

TEACHING THEORY AND METHODOLOGY

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**Adaptation of the methodology for teaching Arabic grammar for students
with a european language base**

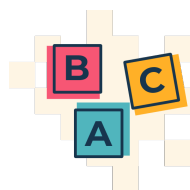
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Abstract. *Teaching Arabic is a real challenge in the context of its perception in a non-linguistic environment, where students do not have the opportunity to immerse themselves in a living environment of communication. Teachers face various difficulties in learning - from limited opportunities for practical use of the language to difficulties in forming communicative competence. Such heterogeneity in the educational process prompts us to think about improving pedagogical practice, reviewing forms and methods of work in classes, and introducing modern tools and practices that can be useful for taking into account students' individual characteristics. In this context, digital strategies can increase the effectiveness of teaching Arabic grammar to students with a European language base. Using digital technologies allows you to expand the educational space, make learning more interactive and personalized, stimulate students' interest and contribute to better assimilation of the material. This work **aims** to analyze digital strategies in teaching Arabic, highlight their role in increasing the effectiveness of the educational process, as well as to find ways to overcome the challenges facing a modern teacher.*



*The **methodology** of the work was based on empirical data obtained through surveys and observations, which corresponds to the empirical-analytical approach in pedagogical research. **Results.** The work results showed the advantage of the proposed program of combined learning of the Arabic language for beginners. Within the framework of this program, the Moodle platform was used, multimedia resources were involved, and tools for creating texts were used in addition to Moodle. During the study, significant heterogeneity was revealed among students studying Arabic, which, in turn, requires additional preparatory work from teachers. It prompted us to pay attention to the issue of pedagogical differentiation in online language learning programs to overcome this heterogeneity. Thus, the work focused on studying the possibilities of pedagogical differentiation within the framework of the hybrid learning program. **Conclusions.** The implementation of digital technologies has allowed the development of an online Arabic language learning program that provides personalized learning, taking into account the different needs of learners. Thus, using digital technologies can allow the implementation of a pedagogical differentiation strategy in an online Arabic language learning program, using the example of a blended learning Arabic language program for beginners.*

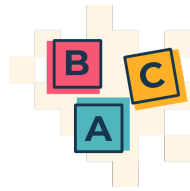
Keywords: *arabic language proficiency, pedagogical differentiation strategy, hybrid learning, communicative competence, blended learning.*

**Адаптація методики викладання граматики арабської мови для
здобувачів освіти з європейською мовною базою**

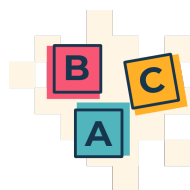
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***Анотація.** Викладання арабської мови є справжнім викликом у контексті її сприйняття у немовному середовищі, де здобувачі не мають можливості занурення у живе середовище спілкування. У процесі навчання викладачі стикаються з різноманітними труднощами – від обмежених можливостей практичного використання мови до складнощів у формуванні комунікативної компетентності. Така неоднорідність навчального процесу спонукає замислитися над удосконаленням педагогічної практики, переглядом форм і методів роботи на заняттях, а також над впровадженням сучасних інструментів і практик, що можуть бути корисними для врахування індивідуальних особливостей студентів. Особливе значення в цьому контексті мають цифрові стратегії, здатні підвищити ефективність викладання граматики арабської мови для здобувачів освіти з європейською мовною базою. Використання цифрових технологій дозволяє розширити освітній простір, зробити навчання більш інтерактивним і персоналізованим, стимулюючи інтерес студентів та сприяючи кращому засвоєнню матеріалу. **Мета** цієї роботи – провести аналіз цифрових стратегій у викладанні арабської мови, виділити їх роль у підвищенні ефективності навчального процесу, а також пошуку шляхів подолання викликів, що стоять перед сучасним педагогом. **Методика** роботи базувалася на емпіричних даних, отриманих через опитування та спостереження, що відповідає емпірично-аналітичному підходу у педагогічних дослідженнях. **Результати** роботи показали перевагу запропонованої програми комбінованого навчання арабської мови для початківців. В межах цієї програми використовувалася платформа Moodle, задіяні мультимедійні ресурси, інструменти для створення текстів, які використовувалися на додаток до Moodle. У ході дослідження було виявлено значну неоднорідність серед студентів, які вивчають арабську мову, що, у свою чергу, вимагає від*

