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THE USE OF THE METAVERSE STUDIO APPLICATION IN FOREIGN LANGUAGE TEACHING AS AN INNOVATIVE AR TECHNOLOGY

Abstract. The article is devoted to the analysis of the educational potential of the Metaverse Studio application as an innovative AR technology in foreign language teaching. The research is based on a literature review, synthesis, generalization, and systematization of the existing research and personal experience of the use of the software. The presented study proves the efficiency of the introduction of AR technology in foreign language teaching due to its versatility, immersion and engagement, motivation, and better learning outcomes it provides. It has been proven and revealed that the Metaverse Studio application applies to various language aspects such as phonetics, grammar, and vocabulary. Due to the rich variety of scenes introduced by the aforementioned AR software, it could be also used as a storytelling tool, puzzle, and trivia games tool as well as the way of effective introduction or a visual element of a project work via the creation of a media wall. Moreover, the use of the Metaverse Studio application offers poll features that could serve in terms of a warm-up at any lesson or topic or as a way for getting quick feedback, or as a reflection tool. The methodical aspects and the importance of sequencing in terms of the use of the software are highlighted and presented in the video posted on the author's YouTube channel. The specifics of the software's dashboard mode, storyboard mode, and setup behind the experience of content creation are visualized and explained in the article. The links to the official website and Metaverse AR platform YouTube are also provided since the support of the software is not available anymore. The benefits of the use of AR software in foreign language teaching as an innovative AR technology and Metaverse Studio application, in particular, are emphasized and arguments in the study.

Keywords: digital literacy; foreign language teaching; innovative technologies, AR technology; Metaverse Studio application

Introduction. The implementation of innovational technologies in the various spheres and education in particular is a constant process, which is aimed at increasing the efficiency of teaching and receiving better learning outcomes. In terms of the digital age and technological advancement that influenced the transformation of education and resulted in its digitalization and gamification the use of digital technologies in education as well as digital skills development became widely analyzed and discussed issue among researchers (Basilotta-Gómez-Pablos, 2022; Rusudan & Semenist, 2021; Kuzminska et al., 2020; Morze & Buinytska, 2019). The increased interest in the introduction of AR technologies in education specifically in the field of foreign languages teaching and learning is conditioned by several factors: the advancement in the technological sphere that presupposes the use of innovative technologies in teaching and the advantages of the use of aforementioned technologies offer. While representing digital technologies AR became a powerful tool from all of the immersive technologies group since it does not require special equipment and the price to introduce them in education is comparatively low or even free to compare with virtual or mixed reality technologies. Also, the creation of content is an important criterion that defines the accessibility of AR to a large group of teachers. Finally, it is hard to overestimate the importance of AR in terms of the immersive experience, authentic materials, and game modes it offers that had already been proven to increase students' engagement and foreign language skills development (Hein, et al., 2021). Though the positive aspects of the implementation of AR technologies in a foreign language are analyzed the complete educational potential that is empirically measured provokes further research on the issue.

Literature review. Researching the topic of the implementation of AR technologies in foreign language teaching it is necessary to mention the official documents that support the digitalization of education and the development of digital skills of pedagogues in Ukraine: «European Framework for the Digital Competence of Educators» (DigCompEdu 2017), «Digital agenda of Ukraine-2020», «UNESCO ICT competency framework for teachers» (2011).

The representation of the digital competence of the pedagogue is developed by Morze (Morze et al., 2019). The assessment of a modern academic teacher's digital competence is offered by Khoruzha (Khoruzha, et al., 2019). The different aspects of professional training of pedagogues to the use of digital and specifically multimedia technologies were analyzed by Kosharna (Kosharna & Petryk, 2022) and Petryk (2021).

The complex review of the research between 2000 and 2021 on digital competence revealed the necessity to improve the assessment of teachers' digital skills and thus focused on digital competence as a major one that should be mastered nowadays in terms of the implementation of digital technologies in education (Basilotta-Gómez-Pablos, 2022). The idea is supported by Bećirović et al. who reveal the perception of students of technology-based English language learning (2021). The aspect of the integration of digital technologies in the classroom among foreign language teachers dwelled upon Thu (2022). The use of digital technologies in foreign language teaching is revealed in terms of different language aspects. Thus, Zakian et al. focus on vocabulary acquisition via mobile devices application specifically digital flashcard applications (2022), Saeedi & Biri investigate the effectiveness of using sitcoms in teaching grammar (2016).

