios: A Handbook for Teachers, 2010. URL: http://www.ub.edu/euelearning/proactive/documents/handbook_creative_gbl.pdf

18. Beaconing. Horizon Project. Breaking Educational Barriers with Contextualised Pervasive and Gameful Learning, 2020. URL: https://beaconing.eu/

19. Nutriciencia. University of Porto, EEA, Ministry of Health, Portugal Project., 2016. URL: https://nutriciencia.pt/

20. Jogos Sérios no Ensino Superior. Impactos, Experiências e Potenciais Project, CIIE/Faculty of Psychology and Education Sciences of the University Porto, 2019. URL: https://www.fpce.up.pt/ciie/?q=en/content/josees-%E2%80%93-serious-games-higher-education-impacts-experiences-and-potential

21. KidCOG. The University of Skövde. The Change Attitude Foundation, Sweden Project, 2019. URL: https://www.his.se/en/research/informatics/media-technology-and-culture/kidcog/

22. GameHub. Erasmus+ Project., 2018. URL: https://erasmusplus.org.ua/novyny/2916-znaiomtes-proiekt-yes-erazmus-gamehub-spivrobitnytstvo-mizh-universytetamy-ta-pidpryiemstvamy-v-sferi-industrii-ihor-v-ukraini-university-enterprises-cooperation-in-game-industry-in-ukraine.html

23. Tokarieva A., Volkova N. et.al. Educational Digital Games: Models and Implementation, in: CTE 2018 6th Workshop on Cloud Technologies in Education. Kryvyi Rih, 2019, pp. 74–89. Scopus ID: 2-s2.0-85072758016, DiVA.org: his-17783DiVA, id: diva2:1359985.

24. Education and Training Monitor. Executive Summary. Publications Office of the European Union, 2020. URL: https://op.europa.eu/webpub/eac/education-and-training-monitor-2020/en/chapters/chapter1.html

25. Whitton N. Learning with Digital Games: A Practical Guide to Engaging Students in Higher Education. Routledge, 2010, pp. 85–88.

26. Tokarieva A., Volkova N. et.al. E-learning in the Present-day Context: From the Experience of Foreign Languages Department, PSACEA., in: ICon-MaSTEd 2020: XII International Conference on Mathematics, Science and Technology Education, Kryvyi Rih State Pedagogical University, Kryvyi Rih, Ukraine, 2021. (Scopus). doi:10.1088/1742-6596/1840/1/012049.

References

1. Young, M. (2007). Bringing Knowledge Back. *From Social Constructivism to Social Realism in the Sociology of Education*, 1st. ed., Routledge.

2. Friere, P. (2005). Pedagogy of the Oppressed. US: The Continuum International Publishing Group Inc., New York, NY.

3. Ball, S.J. (2016). Policy Mobility: Education, Globalisation and Neoliberalistion. Presentation at VIII International Seminar of the Doctoral Program in Educational Science, Porto, Faculty of Psychology and Education Sciences, University of Porto.

4. Technology Imperative, Microsoft and McKinsey & Company's Educational Practice. (2017). The Class of 2030 and Life Ready Learning. Available at: https://education.minecraft.net/wp-content/uploads/13679_EDU_Thought_Leadership_Summary_revisions_5.10.18.pdf

5. Luksha, P., Cubista, A., et. al. (2018). Global Education Futures Report: Educational Ecosystems for Societal Transformation, Global Education Futures.

6. Prensky, M. (2010). Teaching Digital Natives: Partnering for Real Learning, CA, Corwin, Thousand Oak.

7. Jenkins, H. (2012). Confronting the Challenges of Participatory Culture. Media Education of the 21 Century, Chicago, The MacArthur Foundation. doi.org/10.17231/comsoc.17(2010).1017

8. Interactive Software Federation of Europe (ISFE) (2020). *Games in Society*. Available at: https://www.isfe.eu/

9. Zemliansky, P., Wilcox D.M. (Ed.) (2010). Design and Implementation of Educational Games: Theoretical and Practical Perspectives, 1st edition, Information Science Reference, Hershey.