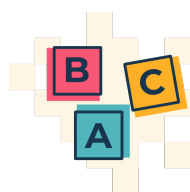


викладачів додаткової підготовчої роботи. Це спонукало звернути увагу на питання педагогічної диференціації в онлайн-програмах мовного навчання для подолання зазначеної неоднорідності. Таким чином, робота зосередилася на вивченні можливостей педагогічної диференціації в рамках програми гібридного навчання. **Висновки.** Імплементація цифрових технологій дозволила розробити онлайн-програму з вивчення арабської мови, яка забезпечує персоналізоване навчання, враховуючи різні потреби здобувачів освіти. Таким чином, використання цифрових технологій може дозволити реалізувати стратегію педагогічної диференціації в онлайн-програмі вивчення арабської мови на прикладі програми комбінованого навчання арабської мови для початківців.

Ключові слова: володіння арабською мовою, стратегія педагогічної диференціації, гібридне навчання, комунікативна компетентність, комбіноване навчання.

Problem statement. Modern conditions of teaching foreign languages require implementing practical approaches to the organization of the educational process, which would consider different levels of training, motivation and individual characteristics of applicants. Given its structural complexity and significant differences from Ukrainian or other European languages, this is especially relevant in teaching Arabic as a foreign language. One of the promising areas in this context is the implementation of a differentiated approach in blended learning.

However, in practice, several difficulties arise related to the adaptation of educational material to the needs of different-level student groups, the creation of an effective learning environment in the Moodle platform, as well as ensuring the quality of mastering grammatical structures and the formation of stable language skills. Insufficient study of the methodological aspects of using a differentiated

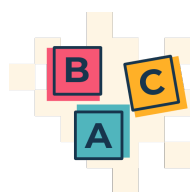


approach within the framework of blended learning of the Arabic language creates the need for systematic research on this issue and the development of appropriate pedagogical solutions.

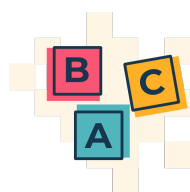
Given the above, the proposed study focuses on the extent to which the use of digital technologies can contribute to implementing a differentiated learning strategy in online Arabic language courses for beginners in a non-native environment.

Analysis of recent research and publications. Digital technologies occupy a key place in modern society, transforming how information is accessed and processed. In this context, researchers M. Qureshi, N. Khan, H. Raza, A. Imran and F. Ismail consider digital technologies as a real revolution in the field of information access, emphasizing their ability to provide instant access to significant amounts of data in everyday life [1, p. 4]. Digital technologies today are revolutionizing learning [2, p. 275]. According to M. Pinto and C. Leite, digital technologies encompass digital tools and products used in education and teaching. They encompass tools designed and used to create, process, store, share, classify, search and read digital documents for learning purposes [3, p. 344].

According to M. Sailer, J. Murböck and F. Fischer, digital resources have the advantage of providing tools and solutions to manage the various constraints of differentiated learning. First, they overcome the geographical and time constraints required for physical presence. Thanks to digital technologies, teachers can adapt to the specific needs of each learner without going through a long and tiring process of over-adapting to each profile [4]. Numerous studies and reports highly appreciate the benefits of digital technologies. Thus, according to A. Kulish, V. Radul, Y. Haleta, O. Filonenko and I. Karikh, digital technologies in language teaching contribute to greater differentiation as they adapt to the work of learners and their different learning styles, taking into account the needs of both those who are better at learning and those who have more difficulties [5, p. 3].



