

## INCORPORATING EDUCATIONAL SMARTPHONE APPS FOR TEACHING UKRAINIAN AS A FOREIGN LANGUAGE TO MEDICAL STUDENTS

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*This article explores the implementation of mobile applications in the training of future doctors studying the Ukrainian language. The authors conducted a descriptive survey to explore the types of language learning apps commonly used by foreign students studying Ukrainian at the Poltava State Medical University. Furthermore, the effectiveness of these applications for the development of language skills was identified and analyzed. The authors have demonstrated that most smartphone and tablet apps can be effectively used for learning new vocabulary, grammar, spelling rules, and developing writing and speaking skills in Ukrainian for foreign students. The descriptive survey indicated that students generally hold a positive attitude towards the use of apps for language learning. Among the students surveyed, grammar and vocabulary apps were found to be the most popular, while speaking and writing apps were less favored. The authors have also identified the advantages and disadvantages of using language learning apps. The article provides a careful analysis of the essence, principles, strengths, and weaknesses of mobile*

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*applications, as well as their pedagogical significance in the context of studying the Ukrainian language at medical universities. It emphasizes that educational mobile applications used by teachers of Ukrainian as a foreign language create an environment that facilitates information retention, promotes interaction between students, and develops their language skills. Mobile applications allow students to personalize their learning by choosing the content and pace, making them convenient for self-directed and distance learning. The data and results obtained from this study can be used to improve educational materials through mobile applications for learning Ukrainian as a foreign language. The findings contribute to research on mobile-assisted language learning and the design of educational apps by shedding light on students' preferences for acquiring different language skills.*

**Keywords:** *educational smartphone apps, mobile learning, distance education, foreign student, Ukrainian language learning, technology, future doctors.*

## 1. INTRODUCTION

The ongoing transition to the information society, both globally and in Ukraine, requires significant changes across various sectors, particularly in education. Currently, the development and advancement of the unified European educational space are underway through the Bologna process, which promotes the integration of information and communication technologies into education.

Furthermore, the world is witnessing the establishment of global open educational and scientific systems. These systems serve as the foundation for the accumulation and dissemination of scientific knowledge, enabling widespread access to diverse information resources for various sections of the population. In this context, contemporary education should embrace the utilization of cutting-edge technologies to facilitate knowledge transfer and provide access to a wide range of educational information.

One of the primary directions in educational development is the integration of distance learning technologies, with the primary objective of establishing a comprehensive distance education system. Distance learning, as understood in its modern context, is a relatively recent phenomenon. Its novelty allows for the incorporation of the best methodological practices accumulated by educational institutions worldwide, along with the utilization of contemporary and highly effective pedagogical technologies that align with the needs of modern education and society as a whole. To implement distance learning technology successfully, the development of a model that utilizes virtual learning environments is crucial. Several renowned foreign universities have emerged as leaders in the field of distance learning. Examples include the Massachusetts Institute of Technology (MIT), Stanford University, the University of Oxford, the University of Cambridge, Fern University in Hagen (University of Hagen), among others. Their innovative approaches and successful implementation of distance learning have positioned them as role models for educational institutions worldwide.

The establishment of a distance education system aims to grant widespread access to educational resources throughout the nation by leveraging modern information

technologies and telecommunication networks. It creates favorable conditions for citizens to exercise their right to education. Notably, distance learning technology enhances the efficacy of active learning methods. A compelling instance of its application in universities is the integration of mobile technology as a novel educational format, enabling the provision of large-scale open (free) online courses. This innovative approach allows for the dissemination of education on a broad scale, promoting accessibility and inclusivity.

Mobile learning technology has become an essential tool embraced by teachers and students worldwide. Its prevalence has made it an integral part of people's lives, both in Ukraine and around the globe. This innovative technology incorporates advanced mobile hardware and cutting-edge software, making it indispensable for educational purposes. Over time, modern mobile devices have increasingly integrated into the learning process, reshaping traditional teaching and learning methods. The extensive use of smartphones and various wireless handheld devices has revolutionized education. These latest mobile devices are rapidly emerging as vital educational tools, offering learners broader, more flexible, and contemporary learning opportunities and options.

In the process of reviewing, analyzing and summarizing relevant scientific sources on the chosen research problem, we would like to pay more attention to improving the methodological system of teaching Ukrainian as a foreign language to students of medical institutions of higher education, especially considering the introduction of mobile applications in the training of future doctors when learning the Ukrainian language.

### **Literature review**

Mobile learning technology, commonly referred to as mobile-aided language learning, encompasses various devices such as smartphones, iPods, MP3 players, and mobile phones that facilitate language learning. By utilizing these wireless devices, students gain access to diverse information resources, enhance their vocabulary skills, and engage in simulated games, intellectual and experiential learning, as well as pragmatic and real-life situations. The active use of these advanced mobile devices provides numerous benefits for both teachers and students, driving positive and noticeable changes in the learning and teaching processes. Mobile learning also enables information acquisition, exchange of training materials through group communication, and the seamless recording of informal and continuous learning progress. Consequently, mobile devices provide an effective platform for learners and educators to interact socially and informally.