10. Arnab, S., de Freitas, S., Bellotti, F., Lim, T., Louchart, S., Suttie, N., Berta, R., De Gloria, A. (2015). Pedagogy-Driven Design of Serious Games: An Overall View on Learning and Game Mechanics Mapping, and Cognition-Based Models, British Journal of Educational Technology, 46 (2), 391–411. doi.org/10.1111/bjet.12113

11. Becker, K. (2017). Choosing and Using Digital Games in the Classroom, Springer International Publishing Switzerland, 411. doi.org/10.1007/978-3-319-12223-6

12. Wouters, P., van Nimwegen, C., van Oostendorp, H., van der Spek, E.D. (2013). A meta-analysis of the cognitive and motivational effects of serious games. *Journal of Educational Psychology, 105*(2), 249–265. doi.org/10.1037/a0031311

13. Alkind Taylor, A.S. (2014). Facilitation Matters: A Framework for Instructor-Led Serious Gaming, Doctoral dissertation, University of Skövde, Sweden.

14. Marklund Björn, B. (2015). Unpacking Digital Game-Based Learning: The Complexities of Developing and Using Educational Games, Dissertation Series, University of Skövde, Sweden, no. 8.

15. Felicia, P. (2010). Digital Games in Schools: A Handbook for Teachers. Available at: https://hal.archives-ouvertes.fr/hal-00697599

16. Emin-Martinez, V., Ney, M. (2013). Supporting Teachers in the Process of Adoption of Game Based Learning Pedagogy. ECGBL – European Conference on Games Based Learning, ACPI, Porto, Portugal, 2013, pp. 156-162.

17. Production of Creative Game-Based Learning Scenarios: A Handbook for Teachers. (2010). Available at: http://www.ub.edu/euelearning/proactive/documents/handbook_creative_gbl.pdf

18. Beaconing. Horizon Project. Breaking Educational Barriers with Contextualised Pervasive and Gameful Learning (2020). Available at: https://beaconing.eu/

19. Nutriciencia (2016). University of Porto, EEA, Ministry of Health, Portugal Project. Available at: https://nutriciencia.pt/

20. Jogos Sérios no Ensino Superior. Impactos, Experiências e Potenciais Project, CIIE/Faculty of Psychology and Education Sciences of the University Porto, (2019). URL: https://www.fpce.up.pt/ciie/?q=en/content/josees-%E2%80%93-serious-games-higher-education-impacts-experiences-and-potential

21. KidCOG (2019). The University of Skövde. The Change Attitude Foundation, Sweden Project. Available at: https://www.his.se/en/research/informatics/media-technology-and-culture/kidcog/

22. GameHub. Erasmus+ Project. (2018). Available at: https://erasmusplus.org.ua/novyny/2916-znaiomtes-proiekt-yes-erazmus-gamehub-spivrobitnytstvo-mizh-universytetamy-ta-pidpryiemstvamy-v-sferi-industrii-ihor-v-ukraini-university-enterprises-cooperation-in-game-industry-in-ukraine.html

23. Tokarieva, A., Volkova, N. et.al. (2019). Educational Digital Games: Models and Implementation. CTE 2018 6th Workshop on Cloud Technologies in Education. Kryvyi Rih, pp. 74-89. Scopus ID: 2-s2.0-85072758016, DiVA.org: his-17783DiVA, id: diva2:1359985.

24. Education and Training Monitor. Executive Summary. Publications Office of the European Union (2020). Available at: https://op.europa.eu/webpub/eac/education-and-training-monitor-2020/en/chapters/chapter1.html

25. Whitton, N. (2010). *Learning with Digital Games*: A Practical Guide to Engaging Students in Higher Education. Routledge, pp. 85-88.