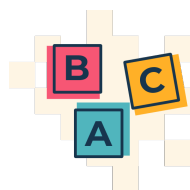
In the same context, O. Ovcharuk, I. Ivaniuk, O. Burov, M. Marienko, N. Soroko, O. Hrytsenchuk and O. Kravchyna add that they have a positive impact on behavior, motivation, communication and development of cognitive skills in learners [6, p. 434]. H. Polianovskyi, T. Zatonatska, O. Dluhopolskyi and I. Liutyi also emphasize the benefits of digital technologies, especially for learners with learning difficulties. The authors note that these technologies, in addition to promoting differentiated learning adapted to each learner, are also an essential means of assessment, self-study and the development of creativity. They stimulate motivation and provide inclusive learners with adapted means of communication and learning [7, p. 599]. Within the digitalization of education, F. Habibi and M. Zabardast distinguish levels of ICT (information and communication technologies) consumption. The authors believe that at the first and second levels, ICT consumption is passive and interactive. Learners consume passively as they listen to or read digital resources without active intervention. In interactive use, they read content and then interactively perform exercises on familiar learning platforms. The third level involves the creation of materials (texts, images or videos) as a continuation of the learning sequence, which is performed in groups or individually. The last two levels develop the joint creation of knowledge and materials [8]. In a related study, S. Yusuf adds that learners must work together to achieve educational goals using digital resources. Teamwork and collecting online resources motivate learning [9]. According to M. Jemni, F. Kammoun, M. Marrakchi and J. Chaabouni, the ultimate goal of introducing digital tools into language learning is to combine each learner's skills to solve a common group problem on a given topic. This type of joint task strengthens the sense of belonging to the learning community. In this context, learners are offered forums and audiovisual communication interfaces for collaboration [10, p. 231].



The issue of the ethical position of the teacher in the teaching process, according to V. Borisenkov, O. Gukalenko and V. Pustovoitov, plays a key role in the adaptation of digital technologies. His role is part of the traditional pedagogical approach. Currently, only the teacher can provide pedagogical support using digital technologies to students who do not yet take an active part in their learning. Only after the teacher's instructions the student becomes a participant and co-creator in the learning group with the support of digital technologies [11, p. 12075]. The types of learning activities proposed in this work for the course on learning Arabic in a non-linguistic environment are located at levels corresponding to the first two steps in the taxonomy of digital activity - from passive consumption (viewing digital resources, in particular, video audio and texts) to interactive consumption (performing tasks on the Moodle educational platform). This approach is an effective starting stage for forming basic language skills at the initial level of learning.

Highlighting previously unresolved parts of the general problem. As the analysis of the sources of literature showed, in the scientific space still leave unresolved questions about the peculiarities of teaching Arabic to the European audience. The main complexities in learning for students are the fluidity, the lack of vowels in the letter and the specificity of verb forms that contrast the language system of Arab and European languages. Therefore, significant morphological and syntactic differences create difficulties for students interpreting grammatical structures.

The next problem is the lack of training of Arabic teachers to work with European-language students. The main problem is an actual deficit of specialized teaching methodology for the grammar of the Arabic language for students with a European linguistic base. Along with this specific problem is the lack of adapted teaching materials that would consider this category of students' typical mistakes



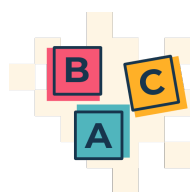
and language expectations. The absence of language immersion causes students in the first months of learning significant difficulties in assimilating Arab graphics and grammatical structures, accompanied by language interference. It leads to a motivational crisis of learning. Thus, without proper cultural contextualization, there is a decrease in the efficiency of remembering and complicating the formation of communicative competence. The separation of grammar from real speech leads to the formation of «passive knowledge», which does not become the skill of active communication. Therefore, standardization of grammar outside the individual context is required, as these problems prevent the successful mastering of Arabic. All these problems can be separate areas for further research and important accents for clarifying the work or in-depth analysis.

Formulation of the objectives of the article (task statement). The article aims to assess the effectiveness of using digital materials in the educational process and to develop new programs for teaching Arabic grammar to students with a European language base.

To achieve the goal, the following tasks are set in the work:

1. To assess the potential of digital technologies in creating online programs in the Arabic language.
2. To demonstrate how teachers can use such a program for differentiated Arabic language teaching.

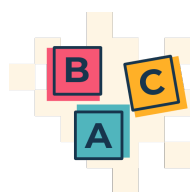
Presentation of the primary material. The study results are based on the analysis of the responses of the participants who completed the online questionnaire and the review and evaluation of the learning activities integrated into the Moodle platform for the Arabic language course. The collected data made it possible to outline the main characteristics of the audience. In particular, it concerns detecting prior knowledge, motivation, learning difficulties and needs after a year of language learning. The collected data made it possible to identify ways to optimize the



educational process and develop recommendations for implementing differentiated learning in the context of using digital technologies.