Considering the imperative need for specialists in various fields to communicate effectively in foreign languages amidst current global challenges, it is evident that mobile language learning is a rapidly advancing field. It is valuable to acknowledge real examples supported by relevant evidence that demonstrate the significant contributions of mobile technology to modern language teaching and learning processes. By being aware of such real-life instances, we can recognize the tangible value that mobile technology adds to language education and learning experiences.

Numerous scientists have been actively involved in studying the theoretical and practical aspects of mobile learning technology and mobile-aided language learning. The methodological foundations of research in this field have led to a significant increase in the

number of articles written and published by both foreign and Ukrainian educators, theorists, and pedagogical practitioners. Building upon the foundational ideas put forth by their predecessors, contemporary scholars have sought to refine the definition and outline the dominant and key features of this phenomenon. The growing body of research sheds light on the potential and effective ways in which mobile devices can be utilized in language teaching and learning. Many studies delve into the investigation of the challenges, benefits, peculiarities, and future prospects of mobile technology in foreign language learning (Kuimova et al., 2018; Huzairin, Putrawan & Riadi, 2020; Ishag et al., 2020; Katemba, 2019; Machmud, 2018; Rebeca, 2017; Sletten, 2021; Chen, 2013).

Extensive research on mobile learning has led scholars to identify key characteristics of this approach, including accessibility, immediacy, interactivity, and the contextualization of instructional activities (Ogata & Yano, 2005).

Mobile devices provide one of the easiest and fastest ways to gain free and open access to different educational content. Therefore, modern students can seamlessly learn via using devices or the newest gadgets familiar to them. Mobile devices are commonly handheld, transportable, readily available, and affordable. Therefore, mobile learning offers easy access to the variety of learning material, specific location and learning time, feedback, and self-monitoring tests. Additionally, it is an engaging, adaptable and flexible process that enhances and motivates students to study and to refine their skills everywhere in the world where there is access to the Internet.

Mobile devices have their own set-up application store where users can download unique apps. There are many different types of applications and technologies utilized within education. Speaking about the numerous competitive apps, one fact is worth noting: currently, there are a variety of advanced Android / iPhone applications for learning different foreign languages through smartphones or tablets. All these apps are designed with particular objectives to carry out specific tasks. Wireless E-learning and Communication Environment is an application that combines push and pull technology through browser and WAP tech to supplement the student's device with info about event alerts and campus services. This is content delivery in the simplest possible format (Motiwalla, 2007).

Thanks to the growing popularity of mobile applications and facilitating access to them language learning apps was brought into focus (Annamalai & Kumar, 2020). Review of mobile aided language learning studies over the past few decades shows that research has been concerned mainly with quantitative accounts of mobile devices, systems, and learning effectiveness, mostly in formal language learning contexts (Ma, 2017). Other research have focused attention on the mobile assisted game-based language learning (e.g., Schwabe & Göth, 2005), teacher perceptions of learning through mobile phones and laptops (e.g., Leshchenko, Shevchenko, & Zhovnir, 2022), and a user-centered model for mobile learning using a personal digital assistant program (e.g., Ng & Nicholas, 2012).

Mobile language learning applications are well-defined as the use of mobile phones for learning linguistic (Ali, Malik, & Rehman, 2016). Smartphones help students to learn their own language skills and write effortlessly and mobile devices are commonly used for academic and growth purposes in developing countries (Zhang, 2016). A study of Nagaletchimee Annamalai et al. (2022) focuses on language learning skills that students are engaged with during their use of smartphone language apps. In addition to these,

authors have described main motivation and challenges aspects experienced by the students during their use of smartphone apps. Results of the research by Fatemeh Nami (2020) conclude that language learners' knowledge of different language skills can be improved by proper design and use of smartphone educational apps as supplementary materials in language courses. A study of Gafni et al. (2017) indicates that the use of a mobile aided language learning application to learn foreign languages has advantages and drawbacks, which are important to understand, in order to achieve better learning results, while improving the enjoyment of the process.

Research on mobile language learning applications in Ukraine is still lacking. Most studies examined and described general rules and specifics of implementing mobile applications in education. In their works scientists defined the essence and analyzed the specifics of mobile learning; partially highlighted the peculiarities of its application in the context of education, denoted the search for effective methods and means of language learning, both Ukrainian and Ukrainian as a foreign language; focused on the advantages of mobile applications during the study of foreign languages, and also investigated their role in the formation of foreign language competence of students of higher education institutions (Abysova, Kravchuk, & Gurnyak, 2023; Bilous, 2018; Bugaichuk, 2012; Horbatyuk et al., 2019; Samoilenko, 2015).