A systematic literature review of the studies of the use of immersive technologies in foreign language learning and teaching was offered by Hein (Hein, et al., 2021). It included the chosen research from 2001 to 2020 and identified the gaps for further investigations such as the analysis of VR as a complete immersive intervention form. Karacan and Kemal analyzed the literature on AR technology in language learning and teaching, offered activities enriched with AR, and emphasized its affordances for language learning though mentioned uninvestigated didactic potential that prevents its complete integration in the classroom (2021).

Despite the detailed review of the immersive and augmented and virtual reality technologies the education potential of the AR software in foreign language teaching was not fully researched, one of the Metaverse studio applications in particular.

Purpose of the article. To give a general overview of the educational potential of the Metaverse Studio application as an innovative AR technology in foreign language teaching. To demonstrate the ways of practical use of the experiences created in Metaverse Studio in the classroom a series of activities is revealed to prove the efficacy of AR software due to its multiple functionalities.

Research. To achieve the purpose of the article various theoretical methods were used particularly the literature review and the analysis of the official documents devoted to digital literacy were taken into account. Synthesis, generalization, and systematization for the theoretical justification of the use of Metaverse Studio application in foreign language teaching as an innovative technology were applied in the presented study.

Results of the research. The digitalization of education that occurs allows the implementation of innovative tools and technologies in the sphere of foreign language teaching in particular. Therefore, immersive technologies are being integrated into language teaching more often. Due to the significant shift from face-to-face learning to distance learning in terms of the pandemic, the use of information and communication (ICT) tools in foreign language teaching also grows and new modes of teaching, as well as technologies, are introduced.

In general, immersive technologies are represented by two varieties of technologies virtual reality (VR) and augmented reality (AR) which are also addressed as extended reality

(XR). Compared with the VR experience the use of AR technologies in foreign language teaching is more widespread due to the comparatively high affordability of the technology. Since AR is the mix of real (physical) and digital information translated via technological devices such as smartphones and not necessarily requiring the use of headsets such as in VR its implementation in education is analyzed more.

The term "augmented reality" (AR) refers to the use of the contextual layer of information created by the computer, which is added to the physical world to create an enhanced experience (Panke, 2020). The learners interact with the offered experience in a real environment using their fingers, hand, arm, or body to control or move the item.

The AR technology and Metaverse Studio application, in particular, represents the group of innovative technology since its introduction in education and foreign language teaching specifically is a rather new experience and the influence of its use is still researched by many scholars today. Also, in terms of the meaning of the term "innovation," the use of AR software changes the learning experience by improving students learning outcomes and the whole language learning in general due to the level of enhancement, interaction, and motivation.

The modern realities of distance and mixed learning, dealing with digital natives require new approaches to teaching in general and foreign languages in particular, where the use of digital technologies became inevitable. The advantages of the introduction of AR in foreign language teaching have also been proved. The higher level of engagement and motivation together with increased satisfaction, enthusiasm, and the new mode of interaction with people and the environment it provides makes the process of learning and memorizing concepts more efficient (Mozaffari & Hamidi, 2023). While three categories of AR technologies are defined by scholars creation-based AR is the one that allows the teacher the most variety of options and creative freedom (Karacan & Kemal, 2021). Metaverse Studio application represents this category.

Metaverse Studio is a free application that allows teachers to create a unique AR experience and share it in the classroom via links or the use of QR codes. While available both on the App Store and Google Play the application interface makes it easy to use by students themselves as well. It is worth mentioning that though it is still open to use and new experiences creation they are not supported by the creators of the software anymore. This does not influence the use of the application since all the necessary information though still could be found on the official website and the Metaverse AR platform YouTube channel. Despite this fact, the tutorials that exist reduce the necessity for any kind of support. To create the new experience web-based version is necessary, while the use of smartphones for students to try the offered teacher experience would be enough to be involved in AR.

The dashboard and interface of the Metaverse Studio application are simple and user-friendly (Fig.1). The creation of experience (this is the way the project is called in the software) reminds the creation of a timeline or storytelling where the order of the events (in the case of Metaverse linking of the scenes) is the most crucial step of the whole process (Fig.2). There are a lot of new options on the right-hand side of the page such as to add the new scene, to end the experience and many others. The full tutorial video on how to create the AR experience to use in foreign language teaching is shared on the YouTube channel (YouTube, 2022).

