IMPLEMENTATION OF EDTECH TOOLS IN THE EDUCATIONAL PROCESS OF THE DIGITAL ERA

Abstract. The article provides an overview of popular Edtech tools utilized in the educational process of the digital era. Analysis and comparison of educational software helps to gain insights into digital game-based learning opportunities by measuring effectiveness, efficiency and user satisfaction according to different parameters.

Edtech solutions give the opportunity for students to complete their educational program remotely with the use of synchronous and asynchronous communication. Learning with edutainment and gamification makes the learning process more attractive and effective. E-learning technologies are multifunctional and involve multiple forms of interaction. Modern EdTech platforms and web or mobile applications for improving language proficiency with rich imagery and visualization proved to be extremely useful.

Digital game-based learning enjoys great popularity among language learners of all ages in the age of information and communication technology. This article provides an overview of the most effective Edtech tools utilized in the educational process at higher educational establishments namely Google Classroom, Duolingo, Kahoot, Teachable, Moodle, Obsidian Learning, Quizlet, Wordup, Grammarly, Coursera. Each app is characterized by some special technological features: layout, sound and visual options for touch-based activities. The goal of the study is to demonstrate the effectiveness
of Edtech software, to highlight the strong and weak points of each educational tool and point to its specific features.

Online learning and implementation of various EdTech solutions allow making the educational process more individualized. Computer and game-based learning encourages personalization and shifts the educational process from system-oriented to student-oriented in different educational activities and helps to achieve specific learning outcomes in interactive environment.

Keywords: e-learning, digitalization, edutainment

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ЗАПРОВАДЖЕННЯ ІНСТРУМЕНТИВ ДЛЯ ОСВІТНІХ ТЕХНОЛОГІЙ В НАВЧАЛЬНОМУ ПРОЦЕСІ ЦИФРОВОЇ ЕРИ

Анотація. Стаття пропонує огляд популярних інструментів для освітніх технологій, які використовуються у навчальному процесі цифрової ери. Аналіз та порівняння освітнього програмного забезпечення допомагає отримати уявлення про можливості цифрового ігрового навчання шляхом порівняння ефективності, результативності та ступеня задоволення споживачів відповідно до різних параметрів.

Цифрова трансформація освіти дає можливість учасникам освітнього процесу долучатися до навчання дистанційно, з використанням синхронного та асинхронного зв’язку. Навчання з використанням ігрових методів робить процес навчання більш привабливим та ефективним. Технології електронного навчання багатофункціональні та передбачають численні форми взаємодії. Сучасні навчальні цифрові платформи та мобільні додатки для покращення володіння мовою з яскравою графікою та відеорядом виявилися надзвичайно ефективними.
Навчання за допомогою цифрових інструментів та додатків користується великою популярністю серед різних вікових груп в епоху інформаційно-комунікаційних технологій. У статті представлено огляд найефективніших цифрових інструментів, які використовуються в навчальному процесі у вищих навчальних закладах, а саме Google Classroom, Duolingo, Kahoot, Teachable, Moodle, Obsidian Learning, Quizlet, Wordup, Grammarly, Coursera. Кожен додаток характеризується певними технологічними особливостями: оформленням, звуковими та візуальними можливостями. Мета дослідження – продемонструвати ефективність начальних цифрових засобів, висвітлити сильні та слабкі сторони кожного з них та вказати на його особливості.

Онлайн-навчання та впровадження різноманітних освітніх цифрових рішень дозволяють зробити навчальний процес більш індивідуалізованим. Комп’ютерне та ігрове навчання заохочує персоналізацію та зміщує освітній процес із системно-орієнтованого на особистісно-орієнтований в різних навчальних видах діяльності та допомагає досягти конкретних результатів навчання в інтерактивному середовищі.

Ключові слова: електронне навчання, диджиталізація, ігрове навчання.

Problem statement. The current global situation has changed the world and lead to the necessity of extensive use of online tools and digital solutions. Digitalization in education sector involved readjusting educational process to match the need to train students in lockdown circumstances. It has also changed the possibilities within teaching and learning. The role of modern technologies in remote education cannot be underestimated. Digitalization or digital transformation is a process of automating and optimizing different processes with the help of technology. It propels education to new heights and speeds up globalization. It opens doors for multiple educational opportunities to all participants of the educational process.