In the study conducted by Horbatyuk (2019), the focus is on the issue of developing foreign lexical competence among students, recognized as an essential component of training future specialists. Another Ukrainian researcher Hurska (2019) described methodical functions and didactic properties of the mobile application "Appinall" for the formation of components of professionally important qualities of future IT specialists in the process of foreign language learning. Researchers Leshchenko, Shevchenko, & Zhovnir (2022) substantiated the feasibility of introducing mobile learning into the educational process and described the algorithm of its application in classes on the discipline "Ukrainian as a foreign language" in the national higher medical institution of education. In another research study, Leshchenko et al. (2022) have explored the potential of Quick Response (QR) codes and their applicability within the framework of modern education. We can conclude that in the most of the papers scientists defined mobile aided language learning, covered in detail the features of their application in the context of mobile learning entry into the field of education, the search for effective methods and tools for language learning, identified and described the features of creating and using language learning apps as well. Despite the significant focus on the issues of applying mobile aided language learning and advanced pedagogical methods and techniques in teaching Ukrainian as a foreign language, some important challenges remain. With all the diversity of modern researches related to teaching / learning Ukrainian for foreigners, Ukrainian Language Apps remains very relevant.

### **PURPOSE OF THE STUDY**

The purpose of the article is to find and describe the features and advantages of using Ukrainian language smartphone apps while learning Ukrainian as a foreign language. Difficulties and problems associated with the use of Ukrainian language apps in smartphone should also be highlighted.

Taking into consideration practical necessity to examine urgent problems which are directly related to mobile aided language learning, visible gaps in theoretical and methodological analysis, the motivation for this research, its aims and objectives, the paper attempts to address the following research questions:

- What are the main didactic features of educational mobile applications and their capabilities?
- What are the most frequently used type of apps for improving Ukrainian Language learning?
- What notable achievements can be highlighted for students in Ukrainian language training up to the present?
- What are the challenges that foreign learners face while learning Ukrainian via mobile applications?

## **2. METHODS**

The researchers primarily utilized the general method of scientific description as their main approach in this study. This method enabled a comprehensive understanding and analysis of mobile language learning and the essential features associated with the use of available mobile applications within an educational context, specifically in language learning programs. Additionally, the authors employed a descriptive-analytical method to systematically analyze the characteristics of mobile-aided language learning. The preparation of the article involved techniques such as questionnaire development, generalization, systematization, classification, and interpretation of scientific facts.

To explore students' preferences and usage of language learning apps, a descriptive survey design was employed. This design facilitated the understanding of key challenges encountered when using Ukrainian-language applications. The researchers created a survey instrument for data collection. Students were provided with a questionnaire and invited to participate in interviews, where they shared their experiences regarding the use of language learning apps in their Ukrainian language studies. It's important to note that the selected time frame of 12 weeks indicates that the obtained results may not be exhaustive and may not apply to all potential student categories.

The questionnaire was distributed among students enrolled in the Ukrainian as a Foreign Language course using Viber groups. The survey was conducted anonymously and comprised six statements that corresponded to the six main concepts of language learning, including writing, speaking, listening, reading, grammar, and vocabulary.

In Section 1, information regarding students' specialization, year of study, and group number was collected. In Section 2, students were asked to provide feedback on their usage of smartphone Ukrainian language apps across various language skills, such as writing, speaking, listening, core vocabulary, grammar, and reading. They were also asked about the purpose of using these apps in enhancing their Ukrainian language learning. Furthermore, students were requested to identify the main challenges they faced when using Ukrainian language apps.

### **2.1. Participants**

The study was conducted at Poltava State Medical University in Ukraine, focusing on foreign students enrolled in the Ukrainian as a foreign language course during the

2021/2022 academic year. The study group comprised randomly selected participants (n=50) from the first to third year, who had been utilizing smartphone Ukrainian language apps within the same time frame. Participant selection did not consider factors such as age, gender, or nationality, but rather prioritized accessibility and proximity. To ensure the protection of participants' rights, their names were not disclosed through a drawing process.

## **2.2 Apparatus and materials**

The purpose of the questionnaire was to find out the level of assimilation of the writing, speaking, listening, reading, grammar and vocabulary parts of the of studied discipline. An attempt was made to prove the efficiency of the usage of educational mobile applications for acquisition of skills and foreign students' language competences. In addition to this, students were asked to identify main challenges of using Ukrainian language apps.

Through the administration of a questionnaire, our aim was to determine the mobile applications that students most frequently utilize and the specific purposes for which they use them, such as studying grammar or improving reading skills. Additionally, we sought to compare the usage of these mobile apps with traditional methods to assess the perceived value that students at our educational institution attribute to language apps. Participants provided their responses using a 5-point Likert scale, with options ranging from 1 (strongly disagree) to 5 (strongly agree).

## **2.3 Procedure**

Technological innovations play a crucial role in facilitating learning across diverse contexts. Language learning through dedicated mobile apps allows learners to engage in educational activities outside of traditional classrooms. Whether online or offline, learners can access language learning resources using handheld wireless devices, regardless of their location or access to personal computers. This flexibility enables students to read and write conveniently at any time and under any circumstances, empowering them to learn anytime and anywhere.

Portability and connectivity as key characteristics of mobile devices provide main advantages in language learning process. For a good and stable connection, it should be possible to connect and communicate with the educational website using the wireless network of the device for unlimited access to educational material databases. Portability makes it possible to move mobile devices, store and bring educational materials. It is quite possible and incredibly convenient due to small size and low weight. Connectivity relates to the ability of mobile devices to be connected to other devices, or a common network via making a shared network. This is a potential pro to get various benefits from different devices.

