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ВИКОРИСТАННЯ ХМАРНИХ ТЕХНОЛОГІЙ У ВИКЛАДАННІ АНГЛІЙСЬКОЇ МОВИ

Стаття присвячена проблемі застосування хмарних технологій у контексті навчання англійської мови. Метою статті є обґрунтування методологічних підходів до використання хмарних технологій у вищих навчальних закладах. Завдання дослідження включають виявлення основних видів та форм хмарних технологій, їхніх характеристик та аналіз застосування в освітніх процесах. Розглянуто сутність концепції використання хмарних технологій у навчанні англійської мови. Досліджено та проаналізовано основні форми та їхні характеристики для ефективного використання як під час аудиторної так і позааудиторної роботи студентів. Зазначено не тільки їхні позитивні характеристики, а й їх мотивуючий фактор. Оскільки хмарні технології є прогресивним засобом роботи з інформацією, вони надають можливості вивчення англійської мови за допомогою різних технічних засобів, технологій, форм, дозволяючи користуватися зручними та звичними гаджетами у зручний час. Деякі хмарні технології дозволяють використовувати шкали оцінювання результатів навчання студентів відповідно до встановлених оцінок. Реалізація цього критерію дозволяє викладачеві проаналізувати проведені заняття та виконані завдання, а студентам аналізувати та виправляти свої помилки.

Розглянуто різні види та форми хмарних технологій, а також з'ясовано функціональні характеристики, основними з яких є: розповсюджувати матеріали, завантажувати та ділитися матеріалом, аудіо- та відеофайлами, посиланнями на зовнішні ресурси; керувати завданнями та оцінюванням: створювати, призначати, збирати та оцінювати завдання в цифровому форматі, часто з автоматичним зворотним зв'язком для певних типів; відстежувати прогрес студентів: контролювати індивідуальну та групову успішність, надаючи інформацію про сфери, де студентам може знадобитися більше підтримки; сприяти комунікації: пропонувати форуми, функції чату та дошки оголошень для належної взаємодії між викладачами та студентами, а також між самими студентами; інтегрувати різні інструменти: багато платформ дозволяють інтеграцію інших хмарних програм та інструментів тощо. Хмарні навчальні середовища стають дедалі важливішими у сучасній освіті, надаючи такі переваги, як

економія коштів, підвищена гнучкість та покращена масштабованість. Дослідження сприяє знанням про використання хмарних технологій у мовній освіті та підтверджує попередні дослідження переваг навчання з використанням хмарних технологій.

Ключові слова: *хмарні технологій, навчання англійської мови, навчальне середовище, прийоми, методи та форми навчання, навчальні ресурси.*

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THE USE OF CLOUD TECHNOLOGIES IN TEACHING ENGLISH LANGUAGE

The article is devoted to the problem of using cloud technologies in the context of teaching English. The aim of the article is to substantiate methodological approaches to the use of cloud technologies in higher education institutions. The objectives of the study include identifying the main types and forms of cloud technologies, their characteristics and analysis of their application in educational processes. The essence of the concept of using cloud technologies in teaching English is considered. The main forms and their characteristics are studied and analyzed for effective use both during classroom and extracurricular students' activities. Both positive characteristics have been noted, and their motivating factor. Since cloud technologies are a progressive means of working with information, they provide opportunities to learn English using various technical means, technologies, and forms, allowing to use convenient and familiar gadgets at a convenient time. Some cloud technologies allow the use of scales for assessing student learning results according to established grades. The implementation of this criterion allows the teacher to analyze the lessons and completed tasks by the students, while the students to analyze and correct their mistakes.

Different types and forms of cloud technologies have been considered, and functional characteristics have also been clarified. The core of functional characteristics are: to distribute materials, upload and share material, audio and video files, links to external resources; to manage assignments and assessments: to create, assign, collect and grade assignments in digital format, often with automatic feedback for certain types; to track student progress: to monitor individual and group performance, providing information on areas where students may need more support; to facilitate communication: to offer forums, chat functions and bulletin boards for proper interaction between teachers and students, as well as between students themselves; to integrate various tools: many platforms allow the integration of other cloud applications and tools, etc. Cloud learning environments are becoming increasingly important in modern education, providing benefits such as cost savings, increased flexibility, and improved scalability. The study contributes to the knowledge about the use of cloud technologies in language education and confirms previous research on the benefits of learning using cloud technologies.

