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RESEARCH ARTICLE

Authentic Language Learning in Metaverse: A Big Step in the Technological Revolution or a Buzzword?

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Abstract

In discussing the changes that technologies such as augmented reality and virtual reality have brought to our lives, the concept of the metaverse has also been frequently debated rather recently. Metaverse, which calls more attention day by day as a considerable number of world-renowned technology companies have directed their attention into this field, has the potential to change many fields such as communication, education, and trade with its promised features and opportunities. In the current study, the advantages and disadvantages of metaverse, which has the potential to break new ground by increasing the digitalizing education and training environments to a higher level of experience, will be discussed under the scope of foreign language education. For this purpose, the creation, formation, and transformation of metaverse, along with the technologies underlying it, will be explored and discussed, and the opportunities that these technologies can provide for foreign language learning in realistic and authentic environments will be put forward. Research was processed by examining data in the relevant literature and in the environment of new media using the method of document analysis. Metaverse universes can be the key to a new world where learners can easily learn the target language both in the classroom and in their natural environment.

Keywords: Authentic learning, autonomous learning, extended reality, foreign language learning, metaverse, virtual reality

Introduction

"Can Metaverse Be a New Step in Foreign Language Teaching?" It may be too early to give a clear answer to this question, but it also seems certain that this new world, which has gained a reputation as the technology of the future, will bring many innovations. In the future, we will be able to do and even feel a great number of activities in connection with daily life in the metaverse. The opportunity to engage in so many activities in these contexts of metaverse offers language learners natural experiences of language development in authentic contexts.

Innovations in the field of computing play an essential role in daily life by transforming and enriching human interactions and communications and providing people with a new way to interact with each other. The ability to communicate by means of auditory and visual tools through the new media brings many opportunities to facilitate education. There are several applications and uses for integrating technology into instruction where learners can benefit from location-independent reality for distance learning. The transition from face-to-face to distance learning in a short period of time has confronted both instructors and learners with several changes. Therefore, while this new form of communication and education is becoming more and more common in peoples' lives, online lessons with such technologies have been criticized in many ways regarding several limitations compared to face-to-face instructions. Communication problems that may arise in distance education, especially due to *transactional distance*, are among them (Sarı, 2021, p. 663). A couple of these problems are as follows: the high number of students, the low quality of the connection, the lack of competence in the hardware tools that the students have, and the lack of a complete regulation for distance education at intuitions (Sarı, 2021, p. 669). While these issues are challenging, it is possible to strengthen language learning in digital environments based on learner-centered learning strategies and an authentic environment with the opportunities that the metaverse provides us. This is because the real-life communication and interaction that metaverse offers have several advantages over the programs used for today's distance learning.

In contrast to extended reality (XR) technologies, fostering social interaction processes in the form of distance learning via a computer poses a particular challenge due to the spatial and temporal distribution of participants. Nalbant and Uyanık (2021, p. 10) state that there is never a chance with traditional teaching methods to convey concepts as efficiently as with visual means. Learners prefer to watch rather than read. Therefore, handling a topic with visual dimensions in metaverse leads to better learning outcomes. Also, according to Al-Gnbri (2022, p. 3), virtual reality (VR) makes it possible for students to virtually simulate situations and develop their long-term experiences, which is crucial given the increasing likelihood that society will soon live in a mixed or merged world of virtual and physical space.

From the constructivists' point of view, language teaching is a continuous process of information processing, the goal of which is to understand and describe what is happening in the brain, so the focus is on learners' thinking processes (Rinder, 2003, p. 5). Consequently, foreign language didactics under a constructivist perspective differs from traditional foreign language didactics of teacher-centered education. This type of education has an understanding that takes the student to the center and considers individual learning and skill differences. Also,

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the distance education models that we come across at this point ensure that the concepts of autonomous learning and lifelong learning (Tan, 2018, p. 1) are becoming more and more widespread today. According to Yurdakul (2017), an individual with autonomous learning qualities begins to make progress on the path of lifelong learning, and these concepts are closely related to self-directed learning and individualization. This is because such an approach to education allows learning to take place without the limitation of time and place (Rozenberg, 2010, p. 40). According to Witt and Kerres (2002, p. 3), the major advantage of multimedia-based education is that it enables self-directed learning. Moreover, it is emphasized by the authors that the use of multimedia is adaptable to many educational fields and provides an environment conducive to self-learning. Another important point the authors' highlight is that multimedia environments allow students to choose their own methods and content, which eventually support collaborative learning. One of the great advantages of metaverse environments is that learners can conduct one-on-one interactions with the target speakers and have the opportunity to talk to them in any possible environment that might exist in this world. The innovations the metaverse will bring to our lives will have a significant impact on how people will live their lives in the future.