The other opportunity of portability is social interactivity: exchanging data and collaboration with other learners is possible through mobile devices. In addition, context sensitivity which refers to the data on the mobile devices can be gathered and responded uniquely to the current location and time is considered as a merit. Another visible benefit of using mobile apps is collaboration with other learners that provides unrestricted exchanging educational materials.

Our several-year practice of providing distance education to foreign education seekers, future specialists in the medical field, testifies to the effectiveness of using mobile applications when learning Ukrainian as a foreign language. Foreign students who live and study in Ukraine have to learn Ukrainian as a foreign language, because it is used as educational and official language. The progress of students in Ukrainian language education depends on many factors, particularly their social and cultural context, educator employment, curriculum, resources and facilities, the existence of a medium for free and unhindered communication, etc. Ukrainian pronunciation and some grammar rules are very hard to understand, especially the students from India and Pakistan.

Nonetheless, it remains crucial to emphasize the necessity of enhancing students' language skills to develop their oral and written proficiency, apply fundamental knowledge of Ukrainian, and effectively utilize it in everyday conversations. The primary objective of foreign language learning for foreign students is to foster communicative competence and enable them to fulfill essential communication needs across various domains, including education, science, socio-political affairs, socio-cultural interactions, and daily routines.

"A well-structured, regulated, and organized educational process, focused on the acquisition of fundamental professional knowledge and the development of professional abilities, skills, language, and communication competences, is complemented by the acquisition of socio-cultural competences" (Leshchenko and Zhovnir, 2023). Therefore, teaching foreign languages to foreign students with non-linguistic specialties presents numerous pedagogical and technical challenges that need to be addressed.

Reasonable and thought out using of the educational mobile applications can speed up the process of learning and gaining communication skills and grammar patterns, but it will take time for both teacher and student, but only in the initial stages. Despite the fact that mobile devices have not yet found their place for solving all educational tasks, lessons using apps are quite common and rational today.

Educational mobile applications designed for learning Ukrainian foster interactive environments that facilitate effective information retention. They enable learners to engage with comprehensive knowledge databases, offering an ideal platform for enhancing language skills. By selecting suitable apps, individual learners can personalize their learning experience by determining the content and pace that best aligns with their needs. These apps prove particularly convenient for self-learning and distance education. Teachers play a vital role in guiding students towards the most relevant apps tailored to their unique requirements. They offer personalized advice, ensuring that students' learning paths are tailored to their specific needs, creating an optimal learning experience.

It is important to note that there is a wide array of smartphone and tablet applications available for language learning purposes. Many of these applications are designed to facilitate the acquisition of new vocabulary, comprehension of grammar and spelling rules, as well as the development of writing and speaking skills, among other language learning components. For example, the popular mobile application Learn Ukrainian. Speak Ukrainian Bluebird Languages (<https://play.google.com/store/apps/details?id=com.pronunciatorllc.bluebird.ukrainian&hl=ru&gl=US>) provides an opportunity to study in the language that the student is fluent in, and by choosing the desired level from the suggested ones automatically, learn new vocabulary, phrases, rules for building simple expressions, sentences using standard lessons and flashcards. In addition to well-

categorized lexical material (“Everyday Lessons”, “Basic Vocabulary”, “Important Words”, “Sentence Construction”, “Communication”, etc.), the application offers model pronunciation options for words and phrases, as well as a selection of exercises for constructing sentences. Communicative competence is formed through familiarization with standard situational syntactic constructions and linguo-pragmatic clichés: “Meeting”, “Children”, “Friends”, “At the airport”, “At the dentist”, “At the hotel”, “Direction of movement”, “Currency exchange”, etc. Each foreign student who wants to learn Ukrainian language freely revises all the material and has the opportunity to pass the test (Figure 1).