Keywords: *cloud technologies; English language teaching; learning environment; techniques, methods and forms of learning; learning resources.*

Statement and justification relevance problems. Due to globalization English has become an international language. Splendid comprehension of English implies various possibilities to contemporary specialists. Furthermore, students are expected to have a sufficient level of foreign language competence both within their professional sphere and on the whole, they must acquire a set of abilities and skills that would form their communicative competence. Social realities, unpredictable circumstances, abidance in the state of war also encourage teachers to implement effective and innovative methods and technologies into educational process, to introduce creative approaches into practical and theoretical expertise of teaching English as a foreign language. Hence, teaching English must be flexible and diversified, for example involve technologies, methods and strategies that will provide students' language and communication skills comprehension by means of English language technology integration into education.

The integration of technology in education is essential, especially in language instruction. Technology changes how we gather information, conduct research, and communicate, breaking geographical barriers and allowing effective teaching worldwide. Cloud technologies have become key tools in language education, providing educators and students with flexible, affordable, and accessible resources. Properly integrating technology in education can enhance language learning for students and include global issues in the curriculum. Therefore, teachers should consciously use technology in language classrooms to improve students' language skills and increase access to authentic resources. The integration of technology significantly enhances the instruction and acquisition of English language skills. A thorough analysis of current literature shows that cloud technologies can greatly improve English language instruction, pedagogical practices, and create engaging learning environments.

Latest research and publications. Scholarly discourse on the integration of cloud technologies into English language pedagogy indicates a growing body of research that validates their efficacy in enhancing educational outcomes. The provided literature review highlights several key findings and recent publications that contribute to the understanding of this field. Recent empirical evidence demonstrates a strong positive correlation between the implementation of cloud technologies and students' linguistic proficiency. Quantitative data indicate that student performance in all four language skills – reading, writing, speaking,

and listening – improves significantly when cloud technologies are utilized in the curriculum. The research further elaborates on specific contributions from various scholars, for example, one of the researchers Duterte J. (2024) focused on the pedagogical implications of technology-enhanced learning environments, specifically noting their role in improving student engagement and learning. Hasumi and Chiu (2024) contributed to the field by providing a comprehensive performance analysis and identifying emerging trends in technology-enhanced language education. Zhang (2022)'s research detailed the practical construction and application of a cloud platform designed for English language teaching. Aburezeq and Dweikat (2017) examined the perspectives of future educators, analyzing pre-service teachers' expertise, perceptions, and integration of cloud applications in language instruction. A collective monograph by Shkola, Saliuk, and Antonenko (2024) and a separate publication by Shaikh (2025) provide further support for the use of digital technologies to enhance English language acquisition.

This research collectively confirms that cloud technologies are an integral component of modern language education. While the pedagogical benefits, such as enhanced collaboration, accessibility, and personalization, are well-documented, the research also acknowledges the need to address challenges related to internet connectivity, the digital divide, and data security to ensure equitable and effective implementation.

Purpose of the article is to analyze how cloud technologies can be applied in educational settings; to evaluate the effectiveness of using cloud technologies for teaching English, noting both their positive aspects and motivating factors; to show how cloud technologies can make English language teaching more flexible, interactive, and personalized.

The main research material. In contemporary world English language teaching moves to distance learning, usage of information and communication tools as integral part of education. The use of blended learning and various online tools has become an integral part of modern education both in Ukraine and throughout the world. A large number of online platforms have been designed for learning. They make it possible to be accessible for everyone, create training courses, share educational material, form assignments and tasks, use a wide range of tools (videos, images, records, simulators etc.), check the level of knowledge comprehension, control the progress of students.

