Yu. Rudnik,

Candidate of Pedagogical Sciences,
Senior lecturer of Foreign Languages and Methodology Department,
Faculty of Pedagogical Education
Borys Grinchenko Kyiv University,
Kyiv, Ukraine
y.rudnik@kubg.edu.ua

ORCID ID: 0000-0002-5171-4762

THE SPECIFICS OF FUTURE TEACHERS TRAINING TO THE USE OF IMMERSIVE TECHNOLOGIES IN FOREIGN LANGUAGE TEACHING

Abstract. *The article presents the peculiarities of future teachers training in the digital age, particularly to the use of immersive technologies in foreign language teaching. The revealed experience of the future teachers' training is based on the experience of training 012 Preschool education specialty students of the Faculty of Pedagogical Education of Borys Grinchenko Kyiv University specifically in terms of their mastering "Modern Technologies of Teaching a Foreign Language to Preschool Children" discipline. The study clarifies the notion of immersive technologies as an umbrella term and a structural unit of digital technologies and gives its overview in foreign language teaching as well as highlights the influence of their use in the digital age and describes their educational potential. The four basic immersive technologies are mentioned and clarified. The advantages of the use of immersive technologies in foreign language teaching and learning are discussed. The general scientific analytic methods are used in the article. The literature analysis is the major method used to summarize the experience of the implementation of the use of immersive technologies in the field of foreign language teaching and learning. The received data emphasizes the further necessity to investigate the professional training of future teachers to the use of immersive technologies in foreign language teaching, specifically the aspect of their readiness for the aforementioned technologies implementation in professional activities.*

Keywords: *digital age, digital skills, foreign language teaching, immersive technologies, teacher students training.*

Introduction. The future teachers training in the digital age involves their acquaintance with a variety of modern technologies such as different digital tools, AR and VR technologies, and many other new experiences. The so-called "guided interaction" mentioned in the study by Barbara Hoskins Sakamoto, which is necessary at pre-primary and primary school when dealing with technologies in terms of the interaction of digital immigrants with digital natives should be transferred to the process of future teachers training at universities as well (Sakamoto, 2015). The advantages of immersive technologies that are named in the majority of scientific research prove the need to implement them in the education field particularly foreign language teaching and learning to receive positive learning outcomes and raise motivation due to engagement in the learning process they offer. Since the use of any digital technologies requires the possessing of the corresponding digital skills and the process should be well-planned and performed the aspect of future teachers training becomes urgent.

The study aims to present the educational potential of immersive technologies in foreign language teaching and to describe the specifics of future teachers training to the use of immersive technologies in foreign language teaching.

Methodology. The article is based on the main pedagogical principles in terms of future teachers training to foreign language teaching and major methodological outlooks to teaching foreign languages in general. To achieve the aforementioned aim of the article the basic theoretical methods were used: analysis, synthesis, generalization, and concretization for the outline of the specifics of future teachers training to the use of immersive technologies in foreign language teaching.

Analysis of the recent research and publications. While generalizing the modern teaching methods in countries of Europe scientists Chernysh et al.

in their comparative study focus on three foreign language teacher training methods in terms of general education practice that are formal, non-formal, and informal, while recognizing the last two of them being the most efficient (Chernysh et al., 2020). Also, the authors emphasize the need to meet the requirements and educational needs of modern society.

The use of digital technologies and investigation of their educational potential became important in terms of distance learning, specifically augmented and virtual reality technologies. The peculiar features of the organization of such training of foreign language teaching of 013 "Primary education" and 012 "Preschool education" specialties students in terms of the Hybrid or HyFlex teaching model is analyzed by Kosharna and Petryk (2022). The focus of their study is made on the necessity to develop both professional and digital competence, which is also important in future teachers training to the use of immersive technologies in foreign language teaching.

The emphasis on the necessity to form the readiness of future teachers to use AR in the educational process of primary school is analyzed by Nezhyva and Palamar (2021). In their study, they develop a model for the formation of this readiness among students of pedagogical institutes. Particularly the researchers develop criteria and levels of future teachers' readiness to the use of AR in the linguistic and literary field of primary school education.

The general overview of the immersive learning technologies used in English language teaching for the period of 9 years (2010-2019) was presented by Altun and Lee in their research (Altun & Lee, 2020). In the result of the systematic review of 59 academic articles from various databases such as EBSCOhost, ERIC, Web of Science, and others they defined 2017 as a year when immersive learning technologies in English language teaching became significant and the number of scientific research devoted to the issue also grew. The language skills that dominated the research were specifically vocabulary (augmented reality) and speaking (virtual reality).