26. Tokarieva, A., Volkova, N. et.al. (2021). E-learning in the Present-day Context: From the Experience of Foreign Languages Department, PSACEA., in: ICon-MaSTEd 2020: XII International Conference on Mathematics, Science and Technology Education, Kryvyi Rih State Pedagogical University, Kryvyi Rih, Ukraine. (Scopus). doi:10.1088/1742-6596/1840/1/012049

UNDERSTANDING EDUCATORS' EXPERIENCE AND ATTITUDE TO GAMIFIED LEARNING APPLICATIONS

Anastasiia V. Tokarieva, PhD of Pedagogical Sciences, Associate Professor, Foreign Philology, Translation and Professional Training Department University of Customs and Finance, Dnipro
E-mail: nastia003@gmail.com
ORCID: http://orcid.org/ 0000-0001-8980-9559
Inna V. Chyzhykova, Senior Teacher, Foreign Philology, Translation and Professional Training Department University of Customs and Finance, Dnipro, postgraduate student, Alfred Nobel University, Dnipro
E-mail: innachigikova1502@gmail.com
ORCID: http://orcid.org/0000-0003-2722-3258
DOI: 10.32342/2522-4115-2022-1-23-25

Key words: gamified learning applications, new learning models, students' academic autonomy.

This article is devoted to the analysis of the experiences and attitudes of Ukrainian educators to gamified learning applications (GLAs) in the context of a new educational paradigm formation. With the meta-skills (collective intelligence, a variety of thinking styles, empathy, etc.) coming to the foreground, the development of innovative technologies and teaching approaches that would enhance students' cognitive, motivational and social potential, skills of team-working, problem-solving, and critical thinking are becoming important. As the result, the necessity of educational paradigm's change and of designing new learning models that will be relevant for students of the XXI century are obvious. To meet this challenge, digital pedagogy, playful learning, gamification and educational digital games are gradually getting their part in everyday toolkit of educators.

The present article attempts to analyse how educators from Ukraine interact with and relate to gamified learning applications. Gamified learning applications (GLAs) in this research are defined as a wide spectrum of digital tools that includes educational games (for example, "Pandemic", game "Fake News", "Backpack", "Trivia Time"); interactive quizzes (for example, "Kahoot", "Quizlet", "ClassDojo", "Edmodo"); virtual game universes (for example, "Minecraft Edu", "Second Life", "Hytale"); gamified learning management systems (for example, "Classcraft", "Lingua Attack", "Socrative", "DyKnow").

The principal tasks of the authors' investigation in this work are: 1) the experience of educators from Ukraine in using gamified learning applications: frequency, titles and the main purposes of GLAs' application; 2) the attitude of the educators to GLAs: skills that gamified learning applications can develop in students, the educators' outlook on gamified learning applications; 3) educational potential of GLAs as seen by the educators: advantages of GLAs, possible difficulties that prevent teachers from using gamified learning applications as an educational tool.

To solve the present tasks, a qualitative research method was used based on the questionnaire compiled and conducted within the frame of "Digital Technologies' Application in the Process of Students' Professional Skills' Development in Ukrainian Universities" research project implementation (Department of Innovative Technologies in Pedagogy, Psychology and Social Work, Alfred Nobel University). The sample of the participants included 74 respondents. The research took place in December 2021 – January 2022.

The results obtained can be summarised as follows: 1) gamified learning applications (GLAs) are becoming a part of an instructional toolkit of the Ukrainian educationalists; 2) the most popular GLAs used by educators from Ukraine are interactive quizzes, educational games and gamified learning systems; 3) the majority of the respondents see educational role as the main purpose of GLAs. The ability of GLAs to motivate, entertain and to create "communities of learning" are on the second place according to our data; 4) more than a half of the interviewed educators expressed their willingness to use gamified learning applications in their practice. At the same time, 16,7% are satisfied with the traditional methods and 4,2% feel it risky to use new teaching methods; 5) among the main obstacles to wider application of GLAs in practice are the absence of knowledge about GLAs, the low level of digital skills and technical challenges.

The authors conclude that Digital Pedagogy formation as a new strong branch of Educational Sciences is on the stage of its formation globally, as well as in Ukraine. The need to develop serious video games' and digital learning applications' courses for educators with an integrated teacher-training program to help educators understand, design, evaluate and apply serious video games and GLAs into their practice, a Digital Learning Unit creation as an indispensable part of a contemporary Ukrainian Higher Educational Institution are seen as the vectors of further research and work.

Одержано 23.05.2022.