Cloud technologies consist of various services and tools available online, allowing users to store, access, and share data and software remotely. These technologies offer many benefits for English language teaching, including increased accessibility, scalability, and cost-effectiveness. Cloud-based platforms allow students to access learning materials from anywhere with an internet connection, promoting flexibility and convenience. The integration of technology in language education helps students access a wide range of materials beyond traditional textbooks, including various formats and overcoming time and space limitations. Cloud technologies enable educators to tailor learning experiences for students with different learning preferences and language proficiency levels [8]. By using cloud-based collaborative writing platforms like Google Docs, students can work together on writing assignments, providing feedback and developing their writing and communication skills [1, 2, 7]. Additionally, technology provides students with opportunities to gather information and offers numerous tools for studying language and context. Moreover, cloud-based language learning platforms often include interactive exercises, multimedia content, and personalized feedback, which enhance student engagement and motivation. Furthermore, cloud platforms enable smooth communication between teachers and students, allowing for real-time feedback, personalized support, and collaborative projects. The integration of technology enhances language learning by offering diverse tools and resources for students.

Various methodologies can incorporate cloud technologies into English language instruction, each with its advantages and considerations. Blended learning, which combines in-person instruction with online activities, allows educators to utilize both traditional and digital learning environments. This approach addresses concerns in fully online learning by integrating traditional classroom instruction with online components. Mobile-assisted language learning uses mobile devices like smartphones and tablets to facilitate language learning outside the classroom, enabling access to learning resources anytime, anywhere. Gamification, which incorporates game-design elements in non-game contexts, can enhance motivation and engagement in language learning activities. Integrating multimedia resources, such as audio and video recordings, interactive simulations, and virtual environments, can create engaging and immersive learning experiences for students. Digital technologies play a crucial role in enhancing teaching and learning. Examples include Massive Open Online Courses, Bring Your Own Device programs, advanced learning analytics, and hybrid educational environments [9].

Cloud technologies promote student engagement, collaboration, and participation in learning, facilitating group work and knowledge sharing. Online resources provide opportunities for authentic language use, allowing learners to interact with native speakers and engage in real-world communication. The use of technology is now common in language learning, with new technologies continually emerging.

Research shows that technology-enhanced learning environments can improve student motivation, engagement, and learning outcomes in English language instruction. Technology acts as a facilitator of learning, enabling the use of authentic materials and customizing instruction to meet individual student needs. Implementing technological tools, like mobile phones, can improve learning methods by emphasizing coherence, quick access, and communication across contexts. Technology also bridges formal and informal learning contexts, empowering students to effectively use technology both inside and outside the classroom. Integrating technology into language education enhances learning through personalization, com-

munication, collaboration, and access to diverse tools and resources.

Technology can enhance learner involvement and teachers can create valuable technology-based learning experiences. By incorporating technology into language instruction, students can choose the order in which they receive information. Technology-enhanced learning encourages communication among peers and provides access to teachers and other learners globally. Using technology in the classroom fosters a more engaging and collaborative learning environment, where students are actively involved in their learning. Cloud-based tools offer new assessment opportunities, facilitating formative assessment and personalized feedback. Technology has become essential in language learning.

The base of cloud platform allows online tasks to be designed and applied so that the students engaged in performing exercises are involved into the interactive nature of learning activities with support and interest. It is also enhanced with diversity of forms and formats of the training material ranging from multiple choice exercises to open responds to assignments, cases or questions after watching authentic or adapted videos etc. The teacher can create study information of various formats, such as questionnaires, video lectures, audio tracks, text files, presentations, study material, seminars, workshops etc. Besides, the material can be updated, added, edited, deleted by the teacher thus improving the course. All the materials are stored and available enabling all the members to use, review and revise the information. The sets of exercises can be ready-designed, but the order of their display may vary. Therefore, the order of exercises in each group of students can be different depending on their level, comprehension, needs, intensity, timeliness etc [2, 6]. Moreover, cloud technologies also offer individualized approach when some students can get a task aimed at a particular skill or ability. Besides, the cloud technologies may provide additional teaching and learning means, tools and resources that can be easily applied within the study. The teacher can also add some text, video, audio files of different formats etc.