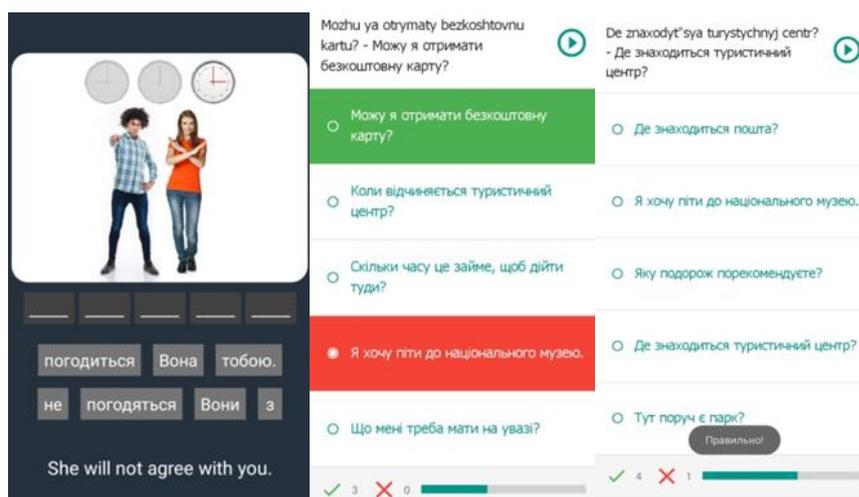


Figure 1. Sample test tasks

Open access offers mobile applications of varying degrees of complexity (FunEasyLearn (<https://play.google.com/store/apps/details?id=com.funeasylearn.ukrainian&hl=uk&gl=US>), Language Course S.L (<https://play.google.com/store/apps/details?id=net.languagecourse.vt.uk&hl=uk&gl=US>), Learning and playing Ukrainian language ([https://play.google.com/store/apps/details?id=free.langame\\_ua.rivex&hl=uk&gl=US](https://play.google.com/store/apps/details?id=free.langame_ua.rivex&hl=uk&gl=US)), Simply learn Ukrainian (<https://play.google.com/store/apps/details?id=simply.learn.ukrainian&hl=uk&gl=US>), Mondly: Learn Ukrainian Easily (<https://play.google.com/store/apps/details?id=com.atistudios.mondly.ua&hl=uk&gl=US>), Learn Ukrainian – 50 languages (<https://play.google.com/store/apps/details?id=com.goethe.uk&hl=uk&gl=US>), Tobo Learn Ukrainian dictionary ([https://play.google.com/store/apps/details?id=free.langame\\_ua.rivex&hl=uk&gl=US](https://play.google.com/store/apps/details?id=free.langame_ua.rivex&hl=uk&gl=US)), LuvLingua (<https://play.google.com/store/apps/details?id=com.luvlingua.learnukrainian&hl=uk&gl=US>), LingQ (<https://www.lingq.com/ru/learn/uk>), etc.

Among the spectrum of available mobile applications, it is easy to choose the appropriate one for educational purposes – from the formation of basic, phonetic, lexical, grammatical, skills, development of skills, speaking, reading, listening, writing, to translating words and even text fragments, correcting pronunciation, writing, etc. The type of operating system is quite diverse – Android (for tablets and smartphones), iOS (for Apple products – iPhone, iPod, iPad), Windows Phone (for smartphones), as well as a server from which you can easily and quickly download this or that mobile application according to the type of operating system.

We paid special attention to the didactic performance of educational mobile applications and their capabilities. This data is shown in Table 1. Applications from this list are suitable for teaching students with different levels.

It is appropriate to emphasize that the choice of certain mobile applications was motivated by the variety of options aimed at improving the level of mastery of the Ukrainian language in general and each language level in particular. The mobile applications selected for implementation during the educational process will be created and presented for general use to improve pronunciation, enrich vocabulary, strengthen grammatical skills, practice the ability to read and speak Ukrainian in specific situations.

The use of selected and systematized mobile applications was not mandatory and was provided as a recommendation. However, students willingly responded to the proposed and varied classes due to mobile applications.

According to the strategy, each practical lesson and homework of the students who participated in the experiment was supplemented with a block of tasks that can be completed using mobile applications.

The table below contains information about the goals and possibilities of motivated use of mobile applications during classroom / extracurricular study of the Ukrainian language by foreign students.

Table 1. Educational Apps Designed for Learning Ukrainian Language

Application name	System / OS	Functions	QR-Code
Ukraine Podcasts	iOS / Android	It is a series of podcasts for students learning English, which can be downloaded to mobile phones and engaged in any time convenient for the user. Each issue lasts approximately 20 minutes and is accompanied by questions for listeners.	
Learn Ukrainian Words Free	iOS / Android	It is a vocabulary trainer for learning Ukrainian that contains flashcard dictionary with Ukrainian-English translations of 10,000 words carefully organized by topics, for instance Travel, Business, Dating, Study or School. The mobile application also includes 100% Free Ukrainian lessons for beginners, advanced learners, adults and kids.	
Duolingo	iOS / Android	The educational course is divided into stages according to the principle «from simple to complex». The Duolingo educational application boosts such skills as writing and speaking (you will be asked to pronounce the studied phrases), reading and listening.	
Mango Language	iOS / Android	It is a series of lessons that involves a rich mix of listening and reading activities, so student can make sense of written and spoken contexts. A simplified learning environment presents content structure, review progress, and learning activities front and center, while streamlined navigation encourages students to explore different topics in their target language.	

Simply Learn Ukrainian – Ukrainian Travel Phrasebook	iOS / Android	App is a free language app that will assist you to speak Ukrainian quickly and effectively when visiting Ukraine. Its content includes basic conversational phrases and topical vocabulary. Educational data is divided by levels of education background. It also provides questions, tests, or exercises to monitor closely students' learning process.	
Clozemaster	iOS	Clozemaster is gamified language learning through mass exposure to vocabulary in context. It contains listening transcribe mode punctuation fix, single and double quote fix, new SRS controls with legacy controls toggle, days played calendar with daily stats table.	
Learn Ukrainian. Speak Ukrainian Bluebird Languages	iOS / Android	App provides free daily lessons for beginner, intermediate and advanced learners. It contains interactive video lessons (over 5 years of lessons) that are aimed at improving speaking and understanding Ukrainian.	

The mobile applications selected for use became a supplement to practical classes. We give examples of the possibilities of using mobile applications during classroom classes (Figure 2).