Edtech, the combination of Education and Technology, is implementing the latest technologies to optimize, facilitate and enhance the learning process. Edtech companies are flourishing nowadays due to the fact that they try to satisfy the most fastidious tastes in terms of learning opportunities. Online communication software and e-learning gamification solutions are extensively used in the educational process today.

Discussions. According to Anastasiadis et al., [1] in education, digital solutions and games are mostly applied in the form of serious games which focus more on primary purposes. Serious games offer motivating and engaging
experiences, interactive learning environments and collaborative learning activities. Some of the main game features that influence students’ engagement and enjoyment include: curiosity, fantasy, role-playing tasks, rules, goals, challenges, competition, control, fun, motivation, interaction, adaptability, feedback and multimodal presentations.

As a result of global digitalization, numerous studies have been carried out devoted to analysis of numerous online solutions that have skyrocketed due to pandemic restrictions. Researchers evaluate different edutainment environments to explore usability aspects of edutainment in e-learning. By measuring effectiveness, efficiency and user satisfaction they evaluate how memorable and educationally valuable certain aspects of edutainment are [2]. Studying the main properties and potentials of digital game-based learning and serious games in education, researchers [1] point to numerous benefits such as: cognitive growth and digital literacy, social-emotional growth and soft skills development, feedback driven and student-centered learning etc. Edutainment software integrates auditory, visual and textual displays that enhance and reinforce students’ higher order thinking skills, instructional effect and academic accomplishments as well as enrich their experience and cognitive success [8,18,9].

The shift to blended and hybrid learning in current conditions urged educators to reconsider students’ new needs and requirements for more interactive and engaging learning experiences. Due to this fact, the concept of serious games in education as a means of fulfilling and satisfying these needs has been introduced.

One can find a variety of Edtech solutions on the market nowadays. One of the most popular ones are Google Classroom, Duolingo [5], Kahoot [10], Teachable [16], Moodle [11], Obsidian Learning [12], Quizlet [13], Wordup [17], Grammarly [7], Coursera [3] etc. Each app is characterized by some special technological features: layout, sound and visual options for touch-based activities.

Google Classroom is a multifunctional learning platform popular with educators due to its user-friendliness and wide applicability. Other Google products are integrated into the platform, including Google Docs and Gmail. Educators can assign different tasks to students, receive the assigned tasks and give feedback. Materials and course work can be organized and stored on the cloud. Other applications can be integrated in Google Classroom including Quizlet and BrainPOP. The latter contains animated movies with quizzes and related materials covering different subjects, including English.

Duolingo is one of the most popular platforms for learning languages due to the fact that its units tend to be semantically or grammatically themed,
with content-oriented or grammatically focused themes. Exercises in this app include translation, verbal repetition of spoken or written L2 structures and dictation, which allows for multispeed audio replay. All exercises offer immediate color and sound-coded textual animated feedback on correctness, and items answered incorrectly may be repeated later in the lesson. Progress through a lesson is visually tracked in the progress bar on the screen. Achievements can also be monitored through pop-up messages and email reminders to help users stay on track with their individualized goals. All these features are implemented to boost potential users’ level of engagement and learning potential. The drawback of the program is the fact that it relies solely on small, disconnected, and decontextualized chunks of isolated language. This decontextualization subsequently restricts meaning making. But Duolingo can be used as a good supplement to other language learning materials [4].

Kahoot is a multipurpose game-based online learning platform with solutions for teachers, students and other target users interested in language learning. This platform allows educators to administer quizzes, facilitate discussions, or collect survey data. Moreover, it allows to host games live via videoconferencing or send self-paced games to connect with students at home and any other location as part of distance learning. This app is extensively used by educational establishments throughout the world. It helps to make lectures interactive, make instruction more engaging remotely and in class, improves student outcomes and allows teachers to collaborate with colleagues on learning content.

Teachable is a unique platform which offers convenient instruments for creating coaching services and online courses. It is an effective tool for creating engaging multimedia lectures, videos and coaching sessions and transforming educators’ knowledge into world-class guided online courses.

Moodle is a learning management system that helps education companies and educational institutions around the world offer learning opportunities. Moodle’s extremely customisable core enables educators to create their own private website filled with dynamic courses that extend learning, any time and anywhere.