Cloud technologies ensure a bilateral communication that is very effective in the context of distance learning. In order to fulfil the function of bilateral communication between the teacher and students, different platforms, email service, browser correspondence can be used. The teacher can select a group of recipients for various tasks. It's also possible to provide the detailed data, the types of assignments, the dates or time of their fulfilment, the lists of students, the scores, the deadlines etc. Both the students and teachers can see the students' progress on online study. Each student's result is stored on the online platform and can be observed both by the teacher and student for further analysis. This analysis enables a conscious and profound consideration of students to their English language comprehension in prospective specialty. The scores of the assignments provide the teachers with the overview of the general progress of the group and with the achievements of a particular student [3]. Moreover, the control function of the fulfilment of the assignments can be performed at almost all stages of students' work on cloud technologies, such as current revision tests, homework exercises, classroom drilling exercises, and even final tests. The teacher can also optionally activate the function that allows the students to fulfil the tasks at several attempts.

Some cloud technologies allow to use assessment scales to obtain calculated students' results according to the established grades. The implementation of this criterion enables to save teacher's time, review and check each class and homework, observe the difficulties the students had, all the attempts they had to achieve the best results, the time to solve the tasks, what were their mistakes and results of the tasks completion. The students, on the other hand, can analyze and correct their mistakes.

Cloud technologies have significantly transformed English language teaching (ELT) by offering flexible, accessible, and interactive learning environments [1]. Here are some key forms and applications of cloud technologies in English language teaching:

I. Cloud-Based Learning Platforms (Learning Management System (LMS) / Virtual Learning Environment (VLE)): platforms like Moodle, Google Classroom, and Canvas are cloud-based and serve as central hubs for English language teaching. They enable teachers to: distribute materials: upload and share lesson plans, handouts, audio files, videos, and links to external resources; manage assignments and grading: create, assign, collect, and grade assignments digitally, often with automated feedback for certain task types; track student progress: monitor individual and group performance, providing insights into areas where students may need more support; facilitate communication: offer forums, chat functions, and announcement boards for appropriate interaction between teachers and students, and among students themselves; integrate various tools: a lot of platforms allow the integration of other cloud-based applications and tools [3, 5].

II. Collaborative Document and Content Creation Tools. Online Document Editors: tools like Google Docs, Microsoft 365 (Word, PowerPoint, Excel online), and Zoho Docs allow real-time collaborative writing, editing, and sharing of documents. In ELT, it facilitates collaborative writing, i.e. students can work together on essays, presentations, or creative writing projects, with teachers providing live feedback. Peer review: students can easily review and comment on each other's work. Teachers and students can co-create and organize learning materials. Presentation Tools: cloud-based presentation software enables students to create and deliver presentations, fostering speaking skills and digital literacy. Whiteboard Tools: virtual whiteboards like Miro or those integrated into video conferencing platforms allow interactive brainstorming, visual explanations, and collaborative problem-solving in English [11].

III. Communication and Interaction Tools. 1. Video Conferencing Platforms: Zoom, Microsoft Teams, Google Meet, and Skype are widely used for: virtual classrooms: delivering live lessons, conducting speaking practice, and facilitating group discussions; one-on-one tutoring: providing personalized instruc-

tion and feedback; guest speakers: inviting native English speakers or experts to interact with students. Discussion forums and social media: cloud-based forums and even social media platforms can be leveraged for: asynchronous discussions: allowing students to practice written English and engage with course content at their own pace; building language communities: connecting learners with shared interests and encouraging informal language practice [10].

IV. Interactive Learning and Assessment Tools. Quiz and game platforms: tools like Kahoot!, Quizlet, LearningApps, and Gimkit offer engaging ways to: review vocabulary and grammar; assess comprehension: design formative assessments in a fun and motivating format. Pronunciation and Speaking Practice Apps: some cloud-based platforms and apps use speech recognition technology to provide immediate feedback on pronunciation; Online Dictionaries and Thesauri: cloud-based linguistic resources are readily available, allowing students to quickly look up words, phrases, and their usage.

V. Content Repositories and Resource Sharing. Cloud Storage Services: Google Drive, Dropbox, and OneDrive allow teachers and students to store, organize, and share large volumes of English language learning materials; Video and Audio Hosting Platforms: YouTube, Vimeo, and podcasts offer a wealth of authentic English language content for listening comprehension, cultural immersion, and discussion. Teachers can curate playlists or assign specific videos/podcasts for learning.

VI. AI-Powered Tools (often cloud-based). AI Writing Assistants: tools like ChatGPT or other AI-powered writing tools can assist students with generating ideas, structuring sentences, and even providing grammar and style suggestions; AI-powered Lesson Planning Tools: some tools use AI to help teachers generate lesson plans, activities, and resources.