**КОМП'ЮТЕР НА ЗАНЯТТІ**

*А. Прослухайте подкаст «Запис до лікаря». Використайте QR-код / Listen the podcast «Making a doctor's appointment». Use QR code.*



*Б. Випишіть українські назви лікарів-спеціалістів / Write down and memorize the new words. Write down names of specialists in medical field.*

*В. Дайте відповіді на запитання / Answer the following questions:*

- 1) What phrases does a nurse start with?
- 2) What questions does a nurse ask?
- 3) What personal data were reported?



**КОМП'ЮТЕР НА ЗАНЯТТІ**

*Використовуючи електронні ресурси (<https://bubl.us/>; <https://www.glify.com/products/glify-online>; <https://www.mindomo.com/ru/>; <https://miro.com/>; <https://www.conceptdraw.com/>; <https://www.FreeMind.com/>; <https://www.FreeMind.com/>), створіть ментальну карту «Dental Clinic». / Use online tools (<https://bubl.us/>; <https://www.glify.com/products/glify-online>; <https://www.mindomo.com/ru/>; <https://miro.com/>; <https://www.conceptdraw.com/>; <https://www.FreeMind.com/>), etc.) create your own Mind Map «Шолинг українською».*

*Підказка: щоб створити ментальну карту, записуйте головне в центрі карти, проговорюйте нові слова для кращого запам'ятовування матеріалу, за потреби користуйтеся словниками. Додавайте нові слова, фрази, малюнки / To create a Mind Map, place the new word in the center of the map. Pronounce the word. If necessary, use an online dictionary with an audio to help you. Add new words, phrases, or images to your semantic map.*

*Для повторення слів і виразів з теми «Шолинг» використовуйте мобільний застосунок Simply Learn Ukrainian – Ukrainian Travel Phrasebook / QR-код.*



Figure 2. Example of Using Mobile Applications During Classroom Classes

### 3. RESULTS

The research was conducted in the academic year 2021/2022. At the beginning of the fall semester, students were given the opportunity to utilize different apps to boost their Ukrainian language skills related to vocabulary, grammar, listening, speaking, reading, and writing. They were recommended to use the Ukrainian language apps at their own convenience, for instance, in preparing their listening, speaking, reading, and writing assessments. The choice of a certain app and determining variety of their using was not a forced point. On the other hand, students were provided with information about existing and productive educational Ukrainian language apps and possibilities of their use.

Table 2 presents the descriptive statistics of survey items related to the usage of smartphone Ukrainian language apps for various language skills development.

Table 2. Survey items' descriptive statistics

Question	Strongly disagree + Disagree	Uncertain	Strongly agree + Agree
I use smartphone Ukrainian language apps aimed at developing and strengthening writing skills	76.2%	12.8%	11.0%
I use smartphone Ukrainian language apps aimed at developing and strengthening speaking skills	31.7%	26.3%	42.0%
I use smartphone Ukrainian language apps aimed at developing and strengthening listening skills	25.5%	48%	26.5%
I use smartphone Ukrainian language apps aimed at developing and strengthening core vocabulary	22.5%	31%	46.5%
I use smartphone Ukrainian language apps aimed at developing and strengthening grammar skills	10%	17.5%	72.5%
I use smartphone Ukrainian language apps aimed at developing and strengthening reading skills	80%	9%	11%

In analyzing participants' responses to the question in the second part of the survey, regarding the type of language learning apps they had and used in their smartphones, it was observed that students use grammar apps (GA) the most (72.5%). According to the questionnaire, vocabulary apps (VA) have proved to be very popular among foreign students who learn Ukrainian. In numbers this means nearly (46.5%). And the third place is taken by the speaking apps (SA) 42.0%. Writing apps (WA) via smartphones are the least used (11.0%). While respondents found apps useful for improving grammar, speaking, vocabulary, they appeared less positive about the potential of apps for listening and reading development. A careful analysis of the language skills that was a focus in each of the apps used by students in this study indicates that grammar learning apps were the most dominant ones being used by the participants, with 11% listed falling into the category of writing apps. This information is presented in the Figure 1.

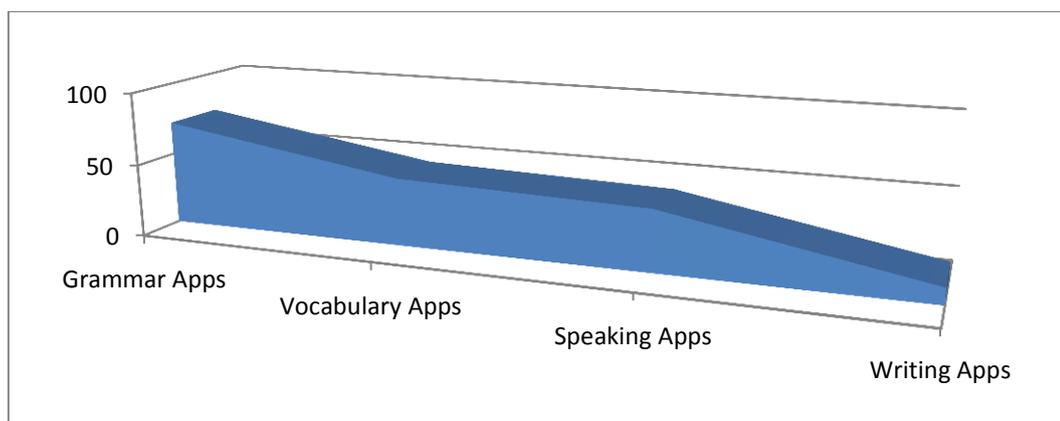


Figure 1. Types of Apps Used to Enhance Ukrainian Language Learning

Table 3 illustrates the types of apps used to improve Ukrainian Language learning.