The analysis of the effectiveness of the Arabic language course for beginners with a European language base aimed to identify gaps, adapt tasks to a different-level audience and optimize digital resources, in particular on the Moodle platform. The results of the questionnaire (23 responses) demonstrated significant heterogeneity in terms of language proficiency, previous experience, interests and motivation. It, in turn, determined the need to implement differentiated approaches in blended Arabic language learning programs. The use of digital tools and multimedia resources made it possible to develop flexible solutions focused on the individual needs of learners. The results also highlighted the main difficulties that learners face when learning Arabic. The most common problems were the correct pronunciation of words without short vowels, a limited vocabulary, difficulties with auditory perception of speech, and the pace of classes, which sometimes seemed too fast. In addition, there were those among the participants who noted difficulties in distinguishing sounds and memorizing language structures. It caused problems during independent learning outside the classroom without teacher support. The results highlighted the need to create adaptive learning solutions that would consider the different needs of learners, including additional training tasks for developing pronunciation, auditory discrimination, expanding vocabulary, and maintaining the pace of learning.

Also, analyzing the participants' responses allowed us to identify their primary needs. Moreover, the needs covered both language aspects (grammar, reading, vocabulary) and the work format (individually, in pairs, in groups). The applicants expressed their wishes for shorter classes, which would provide them with additional exercises in grammar, conjugation, reading, and listening. In addition, the applicants expressed interest in educational games and tasks to practice the



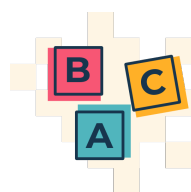
language. Such needs outlined areas for improving the course content and preparing additional resources. The analysis of learning strategies showed that most students repeat the material at home, watch recordings of classes, and search for videos on YouTube or online lessons for additional practice. This data motivated us to create a curriculum that includes interactive tasks, training materials and the ability to view content at their own pace, taking into account the applicants' diverse needs and learning styles.

Thus, the participants' responses helped to integrate the tasks into the Moodle platform and to identify tools and technical means for implementation in the Arabic language course. It enabled the development of a blended learning program for the Arabic language for beginners (Table 1).

In terms of its structure, the program includes all the elements that would strengthen grammatical knowledge and language automatisms. Within its framework, candidates are offered exercises for self-correction of reading and writing, grammar exercises designed to strengthen linguistic automatisms and grammatical translation, and exercises for studying the derivation system and deepening vocabulary.

As mentioned, the course is created on Moodle - a modular object-oriented dynamic learning environment, an open-source online platform. This platform allows you to create courses using integrated tools (resources and tasks) for teachers. In addition, it allows them to organize courses in the form of streams (categories and subcategories, cohorts, etc.), allowing you to implement full-fledged educational systems with their unique characteristics. In addition to creating an online learning environment, Moodle offers numerous interactive tools for teachers [12].

The design of the proposed program is structured and aimed at developing differentiated learning accessible to all. All tasks offered throughout the program are freely available to registered students without specific restrictions. Six



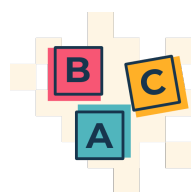
micromodules were completed during the 2023-2024 academic year, and the following were designed for the second year of study, starting in September.