Obsidian Learning develops interactive learning programs that engage learners and accelerate skills development. Blended learning programs offered by the software focus on competency development and interactive approach to communication in an online classroom in distance learning.

Quizlet app enjoys great popularity with students and teachers due to its simplicity and interactivity. This AI Learning Assistant offers learning with
flashcards covering various subjects which can be used as supplemental learning material alongside existing lesson resources.

Grammarly is an AI-powered desktop app which offers instant writing suggestions. This online writing assistant scans the text for common mistakes in terms of grammar, spelling, style and tone. Grammarly is widely used by students and non-native speakers of English to edit and correct their grammar, spelling, punctuation and more.

WordUp is a vocabulary app that is based on three simple concepts. Firstly, the top 20,000 most useful English words in the vocabulary are sorted by how useful they really are. The data is compiled from thousands of movies and TV shows. Secondly, WordUp offers many short video clips from top movies and TV, showing combinability of words and numerous examples of collocations in everyday speech. It also shows you examples from the latest news stories, across thousands of news websites. In this way, learners not just learn new vocabulary, they ‘experience’ it. Thirdly, this app uses ‘Spaced Repetition’ which is a scientifically proven approach to ensure better memorizing.

Coursera is online course provider in different spheres of professional activity including foreign languages, cutting-edge technologies and personal development. It cooperates with reputable universities and organizations and offers online courses, certifications and degrees in multiple subjects. This multidisciplinary platform has become extremely popular due to its accessibility and affordability.

Each of the above mentioned platforms is unique and offers multiple solutions to different target audience. The features they have in common include edutainment elements represented in a complex unity of speech, earcons, avatars with graphics etc. All these things make these tools more enticing for the learners. Most e-learning tools can be used when working with different age groups. They give teachers opportunities to provide immediate feedback and let them know where reteaching would benefit students.

The aim of the research. In an effort to clarify the role and effectiveness of Edtech solutions utilized in the educational process, a study has been done aimed at analyzing the most popular educational software and assessing its effectiveness in the process of learning a foreign language. The study was conducted at Taras Shevchenko National University of Kyiv in Educational and Scientific Institute of Philology and was aimed at measuring students’ performance in terms of their academic achievement, satisfaction, flexible learning opportunities, motivation, engagement in the learning process and overall learning experience.
For this survey students from the Department of English Philology and Cross-Cultural Communication were randomly selected. The participants of the survey were enrolled in a Bachelor’s degree program and specialized in English Studies and Translation. A total of 72 students took part in the study (age range 17-20 years).

**Results.** According to the survey, implementation of Edtech solutions in the educational process boosted students’ academic achievement, motivation and engagement in the learning process as well as improved overall learning experience. Each platform or application is different in its structure, purpose and has its own advantages and disadvantages. Among pluses of Edtech software students named: availability of training at any time, regular notifications that help to keep track of their progress, absence of paperwork and possibility to do and store everything online, opportunity to review the material at any time, improvement of reading, writing and listening skills.

The minuses of Edtech solutions include the lack of feedback from the tutor and the absence of real, face-to-face communication. Moreover, most platforms and apps are not free or offer free versions with limited functionality. Free versions are usually full of advertising which is very distracting and prevents students from concentrating on the studying process.

According to the survey, students view Google classroom as the most essential educational software and treat edutainment apps such as WordUp, Quizlet, Grammarly, Kahoot and Duolinguo as additional learning tools. Students pointed out to multifunctionality of Google Classroom and its simple interface, which is easy to use and on which they can view the educational material, complete the tasks, find out the rating, get feedback and notifications of various kind, communicate with the tutor, and find out about the deadline for completing a certain task. With Google Classroom, participants of the educational process can share documents and resources with each other. This platform is protected from data loss because the data is copied to Google Drive and is ad-free. But there is no real-time communication within this platform. Students and teachers still have to use other resources. Thus, Google Classroom is a very convenient online learning platform that includes basically every needed feature for free.