Table 3. Types of Apps Used to Enhance Ukrainian Language Learning

Types of Apps	Total (%)	Examples
Grammar	72.5	Duolingo
Speaking	46.5	Learn Ukrainian. Speak Ukrainian Bluebird Languages
Vocabulary	42.0	Tobo Learn Ukrainian dictionary
Writing	11.0	Duolingo
Listening	26.5	Ukraine Podcasts
Reading	11.0	Ukraine Podcasts

The use of a mobile aided language learning application to learn foreign languages has advantages and drawbacks, which are important to understand, in order to achieve better learning results, while improving the enjoyment of the process. Respondents reported strong preference for free apps and were largely skeptical about the value of paid apps. Their answers revealed another problem faced by the students in operating the application in learning Ukrainian online – some students did not understand how to operate the application well. It was fixed that in some cases the Apps did not work smoothly during the learning, and technical problem like internet signal, out of date phone, some economic issues were also given.

Undoubtedly, the Ukrainian language apps have a great potential for learning improvement. We monitored students' level of knowledge before the beginning of the experiment, namely the use of applications, and after its end. The purpose of monitoring was to compare the level of knowledge of students who used the tasks and applications (Group 1) proposed by the teachers with their peers (Group 2) who were not involved in the experiment. To monitor the level of students' knowledge, a system of different-level tasks was developed that made up a comprehensive language test.

To implement this goal, a system of exercises and assignments was developed to test students' lexical, grammatical, and conversational skills. Tasks containing material that made it possible to assess the written competence of foreign students were also used. After checking the sample from students and comparison of the obtained result, the study came up with the following major findings. It was found that students who have been using various language applications for 12 weeks have achieved better results in the study of lexical and grammatical material. It was revealed that the ability to perceive and interpret rambling speech has significantly improved. However, the indicators of written skills in both categories were fixed at the same level. The difference of the results in the numeric equivalent is presented in Figure 2.

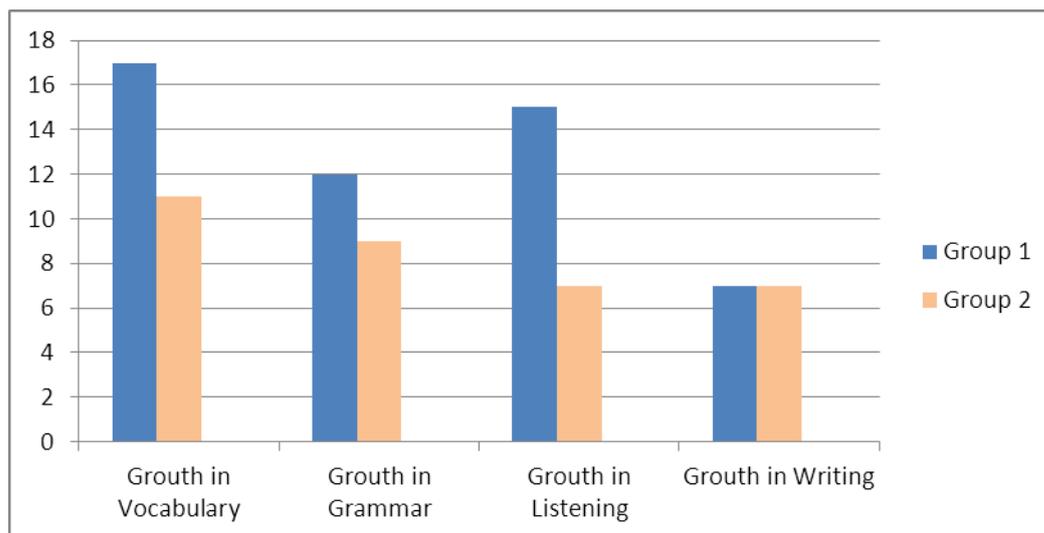


Figure 2. A Comparison of the Results of the Development of Language Competence

The diagram shows that the level of Ukrainian language proficiency among students who participated in the experiment increased. The highest indicators of improvement in knowledge acquisition were found at the lexical level. The indicators of growth at the grammatical level are significantly different. Those students who systematically listened to Ukrainian-language thematic podcasts and performed the tasks showed better results during the final test. At the same time, the indicators of writing skills in the two groups do not differ, which may be due to the lack of appropriate mobile applications.

#### 4. DISCUSSION

Since smartphones have become sophisticated, and multifunctional, there are opportunities for learners to engage in more meaningful Ukrainian language learning. These applications enhance free independent learning, real language practice, interactive learning, monitoring and control of skills and knowledge, and add unexpected element of entertainment to the learning experience. Using the application in teaching Ukrainian, is the best way toward enhancing students' motivation and developing learning language skills.