Fig.1. The dashboard of the Metaverse Studio application

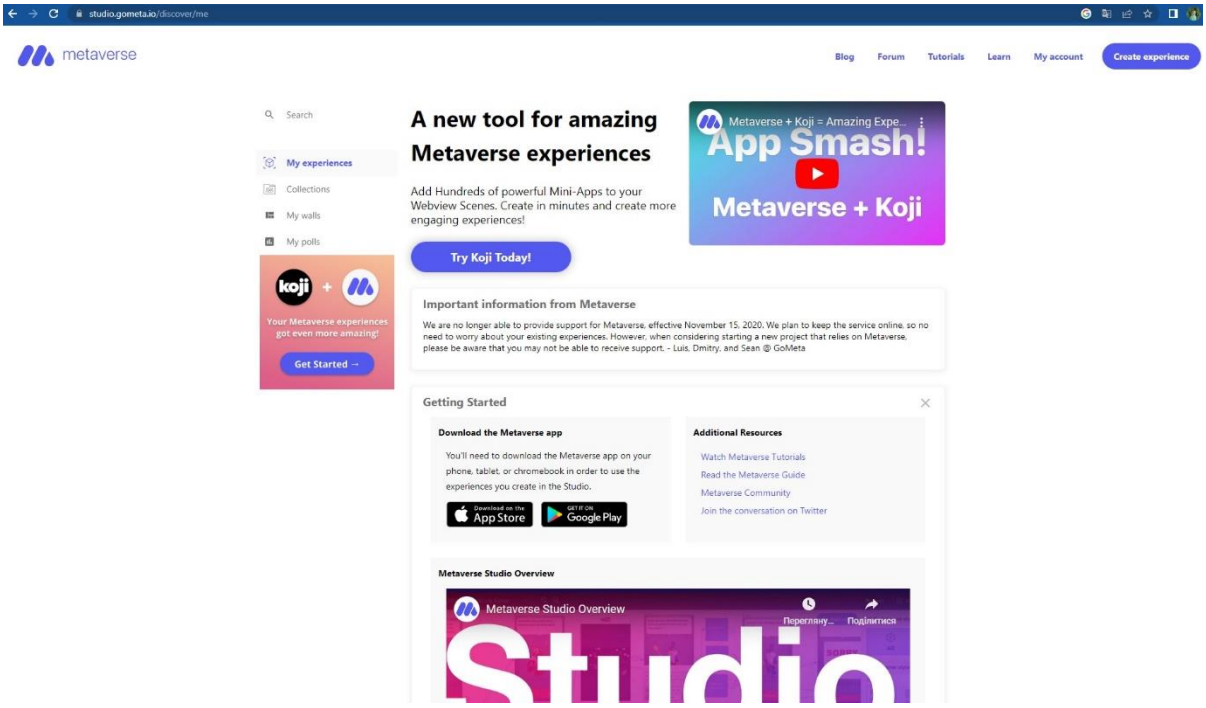

Fig.2. The storyboard of the Metaverse Studio application (creation mode)

The versatility of the Metaverse Studio application allows one to use it for multiple language skills development and a variety of functions. It could motivate, inform, and test the specific grammar topic or vocabulary. Moreover, it could offer storytelling or game mode to proceed. The limits of the users are only those of the individual creative educational scenarios.

Among the scenes offered by the software, there are a variety of types to choose from: character, text input, request or give the item, webview, YouTube, photo or video portal, wall and poll, 360 video, or photo scenes. All of them could be integrated to create the experience to be used in the foreign language teaching and learning process. The additional blocks (save to wall, save text, record vote, check text response, increment experience property by value,

and many others) that are grouped according to the different scenes types such as walls, polls, text, and many others allow to set up the functions that count points in game mode or check the text in type-in mode and many others. The generalized methodical aspects that could be realized with the AR creation-based tool (Metaverse Studio application) are presented in Table 1.