Among the benefits of educational apps such as WordUp, students named the possibility of accent choice, availability of male and female voices representing language material. Advantages of such apps also include placement tests, different levels of learning opportunities, target-oriented vocabulary from different spheres of life, quotations and well-known sayings by famous people, example sentences in context, different tests including multiple choice exercises and spelling tests.
Transcription and pronunciation of words together with images, translation into different languages, synonyms and a short list of possible meanings of the target words presented in a concise way make the educational process more effective. The words in the app are sorted by their usefulness in the real world. Students can easily track their progress when preparing for a language exam thanks to various reminders. The app also offers daily tips and helpful contents on Instagram. All these options help to involve visual, auditory and associative memory and improve learning outcomes.

Most students pointed to the effectiveness of Quizlet which allows to complete grammar and vocabulary tests of different format including flashcards, matching activities and playing word games live with random or chosen teams or on one’s own. Moreover, students have a possibility to be retested if necessary.

The application has several types of memorization. From various memorization methods, each student can choose the most convenient one. There are several rubrics for effective memorization. On the basis of cards, students perform exercises for training spelling skills, tasks for finding and connecting a new lexical item with its definition with a time limit. All these games contribute to the transfer of learned lexical items from the operative to the long-term memory.

Quizlet also helps students prepare for tests. With the engaging study tools and differentiation options available, students have many different ways to study information when using it. Instead of having to look through notes, fill out worksheets, and create paper flashcards, students can just log in and start studying a new material. Quizlet also offers a variety of learning modes, including four study modes and two study games such as flashcards, a speller, tests, scatter games and space race games. Competing with other groupmates is very motivating and encouraging.

Kahoot is another game-based platform which enjoys great popularity among students, helps to learn new topics in an interesting and interactive way. On this educational platform students can take tests in the format of an interactive game held for a group of people in the form of a competition which adds motivation and a great engagement from the students' side. Thus, Kahoot is a great way to integrate technology into any classroom.

Duolinguo is a popular educational tool with students but it is limited in use to beginners. It is appealing and simple in design and those who start learning a foreign language find it useful in terms of simple vocabulary activities including listening tasks that help improve pronunciation. Students can collect points from doing exercises and then exchange them for bonuses, add friends and compete with them. Each topic is divided into many small
tasks, so a person does not need to learn a lot of information at once. He or she can choose what to study each day and learn at one’s own pace. Each student can set himself a goal and define a daily task to be completed. And finally, the application sends a daily notification, which reminds the students of the activities to be completed.

One of the highest ratings among students occupies Grammarly which is aimed at mistake-free writing, improving writing quality, readability and style of writing.

**Conclusion.** Thus, the results of the study showed that the digital game-based approach to learning proved to be very effective in terms of students’ achievement, satisfaction and overall learning experience. There is no denying the fact that the potential of game-based learning and serious games in education is huge and multifunctional. Interactive environment is conducive to effective and engaging learning experience and enables participants of the educational process to tailor education technology to their specific needs.

The demand for Edtech tools in education will only increase. It is connected with the fact that lifelong learning has become an indispensable part of people’s lives due to constant changes and demands of the society. Keeping one’s skills up-to-date is a must in all spheres of human activity. Continuous learning, as an ongoing process of acquiring new skills and knowledge, implies acquisition of meta skills together with hard and soft skills. Meta skills are viewed as higher-order skills that are applicable across domains and disciplines, leading one to improve or accumulate hard skills through having built up a metaskill within one or more other hard skills. Such skills are closely related to communication, creative thinking, innovation and self-awareness [15].

Such a necessity arises from drastic changes in the world. The following acronyms are used to describe the changes that took place in the world: SPOD world, i.e. steady, predictable, ordinary and definite world, turned into VUCA world, i.e. volatile, uncertain, complex, and ambiguous world and finally transformed into BANI world, i.e. brittle, anxious, nonlinear, incomprehensible world we live in now. In the SPOD world, where people used to live, all algorithms were clear and familiar, communication was well-established and results could be realistically expected. However, everything has changed with the shift towards the VUCA world with a strong demand for flexibility [14] and later to BANI-world. The latter acronym was introduced by Stephan Grabmeier [6] who calls for intensifying capacity and resilience, empathy and mindfulness, context and adaptivity, transparency and intuition to see perspectives and face new challenges appropriately in the pandemic era.
Thus, the research on the effectiveness of Edtech tools in different conditions is relevant and necessary. It is also important to be aware of different generations of learners (millennials, generation Z etc.) who perceive and learn information in a different way. These factors should be taken into account when choosing student-focused teaching strategies and web-based learning tools.

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