The other systematic review was conducted by Hein, Wienrich and Latoschik and it included the time period between 2001-2020 (Hein et al., 2021). The 54 articles analyzed based on 4 categories revealed the gap that was connected with transcultural learning and teaching in researchers and offered to focus on intercultural competence through immersive technologies. Also, the research revealed the lack of fully immersive interventions, like virtual reality and finally, it focused on the three successful aspects of digitalization: equipment, acceptance among teachers and their skills development as well as interdisciplinary cooperation.

The researcher Lan analyzes the potential of virtual reality for foreign language learning and describes the recent trends of the aforementioned technology in this area (Lan, 2020). In particular, the scientist observes how the features of virtual reality match the essential components of successful language learning.

The necessity of improving and re-designing the process of future teachers' professional training in terms of their need to create innovative learning environments that is possible due to immersive technologies implementation in educational space is emphasized by modern researchers (Bakhmat et al., 2022). Specifically, they specify the teacher's competencies that are essential for future teachers to be able to implement virtual reality (VR), augmented reality (AR), mixed reality (MR), and extended reality (XR) in the educational process.

Despite the presented research that gives detailed overviews of the immersive technologies in foreign language learning the aspect of future teachers training to the use of immersive technologies in foreign language teaching is analyzed less.

Research results. The modern technologies that are widely used in teaching and learning are digital and multimedia, smartphone applications, and online language learning platforms with rich multimedia content, language labs, and others. Innovative technologies constantly appear and change learning environments. Digitalization and gamification had already been redefining the future of eLearning (Vatsyayan, 2020). The day-by-day implementation of technologies in the teaching-learning process gives rise to challenges and a search for balance between the content and technology and raises questions about the appropriate guidance and professional training to their use. Recently the issue became timely in terms of the educational potential of immersive technologies that become more and more popular due to the shift in the pricing of the equipment that allows use in classrooms.

Paul Chapmen, in his study, highlights the affordability of VR systems, as a fact that made the further rapid development of immersive technologies and potential application among a wider amount of people possible, which was not achievable until 2012, the data that is connected with the new headset Oculus Rift campaign (Chapmen, 2022). The notion of "immersive technologies" encompasses four types of realities that are namely VR, AR, MR, and XR (Jacobs, et al., 2022). While AR technologies add digital objects to the real world with the help of special AR glasses or the camera on your phone and VR requires a specific VR headset to immerse the person in a completely new world, the MR technology could merge the experience of both AR and VR with a headset with the transparent lens or camera. The XR technology is the collective term for all of the three aforementioned immersive technologies.

Recently immersive technologies are the focus of both researchers and educators due to the benefits

they offer such as interaction, hands-on experience, and others, but the direction of their further development and understanding of their complete educational potential is not yet defined (Lan, 2016). Their suitability and topicality in terms of COVID-19 pandemic and the predominance of distance learning mode or HyFlex mode as an optimal solution are emphasized by many authors (Bakhmat et al., 2022). Still, work in such an innovative virtual format requires the ideal mix of pedagogical and digital skills (Bakhmat et al., 2022). The new skills that arise and require specific attention in terms of future teachers' training program are digital skills that are re-defined in terms of modern realities and referred by Bakhmat et al. as digital skills for working in a virtual educational environment.

Immersive technologies allow the creation of a unique virtual learning environment where future teachers could experience the real conditions for the acquisition of their professional skills and experience (Bakhmat et al., 2022). According to Lan if immersive technologies specifically AR VR for pedagogical purposes is implemented in the process of foreign language learning several things should be taken into consideration such as learners, linguistic competence, and the process of acquiring the language (Lan, 2016). The role of a teacher in such an immersive virtual environment is to coordinate the learning in a way that makes it possible to realize pedagogical aims and shape the conditions for achieving learning outcomes (Häfner, 2020).

The skills that are necessary for future teachers to implement immersive technologies in foreign language teaching are digital skills since they belong to the larger group known as digital technologies (Bakhmat et al., 2022). Both technological equipment and advanced digital skills referred to as digital literacy define the efficiency of the implementation of immersive technologies in foreign language teaching in modern classrooms. Bakhmat et al. defines three basic clusters of competencies that correspond to the skills vital to be able to work in the virtual education space: organizational and logistical, educational and methodological, and moral and attitudinal (2022).

The process of updating the future teachers training to the use of immersive technologies in foreign language teaching the same way as implementing any other technologies should be critical and justified not to overestimate their role and goal. The curriculum should presuppose the integration of disciplines and focus on the development of digital skills for working in virtual environments.