There are a lot of benefits of cloud technologies in English language teaching:

- accessibility and flexibility: learning materials and activities can be accessed anytime, anywhere, on any device with an internet connection, promoting self-paced and blended learning;
- enhanced collaboration: cloud tools facilitate real-time and asynchronous collaboration among students and between students and teachers;
- rich and authentic content: easy access to a vast array of authentic English language materials for immersive learning;
- personalized learning: teachers can tailor content and assignments to individual student needs and learning styles;
- immediate feedback: many tools provide instant feedback on student performance, aiding in self-correction and continuous improvement;
- cost-effectiveness: reduces the need for physical textbooks and infrastructure, often offering free versions of useful tools;
- streamlined administration: simplifies tasks like content distribution, assignment collection, and progress tracking;
- scalability: cloud-based solutions can easily accommodate a growing number of users without significant infrastructure changes [9, 11].

By leveraging these various forms of cloud technologies, English language teachers can create dynamic, engaging, and highly effective learning experiences for students. It is no doubt that a lack of live communication, personal contact, audio and vision obstacles etc. may cause annoying and irritating reaction of the participants, nevertheless, cloud technologies become an effective and crucial means of English language teaching in the extreme social conditions like COVID-quarantine measures or martial law. The participants can face inability to personal communication, physical presence, transportation, due to hygienic rules, security regulations, safety measures, etc. The cloud technologies are an integral part of English language teaching concerning both the above-mentioned considerations and contemporary technological tools and devices that are widespread in everyday life.

It should be noted that cloud technologies are a convenient learning means that may diversify and enhance the process of English language teaching. English language teaching becomes flexible, interactive and personalized. Both teachers and students have access to actual information, tools, platforms at any convenient time for them. It enables them both to combine different kinds of activities and stay competent in usage of computer aided programs.

Cloud technologies are up-to-date online tool that provides a possibility of authentic and interactive English language teaching activities as well as effective instant feedback. It may involve both paper-based material and digital one, synchronous and asynchronous learning, elements of offline and purely online formats improving in students' skills of self-management and time independence [4]. Therefore, the use of cloud technologies in English language teaching are aimed at creating favorable learning environments where students feel successful and intelligent. English language teaching via cloud technologies should be directed at organization of language communication that involves in compliance with the objective of education the most rational use of techniques, methods and forms of learning to achieve an appropriate level of English language competence.

A detailed analysis reveals several advantages and disadvantages of cloud technologies in English language instruction. Benefits include increased access to learning resources, personalized learning experiences, improved collaboration and communication, and enhanced student engagement and motivation. Cloud technologies allow educators to customize learning for students with different preferences and proficiency levels. However, challenges like internet connectivity issues, the digital divide, and the need for teacher training must be addressed to ensure equitable access to technology-enhanced learning. Additionally, while cloud computing offers many advantages for language education, concerns about data security, privacy, and ethical considerations must be managed for safe use.

Computer-Assisted Language Learning (CALL) serves as a medium for teachers and students learning

English, with its pros and cons. English teachers should effectively use CALL to enhance students' understanding and skills in learning English. Cloud technologies significantly improve English language teaching, provided educators receive sufficient training and support to integrate these tools effectively. English language educators can utilize technology to offer students valuable input and enjoyable language practice opportunities.

English teachers find using Quizizz in their classes and integrating technology essential for establishing an engaging teaching and learning process. Cloud-based platforms can boost student motivation and engagement, offering personalized learning experiences and real-time feedback. They are beneficial for both teaching and learning processes for educators and students. Cloud computing can reduce IT investment while providing many educational benefits. However, security risks remain consideration. Educators must carefully evaluate these challenges and benefits when deciding how to incorporate cloud computing into their teaching practices. Cloud computing solutions are becoming more common and innovative across various industries.