Table 1

Structure of the blended learning program for beginners in Arabic

Digital tools, resources and content	Didactic advantages
Moodle platform	The main platform for accessing learning materials, exercises, tests and forums
Multimedia resources	Video lessons (explanations of grammar, alphabet, pronunciation) Audio files for training auditory perception and vocalization
Interactive exercises	Grammar tasks (interrogative sentences, verb conjugations, plural, adjectives); Reading and vocalization tasks; Listening tasks (short dialogues, vocabulary dictation); Translation tasks (from Arabic to native language and vice versa)
Supporting materials	Alphabet, numbers, days of the week, months, time, seasons Vocabulary sets (food, everyday life, basic vocabulary) Memoirs, examples, additional explanations
Learning content (grammar)	Imperfect and perfect tenses / Conjugations (basic forms) Interrogative sentences / Negation of verbs / Masculine/feminine gender, plural / Adjectives, relative adjectives / Prepositions, annexes, indicative moods / Imperative and future tense
Reading and writing practice	Joining and separating letters Word formation, word ladder exercise Tasks for recognizing words without short vowels Performing exercises with auxiliary prompts and examples
Listening	Aural dictations / Recognition tasks words/sounds Tasks for determining rhythm and stress
Vocabulary	Thematic word sets / Translations / Dictionary dictations Tasks for repeating and consolidating vocabulary
Focus on supporting independent learning	Clear, standardized instructions for all tasks Exercises with prompts and examples for self-checking Recommendations for practicing pronunciation without short vowels
Flexibility of learning forms	Ability to work individually or in a group Access to materials 24/7 Use of online video, audio and PDF materials for practice
Support for auditory discrimination	Blocks of exercises for auditory discrimination Work on rhythm, intonation and long/short vowels
Game elements	Games on numbers, letters, words Speed tasks (timer) Quest lessons with finding the correct answers

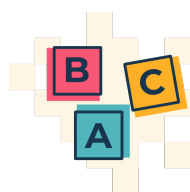
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As mentioned, Moodle offers a wide range of resources and activities [13]. The H5P plugin integrated into Moodle was used to create exercises for each grammar point. This plugin consists of JavaScript libraries that allow you to create different types of interactive content. Despite the presence of numerous tasks in H5P that overlap with Moodle resources, it was chosen for teaching Arabic because of its flexibility in creating and organizing tasks, which is essential for the proposed Arabic language learning program for students with a European language base. In particular, the «Course Presentation» task allowed combining text, audio, images, and tasks in one format. This format fully meets the needs of education seekers.

The Moodle «Testing» tool was chosen for assessment. It allowed the creation of questionnaires with the types of questions required for creating a program and flexibly adjusting them to the needs of the course. Moodle «Testing» opens up the possibility of monitoring candidates' assimilation of the material and provides effective feedback. Other tasks were integrated into Moodle using Genially, an online tool for creating interactive content. Thanks to this, interactive maps, posters and mini-sites were developed. Such digital visualization helps candidates discover new topics before completing the exercises. For example, in the «Adjective of affinity» section, an interactive map of the Arab world was created to get acquainted with different countries and information about which candidates use in subsequent tasks. In addition, video clips were created using Camtasia to increase learning effectiveness, where candidates could watch how to write Arabic letters correctly. Using a tablet and stylus allowed the writing process to be shown in real-time and contributed to better mastery of writing skills by candidates.

Despite the many advantages of the program, during the work, teachers faced certain limitations since a significant part of the tasks required written answers in Arabic. The main difficulty for most candidates was the lack of an Arabic keyboard. Therefore, it was decided to add a link to an online keyboard for entering answers.



However, this process was complicated for candidates, so the number of tasks with written answers was reduced in the course.

Another limitation concerned the «fill in the blanks» task in H5P. The problem was that the system did not always recognize answers in Arabic properly. Tasks with several words were often mistakenly considered incorrect, while one-word answers were checked. Therefore, tasks of this type were left only for cases requiring a one-word answer.

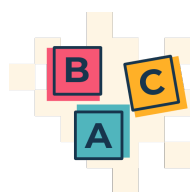
The task of «circle the correct answer in the text» has been replaced with a task of the type «set with one choice»; the option «click on the word» in H5P did not work correctly for the Arabic language.

For the translation exercises, we chose formats that allowed for the variability of answers, such as «Flag», «Drag and drop», and «True / False». The task «Dialogue card» had to be excluded because the Arabic text's font was too small.

In the program, all vocabulary tasks have a gradually increasing level of difficulty. For example, tasks of the «Drag and drop» type are used in the exercise on learning the hours in Arabic. The candidate listens to the audio, finds the desired word and drags it to the appropriate place. It combines auditory and visual cues and contributes to better assimilation. In other tasks, candidates must move the images according to the audio they have listened to. This type of task develops the ability to perceive and understand the Arabic language by ear.

The choice of multimedia elements was based on accessibility and effective learning of the material [14, p. 3]. All integrated resources (video, audio, interactive tasks) aim to facilitate learners' perception of new information and improve memorization. To ensure readability, the work also included possibly adapting the font size for Arabic texts [15, p. 194].