The 012 Preschool education specialty students of the Faculty of Pedagogical Education of Borys Grinchenko Kyiv University develop the necessary digital skills for working in a virtual educational environment to teach a foreign language in terms of "Modern Technologies of Teaching a Foreign Language to Preschool Children" discipline. Due to the specifics of the category, they are dealing with that are preschool students the immersive technology they are getting acquainted with is mostly AR. Though, they still have an opportunity to learn about the educational potential of the use of VR in teaching foreign languages in their extra curriculum work, such as self-learning since they are encouraged to perform research work and visit different seminars and workshops where teachers share the knowledge as it was in 2022 when All-Ukrainian methodical hub for primary school teachers of foreign languages "Online learning of foreign languages in primary school: modern practices, innovative technologies, resources" was held by Foreign Languages and Methodology Department online and students could join the hub or watch it on the YouTube channel afterward. Thus, the digital skills of the 012 Preschool education specialty students are developed both within their curricular and extracurricular activities.

The theoretical knowledge on the variety of AR technologies, their classification, benefits, and challenges of use students receive during lectures, seminars, and practical classes on "Modern Technologies of Teaching a Foreign Language to Preschool Children", where there are two modules devoted to the development of the digital skills of working in a virtual educational environment that is "Digital technologies of foreign language teaching to preschool students" and "The Mobile learning technology of foreign language teaching to preschool students". Except for theoretical background, students learn about the opportunities of creation-based AR, the methodology of the use of AR in the classroom, the specifics of assessment, and other aspects of the usage.

The extracurricular activities allow them to enlarge the theoretical and methodical knowledge received in terms of curricular activities and further research about the other immersive technologies that could be implemented in their professional activities. Moreover, by taking part in student conferences they can share their knowledge on immersive technologies and receive feedback in the discussion section.

Finally, students during their practice in kindergarten could apply their complex knowledge in real educational environment and correlate with it. The more detailed specifics of future teachers training to the use of immersive technologies in foreign language teaching is revealed in Table 1.

Though the process of teacher students training to the use of immersive technologies in foreign language teaching is presented it could still be improved by building interdisciplinary cooperation and including more modules devoted to different immersive technologies. Also, the implementation of AR technology in the classroom is more affordable and understandable compared with other kinds

of immersive technologies. To train future teachers to VR and MR technologies use much more effort and changes should be done such as the support of the qualified pedagogue, who has not only the corresponding skills to work in virtual reality but who has the qualification to train such professionals. The last aspect considers the staffing and organizational

decisions of universities to train lecturers to make pedagogical activities effective in the virtual format. In turn, teachers should be ready to change their roles and delegate part of their professional activities to artificial intellect (Bakhmat et al., 2022). These are the basic challenges that should be overcome in the first place.

Table 1.

Future teachers training to the use of immersive technologies in foreign language teaching

Curricular activities (lectures, seminars, practical classes)	Extracurricular activities (self-learning, workshops, hubs, conferences)	Practice in school/ kindergarten
Theoretical knowledge	Research	Practical use (The use of immersive technologies in the classroom)
Methodological knowledge (The knowledge of the methodology of the creation and use of immersive technology)	Self-taught knowledge	Experience-based knowledge through reflection
	Knowledge sharing	

Discussion. The article presented an overview of the research considering the use of immersive technologies in foreign language teaching and learning. It revealed the educational potential of the aforementioned technologies and revealed the specifics of future teachers training to the use of immersive technologies in foreign language teaching based on 012 Preschool education specialty students of the Faculty of Pedagogical Education of Borys Grinchenko Kyiv University. The article emphasized the challenges that might occur and the need for further empirical research on the readiness of future teachers to implement immersive technologies in preschool and virtual learning modes.

Conclusions. The affordability of immersive technology makes their research and implementation in the education field an urgent topic. The specifics of future teachers training to the use of immersive technologies in foreign language teaching consist of three major aspects that

are curricular activities, extracurricular activities, and practice. Such types of activities allow future teachers to receive theoretical knowledge about the existing immersive technologies, particularly AR, their types and learn about the methodical opportunities they offer. In terms of self-study and taking part in conferences and workshops students enlarge their knowledge of the technologies and apply it in the classroom in terms of practice. Though the training to the use of immersive technologies in foreign language teaching is represented, it still needs to be improved and interdisciplinary connections should be built.

Prospects for further research development. The article presents the topic of future teachers training to the use of immersive technologies in foreign language teaching based on 012 Preschool education specialty students training that set a limitation and therefore require to continue to research the topic and analyze the issue in terms of 013 Primary education specialty students training.

REFERENCES

1. Altun H.K. & Lee, J. (2020). Immersive Learning Technologies in English Language Teaching: A Systematic Review *. Educational Technology International, 21(2), 155-191.