The experience gained in using the proposed applications has proved their feasibility and effectiveness in modern-day of educational practice. Proposed language mobile applications provide favorable conditions for establishing educational environment for students to continuously involve and practice at the ultimate level. Such innovations can significantly improve the quality of studying the subject. By using the language learning apps foreign students develop stable language patterns, communication skills, learn grammatical rules and basic features of Ukrainian pronunciation.

The results of the experiment convinced that the use of Ukrainian-language applications in a smartphone when learning Ukrainian as a foreign language is a necessary component for overall process of teaching a foreign student the Ukrainian language, which contributes to the maximum satisfaction of the student's cognitive and cultural needs. This study revealed the statistical significance and positive dynamics of using Ukrainian-language applications in a smartphone when learning Ukrainian as a foreign language and learning Ukrainian and students' satisfaction with these applications

and their readiness to improve their language proficiency. The results showed that the students who were taught using educational applications significantly increased their language competence and achieved higher results than those who were taught without using these applications. This is clearly seen from the data presented in the tables and their interpretation above.

Accordingly, the goals set in this study (describe the features and benefits of using Ukrainian-language applications in a smartphone when learning Ukrainian as a foreign language; show the main didactic features of educational mobile applications and their capabilities; name the applications that are most often used when learning the Ukrainian language; prove the need use of Ukrainian-language applications when teaching Ukrainian as a foreign language) were successfully achieved.

Thus, on the basis of the analysis performed and our own understanding, we define that the grammar and vocabulary apps appeared to be the most popular application types among participants. Less popular among foreign students are speaking and writing apps.

Final cut of knowledge has revealed a significant difference between levels of assimilation of the basic language skills. Students who took part in the survey have achieved better results in the study of lexical and grammatical material.

We support the opinion Berezenko & Cherkhava (2022) that students do not have sufficient language competence and proper language structures to display various facts and attitudes towards them in everyday communication until they start using communication improvement programs. The results of this experimental study are in line with the results of Vakalyuk, Osova & Chernysh (2021), who, during the study, found that information and communication technologies for educational purposes (multimedia presentations, cloud services, blog, video scribing, electronic portfolio, web quests, etc.) provide a wide range of didactic opportunities for the formation of linguodidactic competence of students, namely: they create conditions for processing business documentation in a foreign language, modeling a virtual environment for business communication in a foreign language, obtaining information (educational, regional studies, linguistic), promoting all types of speech activity (reading, speaking, listening, writing), presentations and data retrieval about languages and countries, etc.

We support the idea of Traxler (2009) who argues that the use of mobile learning programs completely changes the learning process, since mobile devices modify not only the forms of presentation of material and access to it, but also contribute to the creation of new forms of cognition and mentality. Learning becomes timely, sufficient and personalized (“just-in-time, just enough, and just-for-me”).

We also share the opinion of Rebenok (2012) that the use of information and communication technologies improves learning; creates a favorable atmosphere for communication, exchange and interaction of both individual students and educational systems; leads to significant changes in the methods and organizational forms of learning and intensifies the educational process and increases the speed

We agree with Bhandari (2020), who argues that the use of communicative tasks (and therefore the use of Ukrainian-language communicative applications) in the classroom changes the routine grammar practice, with which many students previously could not learn to communicate.

These research conclusions are in the line with other investigations (Klein & Manning, 2005; Bhandari, 2020; Roberts & Liszka, 2019) devoted to competency development. We agree with the scientists we spoke above that using information and communication technologies (various educational programs) contributes to the development of vocabulary, grammar, listening, speaking, reading, writing, students become more confident in their learning and everyday life activities.

## 5. CONCLUSIONS

Systematic and rational using of language learning apps can be considered as the important and non-traditional addition to the factual presentation in the form of seminars or practical classes. The considered online form of organization of training is effective and has considerable potentials of use in studying Ukrainian as a foreign language since it makes possible to diversify the process of boosting skills of foreign students. We have reasons to say that language learning apps contribute to the growth of students' educational motivation and productivity.

In addition, the tested mobile applications contribute to the diversification of the ways of providing educational information and monitoring the knowledge, skills and abilities of students. With the help of mobile applications, it is quite possible to improve a certain level of learning, for example, lexical or grammatical, in a short period of time. The visual analyzer, ability to analyze, systematize material, critical thinking, creative component, etc. involved in working with mobile applications contribute to encouraging students to study this or that topic more deeply.

Thus, on the basis of the analysis done and our own understanding, we define that grammar and vocabulary apps appeared to be the most popular application types amongst participants. Less popular among foreign students are speaking and writing apps. According to the data they are not frequently used with the purpose of improvement of their language skills.

It is important to acknowledge the main disadvantages and challenges that arise when utilizing mobile applications for language learning. These include additional costs associated with purchasing certain apps, difficulties in properly utilizing the apps, technical issues such as poor internet connectivity or outdated devices, and potential economic constraints. However, it is crucial to note that despite these drawbacks, the advantages of using mobile applications for language learning, as discussed in the study, outweigh these limitations.

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