Table 1

The use of the Metaverse Studio application in foreign language teaching

Language aspect	Activity topic | description	Example (Activity QR code)
Phonetics	Fruits | The activity offers to practice pronunciation of fruits vocabulary (apple, pear, plum, watermelon, grape), which is followed by a YouTube song	
Vocabulary	Animals | The activity offers a test to check the understanding of animal vocabulary with the chosen option and the ability of text input	
Grammar	Prepositions of place | The activity offers a test to check the knowledge of prepositions of place	
Storytelling	Based on the story *Little Red Riding Hood* | The activity offers a story mode where the choice influence on the end of the story, which also practices decision-making skills	
Puzzle Game	No specific topic | The activity offers an example of a puzzle that needs to be sold to get to the end of the game	

Trivia Game	Parts of speech | The activity offers an example of a trivia game that is based on checking knowledge on the topic of «Parts of speech»	
Introduction | Project work	Media Wall | The activity offers an example of getting acquainted with a new group of students and reveals creating a media wall for implementing a project work.	
Warm-up | Poll	What is your favorite food | the activity offers an example of creating a poll based on the topic «Food» that is also could be used as a warm-up activity	

The functional feature of the Metaverse Studio application allows teachers to use a variety of media from the preset library as well as to add extra pictures, audio, or video. The possibility to add audio is particularly important for language learning in terms of teaching or learning pronunciation. The audio file could be downloaded both from the computer and immediately recorded in the software itself. Except for particular English words or sentences, a variety of kinds of music could be added to the scenes. In the same way, the pictures could be added to the new experiences either from the library or computer, the option of giving or requesting an item which is very common for puzzle games requires only the addition of the image to the base rather than choosing from the library. The ability to link YouTube in the experience makes it appealing to language teachers, who constantly use the media at their lessons since it saves time and allows them to omit extra unnecessary information that could appear while opening the link in the web browser. Also, it is a great way to share the video to be practiced by students at any time or place by only scanning the QR code.

Except for media setup, the Metaverse Studio application allows one to switch between AR and background mode which is useful in terms of creating trivia games, where the last one is more comfortable and appropriate. The software also allows customizing the color of the background as well as the color and shape of buttons. The ability to add a timer in the trivia game mode is also unique and allows one to experience real competition during the lesson.

The Metaverse Studio application has a significant didactic and methodical potential since it allows to incorporate the use of different technologies such as a game, interactive, storytelling, multimedia, mobile and digital. Moreover, it could offer several modes such as an explanation or narrative mode, in this case, scenes are connected linearly, and navigating between scenes is made with the help of the «next» button for instance; competition, game, or test mode that could have a more complicated sequencing and setup as similar to one presented in Fig.3 that reveals the setup behind the Puzzle game design in the Metaverse Studio application or Fig.4 that represents the setup behind Trivia Game design in the Metaverse Studio application.

The two unique features of the Metaverse Studio application that could be used in foreign language teaching-learning are the creation of media walls and polls, which are popular in terms of warm-up or different project activities. The software allows to set up and calculate of points or checkup different word entries' spelling that could be useful in assessment as well as gathering and posting different information on media walls such as quotes, comments, or even selfies depending on the teacher's aim, lesson topic and specific tasks offered to the students.