Findings and perspectives. Cloud technologies have transformed English language education by offering a wide range of resources and opportunities for both teachers and students. Cloud-based platforms enable students to actively engage in their language development, communicate with peers, and access authentic language resources. Using cloud technologies in English language instruction enhances the learning experience by providing individualized opportunities, improving collaboration and communication, and increasing student engagement and motivation. The rise of digital technologies has made cloud services in learning and research essential. Cloud computing is rapidly changing education by creating a virtual community for sharing and collaborating on a wide array of on-demand resources. Teachers can select content, track student progress, and customize lessons using cloud-based platforms to meet individual student needs. This personalized approach promotes student engagement and success. Cloud computing may help address challenges in the education sector today, but it comes with advantages. Higher education institutions can utilize their technological infrastructure to enhance research. Cloud-based platforms and tools can be readily integrated into English language classrooms and assist teachers in facilitating better learning experiences. The adoption of cloud computing in education is accompanied by significant research efforts to utilize cloud services for educational purposes. For effective integration of cloud technologies into teaching methods, training and support are crucial.

Quantitative data analysis showed a strong positive relationship between the use of cloud technologies and student achievement in English language skills. Technology improves educational effectiveness. Findings indicated that when cloud technologies were used in English language courses, students' performance in reading, writing, speaking, and listening significantly improved. Qualitative data revealed that teachers found cloud technologies facilitated the creation of engaging and collaborative learning environments. Students reported feeling more involved and motivated to learn due to the interactive and personalized experiences enabled by cloud technologies. The study demonstrates that students, teachers, and administrators utilize this technology. When teachers effectively integrate computers into classroom teaching, managing student data, searching for information, and presenting learning materials becomes more efficient. Cloud-based learning environments are increasingly crucial in modern education, providing benefits such as cost savings, enhanced flexibility, and improved scalability. Many institutions are adopting cloud computing to reduce expenses.

This study contributes to knowledge on using cloud technologies in language education and confirms previous research on the benefits of technology-enhanced learning. The findings have significant implications for educators, policymakers, and educational technology developers, offering insights on how cloud technologies can improve English language instruction and learning outcomes.

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ПОРІВНЯЛЬНИЙ АНАЛІЗ ЗАРУБІЖНОГО ТА УКРАЇНСЬКОГО ДОСВІДУ ВПРОВАДЖЕННЯ ЗМІШАНОГО НАВЧАННЯ З ВИКОРИСТАННЯМ ІМЕРСИВНИХ ТЕХНОЛОГІЙ У ЗЗСО

Стаття присвячена порівняльному аналізу зарубіжного та українського досвіду впровадження змішаного навчання із використанням імерсивних технологій у закладах загальної середньої освіти. Обґрунтовано актуальність дослідження в умовах цифрової трансформації освіти та формування компетентностей XXI століття. Проведено огляд сучасних наукових праць, у яких висвітлено потенціал VR/AR для підвищення якості навчання, розвитку критичного мислення, забезпечення інклюзивності, персоналізації освітнього процесу та зростання мотивації учнів. Показано, що у зарубіжних країнах (США, ЄС, Сінгапур, Південна Корея, Велика Британія та ін.) VR/AR інтегруються у національні стратегії цифровізації, а моделі їх використання (ротаційна, гнучка, збагаченого віртуального середовища, immersive storytelling) реалізуються системно й за підтримки державної політики, фінансування та широкомасштабних програм підготовки педагогів. В Україні імерсивні технології впроваджуються переважно у форматі пілотних проєктів, STEM-лабораторій та інклюзивної освіти, що зумовлено обмеженими ресурсами, нерівномірним доступом до цифрової інфраструктури та викликами воєнного часу. Водночас український досвід демонструє інноваційність і гнучкість у кризових умовах, засвідчуючи потенціал VR/AR для підтримки стійкості освітньої системи, забезпечення безперервності навчання та розширення можливостей для різних категорій учнів. У статті сформульовано висновки щодо спільних тенденцій і відмінностей у впровадженні VR/AR у змішане навчання та окреслено перспективи їх інтеграції у вітчизняну освітню політику. Наголошено на необхідності системної підготовки вчителів, створення національних EdTech-платформ, стабільного фінансування та нормативно-правової підтримки для масштабування VR/AR у ЗЗСО та наближення до міжнародних практик у післявоєнний період.

Ключові слова: *змішане навчання, імерсивні технології, VR/AR/MR, цифровізація освіти, порівняльний аналіз, заклади загальної середньої освіти.*

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