Particular attention was paid to multimedia elements that meet the principles of digital strategies for improving learning efficiency. For example, for learning the



alphabet and vocabulary, our interactive books contain text, sound, images and GIF files to satisfy the different learning styles of learners. In this regard, using multiple information presentation formats contributes to better memorization if learners integrate information from different channels. For example, in the book «The Arabic Alphabet», one letter is presented as text, a GIF file with its outlines, an example of a word with a picture, text and audio. The needs of education seekers justify the addition of short vowels.

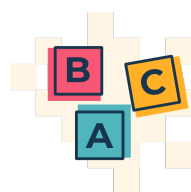
At the same time, when working with students under the proposed program, the risk of cognitive overload due to an excess of multimedia was considered. After all, it is known that an excess of formats can complicate learning. Therefore, after testing the course, education seekers will be surveyed to obtain feedback on this issue.

Among the integrated multimedia materials were also video clips. In them, the teacher himself voices the content and explains the course's key concepts. This is a valuable tool for reviewing topics and differentiating learning.

All tasks described in the course have clear, accessible instructions formulated in action verbs and adapted to the type of task. For complex tasks, for example, «Verlan's Lesson», a button with an extended explanation has been added. «Information» buttons with translations, explanations of grammar rules, and hints are additional help tools that match the tasks' difficulty level.

All tasks are self-correcting; students can see the correct answers after checking. For some tasks, there is individualized feedback that helps to understand mistakes.

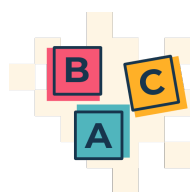
The entire program is built in such a way that the profile of each course participant is taken into account. To overcome difficulties outside the classroom, all tasks are self-correcting. Access to support and technical instructions is also



provided. The program allows students to review, repeat the material, assess their progress and work independently at their own pace.

Thus, designing the blended learning program for beginners in Arabic aimed to create a differentiated, accessible, intuitive learning environment that would consider different student profiles and increase the effectiveness of adapting the methodology for teaching Arabic grammar to students with a European language base.

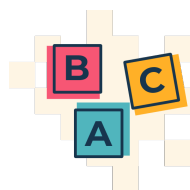
Conclusions. The results of the proposed work demonstrate how digital technologies can contribute to implementing a differentiated learning strategy, in particular, by creating a blended learning program for Arabic as an adapted methodology for teaching Arabic grammar to students with a European language base. The paper examines the benefits of this curriculum for both students and teachers. Despite the limitations of the sample, the paper managed to identify the needs and problems of students. Data collection made it possible to develop appropriate proposals to solve these problems. Despite the ease with which digital technologies allow teachers to meet the various needs of students, they remain a tool that can be used to create differentiated educational content. Still, they do not replace the classroom environment. That is why integrating the proposed program into the study of Arabic is effective for the non-linguistic environment and for increasing students' motivation. However, it should be added that the mere presence of a tool is not enough to ensure its use. To become regular users, learners need the support of teachers who would adjust the curriculum. It is also essential to consider less autonomous learners and pay attention to different profiles or behaviors when they encounter digital content to offer appropriate recommendations if necessary. Implementing such pedagogical differentiation is an investment of time and training for teachers, especially with digital technologies, as mastery of the tools is required. The proposed curriculum provides Arabic language teachers with a ready-to-use



digital tool. However, its use requires some training, both in terms of knowledge of the content of the curriculum and its integration into the lessons, considering the group's diversity. Thus, this article provides an opportunity to deepen knowledge of the integration of digital strategies to improve the effectiveness of teaching Arabic grammar to learners with a European language background, and the proposed program is an effective tool for developing differentiated teaching.