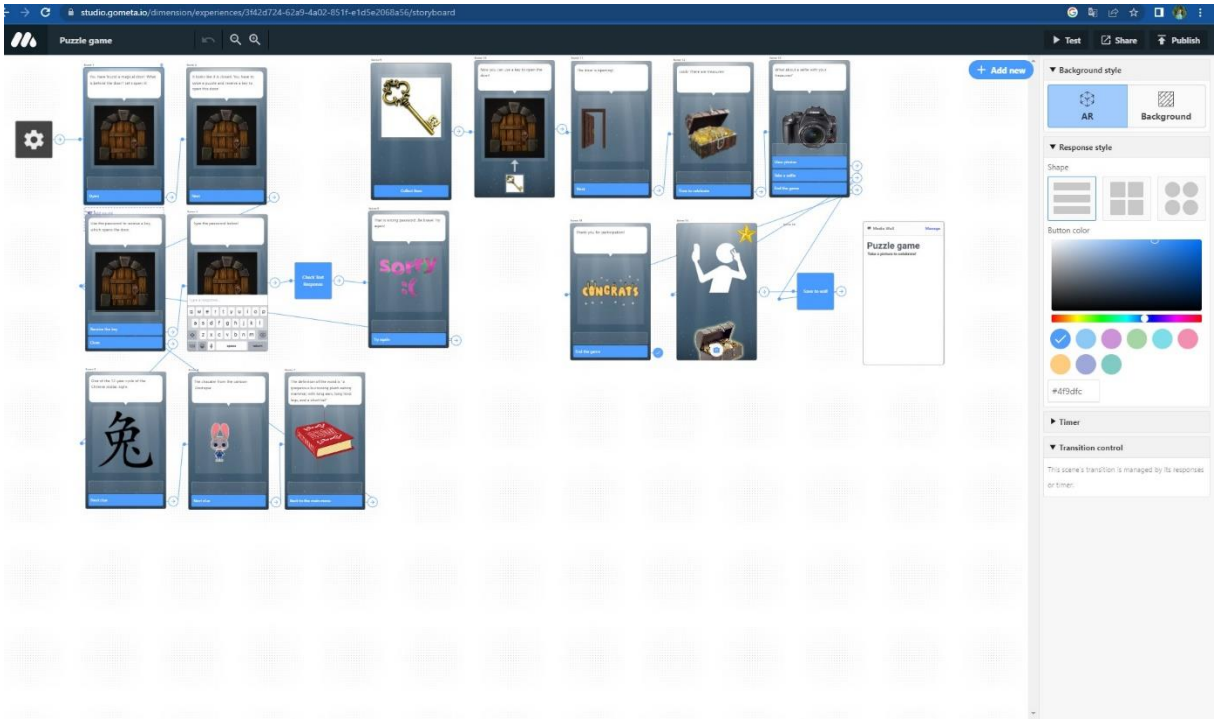

Fig. 3. The setup behind Puzzle game design in the Metaverse Studio application

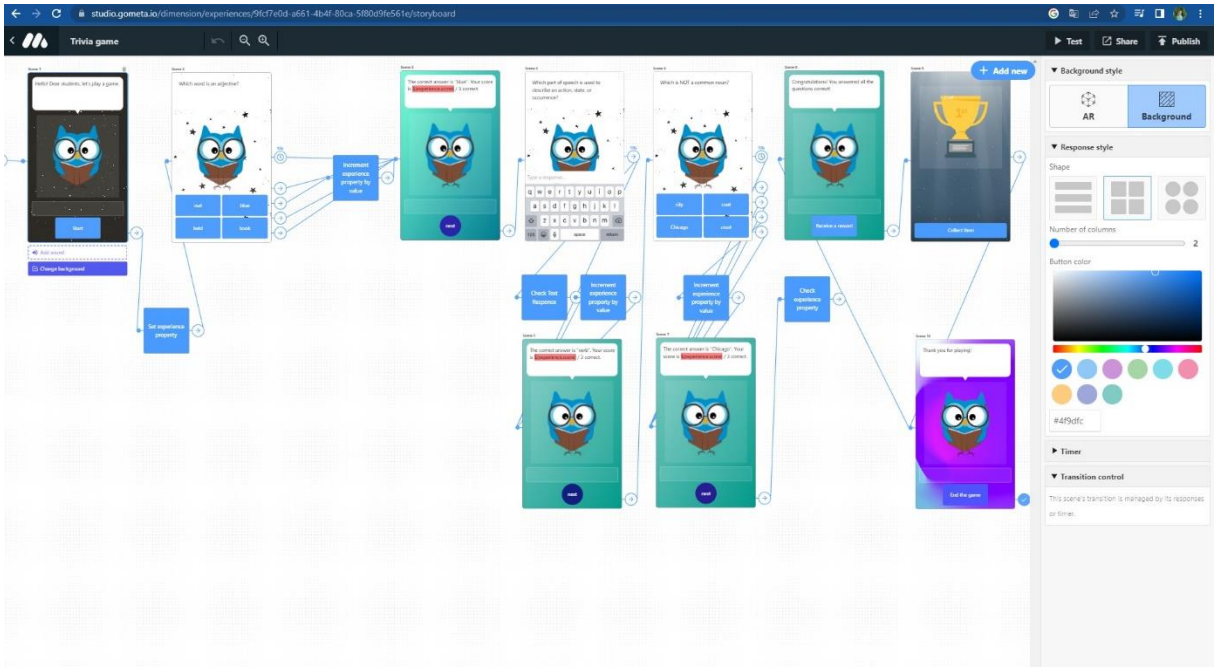

Fig. 4. The setup behind Trivia Game design in the Metaverse Studio application

The advantages of the use of the Metaverse Studio application in foreign language teaching are its suitability to different learning styles (visual, audial, and kinesthetic), the higher

level of engagement and motivation, interaction as well as the aforementioned applicability to teaching different language aspects (phonetics, grammar, vocabulary, and others). The creation of the specific augmented reality-based learning environment allows for enhanced teaching-learning experience in a foreign language that is particularly suitable for digital natives students and modern realities and requirements to education process that mostly occur in distance mode.