2. Bakhmat, N., Kruty, K., Tolchieva, H., & Pushkarova, T. (2022). Modernization of future teachers' professional training: on the role of immersive technologies. *Futurity Education, 2*(1). 28-37. https://doi.org/10.57125/FED/2022.10.11.22

3. Chapmen, P. (2022). Immersive Technologies. *Journal of Ocean Technology, 17* (2), 139-141.

4. Chernysh V., Vaseiko Y., Kaplinskiy V., Tkachenko L., & Bereziuk J. (2020). Modern Methods of Training Foreign Language Teachers. *International Journal of Higher Education. 9*(7), 332– 345. https://doi.org/10.32840/1992-5786.2021.74-1.34

5. Häfner, P. (2020). Categorisation of the Benefits and Limitations of Immersive Technologies for Education. 19th International Conference on Modeling & Applied Simulation 17th International Multidisciplinary Modeling & Simulation Multiconference. 154-159. https://doi.org/10.46354/i3m.2020.mas.020

6. Hein, R., Wienrich, C., & Latoschik, M.E. (2021). A systematic review of foreign language learning with immersive technologies (2001-2020). *AIMS Electronics and Electrical Engineering, 5*(2), 117-145. https://doi.org/10.3934/electreng.2021007

7.   Jacobs, C., Foote, G., Joiner, R., & Williams, M. (2022). A Narrative Review of Immersive Technology Enhanced Learning in Healthcare Education. *Int. Med. Educ. 1*, 43–72. https://doi.org/10.3390/ ime1020008

8.   Kosharna, N., & Petryk, L. (2022). Hyflex Organization of Foreign Language Teaching: Specialties 013 «Primary Education» and 012 «Preschool Education». Continuing Professional Education: Theory and Practice, (3), 24–32. https://doi.org/10.28925/1609-8595.2022.3.3

9.   Lan, Y. J. (2020). Immersion, interaction and experience-oriented learning: Bringing virtual reality into FL learning. *Language Learning & Technology, 24*(1), 1–15.

10.   Lan, Y. J. (2016). The essential design components of game design in 3D virtual worlds: From a language learning perspective. In M. Spector, B. B. Lockee, & M. D. Childress (Eds.), *Learning, Design, and Technology. An International Compendium of Theory, Research, Practice, and Policy* (pp. 1–18). Switzerland: Springer International Publishing.

11.   Nezhyva, L., & Palamar, S. (2021). Preparation of future primary school teachers for the use of augmented reality in literacy and literary reading lessons. *Educological discourse, 2(33),* 144-159. https:// doi.org/10.28925/2312-5829.2021.2.11

12.   Sakamoto, B. H. (2015). The role of technology in early years language education. Early Years Second Language Education: International Perspectives on Theories and Practice, 120–136.

13.   Vatsyayan, K. (2022, May 16). *Gamification in EdTech: The Future of Innovative Learning.* eLearning Industry. Retrieved April 2, 2023, from https://elearningindustry.com/gamification-in-edtech-the-future-of-innovative-learning

Руднік Ю.

СПЕЦИФІКА ПІДГОТОВКИ МАЙБУТНІХ ПЕДАГОГІВ ДО НАВЧАННЯ ІНОЗЕМНИХ МОВ ІЗ ЗАСТОСУВАННЯМ ІМЕРСИВНИХ ТЕХНОЛОГІЙ

Анотація. У статті представлено особливості підготовки студентів-педагогів у цифрову епоху, зокрема до використання імерсивних технологій у навчанні іноземних мов. Аналіз змісту такої підготовки майбутніх педагогів ґрунтується на досвіді навчання студентів спеціальності 012 «Дошкільна освіта» Факультету педагогічної освіти Київського університету імені Бориса Грінченка саме в частині оволодіння ними дисципліни «Сучасні технології навчання іноземної мови дітей дошкільного віку». Представлене дослідження пояснює поняття імерсивних технологій як загального терміну та структурної одиниці цифрових технологій і розглядає вищезазначені технології у викладанні іноземних мов, а також підкреслює вплив їх використання в епоху цифрових технологій і описує визначений освітній потенціал. Чотири основні технології занурення згадуються та пояснюються. Обговорено переваги використання імерсивних технологій у викладанні та вивченні іноземних мов. У статті використовуються загальнонаукові аналітичні методи. Основним методом узагальнення досвіду впровадження імерсивних технологій у сфері навчання іноземних мов є аналіз літератури. Отримані результати підкреслюють необхідність подальшого дослідження професійної підготовки майбутніх учителів до використання імерсивних технологій у навчанні іноземних мов, зокрема аспекту їх готовності до впровадження зазначених технологій у майбутню професійну діяльність.

Ключові слова: цифрова ера, цифрові навички, навчання іноземних мов, імерсивні технології, підготовка майбутніх вчителів.