Education and its didactic applications in virtual environments, which have been heavily debated during the COVID-19 pandemic, maintain to be the focus of interest in the scientific world after the pandemic has ended. Studies examining media use during and after COVID-19 (Kurnaz et al., 2020; ISTE, 2019) indicate that teachers and infrastructure facilities are not adequately prepared for the rapidly evolving technology. On the other hand, it has also been reported that as distance learning can be conducted with auditory and visual tools, learners' voice and cameras are not used enough; thus, distance learning, in general, becomes more of a continuation of teacher-centered instruction. Even in this realization, a psychological gap may arise, leading to misunderstandings between distance education participants, both instructors and learners. This gap is called the transactional distance. To put it differently, this is the feeling of emotional distance (separation) felt by participants (teachers and learners) in the online environment (Horzum, 2011, p. 1573). Nevertheless, the metaverse and its great potential, which has hardly been mentioned so far in the context of distance learning, seems to solve such feelings gaps. For instance, it incorporates technologies such as VR and augmented reality (AR) and goes one step further from classic online education through auditory and visual data. These technologies create an environment where almost all the actions people do on Earth can be done in the metaverse universes. According to Cincioğlu and Zengin (2015, p. 57) via a virtual environment, it is also possible to travel back in time. You can travel back to earlier eras and experience the conquest of a city with soldiers of that time and communicate as a character from this time, or see the conditions of that time and the real environment during a tour and talk to the famous people. This may also refer to the possibility that any person who has the ambition to learn the target language in a foreign country, in other words, in its natural habitat will be able to do this cheaper and more comfortably, thanks to technology. Moreover, it can be foreseen in advance that educational institutions or universities established in the metaverse will not be indifferent to these developments. Hence, it is a new technology that can have an impact not only on foreign language teaching but also on all areas of education, training, and many other fields. According to Cook et al. (2020, p. 6), it is stated that AR/VR technologies will be built on technologies such as advanced networking (e.g., artificial intelligence/machine learning and blockchain) with 5G internet connection. At this point, it is stated in the literature that the term web 3.0 and the innovations it brings will make the step into a new world.

Existing but primitive examples of the metaverse, such as Roblox, Fortnite, and Minecraft, are predominantly controlled by centralized companies. It is thought that Web 3.0 may allow the emergence of decentralized autonomous organizations (DAOs). Decentralized autonomous organizations open up radically new ways of organizing capital and human resources. decentralized autonomous organizations are seen as a new way to fund projects, manage communities, and share value. It is highly proclaimed that DAOs can be a potential model for the management of the metaverse or at least a bunch of games and virtual worlds that connect to the metaverse (Garon, 2022, pp. 17–18).

One of the companies investing in blockchain technology is JP Morgan. J.P. Morgan (2022, p. 2) made the following statement about the metaverse in its report: the components of a new digital age are converging in a new way and what brings these together into a unified, immersive experience is the metaverse. And it calls for so much attention that the metaverse will infiltrate every business leader and boardroom in some form in the coming years one way or another, creating a market opportunity estimated to be more than $1 trillion per year. From a social perspective, J.P. Morgan (2022, p. 5) argues that the development of more immersive virtual experiences enables people to build communities based on shared values and to express themselves more authentically. There will be also new developments related to education from J.P. Morgan (2022, p. 10)'s perspective, with VR worlds providing a low-cost and effective way to access training, which needs to be clear governance in these developments.