There is no similar software that could be compared with or used instead of the Metaverse Studio application to create a similar experience since it is free and available both for IOS and Android. The availability of tutorials and a user-friendly interface and design make the creation process easy and enjoyable. The completed experience is further saved, published, and shared via link or QR code, which is quick and comfortable. Except for the necessity to create own experience the Metaverse Studio application contains a wide base of ready-made experiences that could be already used by foreign language teachers in their classrooms.

Conclusions. The overview of the educational potential of the use of the Metaverse Studio application in foreign language teaching as an innovative AR technology proves its multiple functionalities as well as the rich didactic and methodic potential that is revealed within its use in terms of different language aspects of training (phonetics, grammar, vocabulary) as well as the possibility of gamification of the learning process by creation of trivia and puzzle games. The versatility of the aforementioned AR software is provided by the variety of the initial scenes and additional blocks to choose from for creating learning experiences and the ability to support multiple creative educational scenarios and the possibility to integrate multimedia technologies via creating a poll or media wall as well as the use of the audio and video. To add a point, Metaverse Studio allows using a variety of modes: explanation or narration, competition, game, or test making it a universal innovative AR tool in the modern classroom. Due to its rich functionality, it could motivate, inform about a particular topic, test the specific grammar or vocabulary or engage in storytelling, and finally provide the assessment tool in the game or competition mode. The article statement considering the multifunctionality and efficiency of the aforementioned software is supported by the developed exercises demonstrating the potential of the Metaverse Studio application in foreign language teaching that are accessed via QR-code and by the link to the methodologic video that demonstrate the use of the software by the author of the article. The revealed use of the Metaverse Studio application in foreign language teaching is not limited to that offered in the article and the other ways to use the software are also possible.

Prospects for further research development. The offered research on the potential of Metaverse Studio application use in foreign language teaching does not cover all of the aspects of the topic. Thus, after revealing the different language aspects that could be taught with the help of the Metaverse Studio application empirical research is necessary to test the future teacher's readiness to use the AR software in foreign language teaching and therefore define the specifics of professional training to its use.

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ЗАСТОСУВАННЯ ДОДАТКУ METAVERSE STUDIO ЯК ІННОВАЦІЙНОЇ ТЕХНОЛОГІЇ ДОПОВНЕНОЇ РЕАЛЬНОСТІ У ВИКЛАДАННІ ІНОЗЕМНИХ МОВ

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Анотація. Стаття присвячена аналізу освітнього потенціалу програми Metaverse Studio як інноваційної AR-технології у викладанні іноземних мов. Дослідження базується на огляді літератури, синтезі, узагальненні та систематизації наявних досліджень та особистого досвіду використання означеного програмного забезпечення. Представлене дослідження доводить ефективність впровадження технології AR у викладання іноземних мов завдяки її універсальності, заглибленості та залученості, мотивації та кращим результатам навчання, які вона забезпечує. Було доведено та виявлено, що програма Metaverse Studio застосовна до різних мовних аспектів, таких як фонетика, граматика та лексика. Завдяки багатій різноманітності сцен, представлених вищезгаданим програмним забезпеченням доповненої реальності, його також можна використовувати як інструмент для сторітелінгу, головоломок і дрібниць, а також як спосіб ефективного початку уроку або як візуального елемента роботи над проєктом за допомогою створення медіа-стіни. Крім того, використання додатка Metaverse Studio пропонує функції опитування, які можуть служити для розминки на будь-якому уроці чи у контексті будь-якої теми або способом отримання швидкого зворотного зв'язку чи як інструмент для рефлексії. Методичні аспекти та важливість секвенування в умовах використання програмного забезпечення висвітлено та представлено у відеоролику, розміщеному на YouTube-каналі автора. Специфіка режиму інформаційної панелі програмного забезпечення, режиму розкадрування та налаштування, що лежать в основі створення контенту, візуалізовано та пояснено в статті. Посилання на офіційний веб-сайт і платформу Metaverse AR YouTube також надаються, оскільки підтримка програмного забезпечення більше не доступна. У дослідженні наголошено та аргументовано переваги використання програмного забезпечення AR у викладанні іноземних мов як інноваційної технології AR та програми Metaverse Studio зокрема.

Ключові слова: цифрова грамотність; навчання іноземної мови; інноваційні технології, технологія AR, додаток Metaverse Studio