References:

1. Qureshi M. I., Khan N., Raza H., Imran A., Ismail F. Digital technologies in education 4.0. Does it enhance the effectiveness of learning? A systematic literature review. *International Journal of Interactive Mobile Technologies*. 2021. Vol. 15, №. 04. P. 31-47. DOI: <https://doi.org/10.3991/ijim.v15i04.20291>.
2. Haleem A., Javaid M., Qadri M. A., Suman R. Understanding the role of digital technologies in education: A review. *Sustainable operations and computers*. 2022. Vol. 3. P. 275-285. DOI: <https://doi.org/10.1016/j.susoc.2022.05.004>.
3. Pinto M., Leite C. Digital technologies in support of students learning in Higher Education: literature review. *Digital education review*. 2020. Vol. 37. P. 343-360. URL: <https://dialnet.unirioja.es/servlet/articulo?codigo=7615204> (date of access: 28.03.2025).
4. Sailer M., Murböck J., Fischer F. Digital learning in schools: What does it take beyond digital technology?. *Teaching and Teacher Education*. 2021. Vol. 103. 103346. DOI: <https://doi.org/10.1016/j.tate.2021.103346>.
5. Kulish A., Radul V., Haleta Y., Filonenko O., Karikh I. The newest digital technologies in education and the prospects of their implementation in Ukraine. *Propósitos y Representaciones*. 2020. Vol. 8, № 2. e684. DOI: <http://dx.doi.org/10.20511/pyr2020.v8nSPE2.684>.



6. Ovcharuk O., Ivaniuk I., Burov O. Y., Marienko M. V., Soroko N., Hrytsenchuk O. O., Kravchyna O. The practical experience of the use of digital learning resources by Ukrainian teachers to ensure the sustainable development and democratization of education process. *CEUR Workshop Proceedings*. 2022. Vol. 1. P. 432-444. URL: <https://lib.iitta.gov.ua/id/eprint/731123/> (date of access: 28.03.2025).

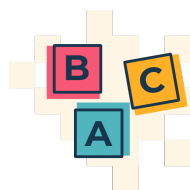
7. Polianovskyi H., Zatonatska T., Dluhopolskyi O., Liutyi I. Digital and technological support of distance learning at universities under COVID-19 (case of Ukraine). *Revista Romaneasca Pentru Educatie Multidimensionala*. 2021. Vol. 13. № 4. P. 595-613. DOI: <https://doi.org/10.18662/rrem/13.4/500>.

8. Habibi F., Zabardast M. A. Digitalization, education and economic growth: A comparative analysis of Middle East and OECD countries. *Technology in Society*. 2020. Vol. 63. P. 101370. DOI: <https://doi.org/10.1016/j.techsoc.2020.101370>.

9. Yusuf S. Digital Technology and Inequality: The Impact on Arab Countries. *Economic Research Forum (ERF)*. 2021. URL: https://erf.org.eg/app/uploads/2021/09/1632920263_470_2894109_1486.pdf (date of access: 28.03.2025).

10. Jemni M., Kammoun F., Marrakchi M., Chaabouni J. Review of digital transformation in higher education in Arab countries. *Radical solutions for artificial intelligence and digital transformation in education: utilising disruptive technology for a better society*. Singapore: Springer Nature Singapore. 2024. P. 227-250. URL: https://link.springer.com/chapter/10.1007/978-981-97-8638-1_15 (date of access: 28.03.2025).

11. Borisenkov V., Gukalenko O., Pustovoitov V. Digitalization of education: trends in teacher training. *E3S Web of Conferences*. 2021. Vol. 273. P. 12075. DOI: <https://doi.org/10.1051/e3sconf/202127312075>.



12. Ziraba A., Akwene G. C., Lwanga S. C. The adoption and use of Moodle learning management system in higher institutions of learning: A systematic literature review. *American Journal of Online and Distance Learning*. 2020. Vol. 2. №1. P. 1-21. URL: <https://surl.li/vxltho> (date of access: 28.03.2025).

13. Simanullang N. H. S., Rajagukguk J. Learning management system (LMS) based on Moodle to improve students learning activity. In *Journal of Physics: Conference Series*. 2020. Vol. 1462, № 1. 012067. DOI: <https://doi.org/10.1088/1742-6596/1462/1/012067>.

14. Lu K. Experimental research of English teaching management model based on personalized multimedia technology. *Open Access Library Journal*. 2020. Vol. 7., № 4. P. 1-13. DOI: <https://doi.org/10.4236/oalib.1106251>.

15. Bărbuleț G. D. The use of multimedia in language teaching. *Swedish Journal of Romanian Studies*. 2023. Vol. 6, № 1. P. 191-201. URL: <https://www.cceol.com/search/article-detail?id=1119397> (date of access: 28.03.2025).