Also crucial at this point are non-fungible tokens (NFTs), which refer to things of material value in metaverse universes. They are unique and non-fungible data units stored in a digital ledger. Non-fungible tokens represent nonexchangeable new virtual assets that generate much of the growth in the metaverse. Non-fungible tokens can be images, videos, or items within a particular game, and they are considered assets, regardless of their classification. Recorded by blockchain technology, the ownership of these NFTs entitles them to be traded as an alternative to the digital assets they represent, which means that the metaverse enables the creation, ownership, and monetization of a new type of decentralized digital asset (Al-Gnbri, 2022, p. 32).

The Purpose and Method of the Research

This study aims at discussing the significance of the metaverse and its underlying technologies and the opportunities these technologies can provide for foreign language learning in the authentic environments. During the course of processing the research, the data in the relevant literature and new media environments on the internet that covered articles, reports, papers, and videos on the subject were examined using the document analysis method.

Definition Development and Immersive Technologies

The term "metaverse" was originally actually used in a speculative fiction story called "Snow Crash" by Neal Stephenson in 1992. Stephenson describes the metaverse as a parallel virtual reality universe based on computer graphics that users from all over the world can access and join via goggles and earphones. Behind the metaverse lies a protocol called "Street" that connects various virtual neighborhoods and locations - an analogous concept to the information superhighway (Damar, 2022, p. 173; Mystakidis, 2022, p. 492). According to Damar, the spread of multiplayer online games represents a rather significant period for the metaverse. For example, Active World (1995), Online Traveler (1996), Second Life (2003), and Minecraft (2011) could be described as cornerstones of the concept of multiplayer virtual worlds (2022, p. 175).

As a composite word of transcendent meta (Greek prefix meaning post, after or beyond) and the universe, metaverse describes a three-dimensional (3D) virtual world in which avatars participate in many activities ranging from political to economic, social or cultural. In the past, the avatar was used as a predefined, exaggerated, and simple form

in the virtual world that did not reflect the real world. Thanks to the technology that allows users to create avatars from their photos and modify them as they wish, today it is possible to create highly life-like avatars. In due course, it is gradually transforming itself into an ideal form that projects the external appearance and reflects the ego (Mystakidis, 2022, p. 486; Park & Kim, 2022, p. 4211).

The current metaverse, whose names have often been heard as "Second Life" in the previous generation, is separated from the old one in three points. Preliminarily, the rapid development of deep learning has improved the accuracy of vision and speech recognition, and the development of generative models has enabled more immersive environments and natural motion. Secondly, while the previous metaverse was based on PC access and had low consistency due to time and space constraints, it is now possible to access the metaverse anytime, anywhere because mobile devices can connect to the internet at any time. The last but not the least, since program coding can be done in the metaverse world, the current metaverse is different from the previous one and, accordingly, more tied to real life through virtual currency. The experience of metaverse means not only conversing with others through a computer in Second Life but also has various social meanings (e.g., fashion, event, game, education, and work) based on immersive interaction. It is also another vital reality of the maintaining conditions under development that cryptocurrencies provide an economic bridge between the metaverse and the real world, giving people a deeper social meaning (Park & Kim, 2022, p. 4211).

Even if the idea of metaverse is not new, according to many researchers, virtual environments of the new metaverse constitute the future of education as it offers users real-like and immersive experiences. The fact that it is new does not mean that people have not dreamed about it or made similar requests before. Online, multiplayer, role-playing worlds like The Sims or Second Life have been in existence for nearly 20 years. Modern equivalents like Minecraft, World of Warcraft, and Fortnite have hundreds of millions of users and a huge economy (Morgan, 2022, p. 5). Today, after COVID-19, we are at a tipping point where hardly a day does it seem to go by without a company or celebrity announcing that they are establishing a presence in a virtual universe. Even states' initiatives on the metaverse and their explanation of their strategies for the field have caused the whole world to be more intrigued in this technology. With the steps to be taken by Facebook which has recently changed its name to "meta," and similar large-scale companies, the metaverse on the horizon will bring with it various technologies and it may cause us to discuss many concepts including education all over the globe once again (Oğuz, 2021, p. 248–250; Morgan, 2022, p. 5). According to Park and Kim (2022, p. 4211), the metaverse makes reference to the virtual world in which the avatar appears, and the avatar is the alter ego of the user and becomes the active subject in this metaverse. XR (Extended Reality) is the medium that connects the avatars in the metaverse and the users in the real world.

Extended reality represents an umbrella term (Mystakidis, 2022, p. 487) that encompasses a range of immersive technologies: electronic, digital environments in which data are displayed and projected which allow human–machine interaction using wearables and remote controllers (Milgram & Kishino, 1994). The X is a variable to describe the variety of immersive technologies. XR contains 360-degree imagery, VR, AR, mixed reality (MR), and 3D content. With all the above XR facets, users observe and interact in a synthetic digital environment constructed by the technology (Mystakidis, 2022, p. 487; Park & Kim, 2022). At this point, with the forthcoming development of new XR devices such as Oculus Rift (Oculus VR, Irvine, Calif, USA) and HoloLens (Microsoft, Redmond, Wash, USA), their future applicability in education seems inevitable.

In the metaverse with the help of such XR technologies, the user can play a game, put on a performance, attend social gatherings, engage in economic activities, pursue hobbies, study, make friends, or enter into a relationship. It can provide unreal experiences such as flying in the sky, skiing, or swimming in the deep sea. Service offerings for different domains where both virtual and real experiences can be obtained are categorized as variant applications of the metaverse (Park & Kim, 2022, p. 4224–4225).

Metaverse sectors include health care, military, real estate, manufacturing, education, and retail. For example, metaverse health-care applications help speed up surgical procedures, examine data obtained through 3D scans in real time and AR, help patients detect, diagnose, and treat potential diseases, and allow them to view their bodies. By placing soldiers in more physically and psychologically challenging war environments, some military applications offer users to have a more realistic experience. Metaverse real estate applications make it possible for real estate marketers to inspect the property with VR tours before making a selection for their clients. This gives customers the advantage of viewing the property in all conditions and reduces travel time to zero (Nalbant & Uyanık, 2021, p. 10).

Theoretical Principles about Authentic Language Learning and Online Environments

It is an undeniable fact that today's teachers should have the necessary knowledge, skills, readiness, and commitment to teaching that twenty-first century demands. As a result of a large number of positive contributions to the use of technology in education, both educators and learners have been forced to evolve in many areas. After the COVID-19 pandemic, an additional need has been added to these requirements in that teachers and learners must be able to have many skills and experiences in online environments. With regard to those changes and necessities, multimedia programs and their use for educational purposes are already among the basic yet fundamental competencies of a teacher. In the same vein, there has existed similar situations in the student dimension of change; getting used to learning in online environments and being able to use programs can be considered as the very main facets of these. According to Ammenwerth/Hackl (2016, p. 48), the promotion of social interaction processes in digital learning environments encounters a particular challenge due to the spatial and time-related distribution of the participants. As a matter of fact, the teacher also faces with the challenge of creating a purposeful and authentic learning environment in which learners feel comfortable and can flourish. Such comprehensive distance learning, however, is no easy task for many instructors who were previously accustomed to face-to-face instructions. This is because distance learning is completely new for them and requires individual skills such as IT knowledge and didactic-methodological competencies as well as experience with online platforms.

According to a number of researchers, the tendency of foreign language teaching in the twenty-first century has begun to transform from a teacher-centered paradigm to a learner-centered paradigm. Constructivist Approach's foundations have enabled the beginning of self-directed, active, and experiential learning (Heusinger, 2020, p. 12). The term "constructivism" has a high status in the literature, psychology, philosophy, biology, linguistics, mathematics, and many other scientific fields (Möller 2001, p. 16). Based on constructivism, the educational institution happens to be the controlling center for learning, and it is assumed that learning is an action performed by the individual (Kron & Reddig, 2003; Sarı & Karasu, 2020, p. 426). Recent studies have also shown that such an approach to the teaching and learning of a foreign language yields positive and better results, improving both the cognitive and affective characteristics of learners (Kılıç 2004, p. 155; Raya 2014, p. 155).

Güneş et al. (2020, p. 248) emphasize that authentic learning takes its roots in situated learning, and it would be more appropriate to use

the term *model* for authentic learning. Within the model of authentic learning, a variety of teaching strategies and methods can be used, such as presentation, invention, research, lecture, question–answer, discussion, case studies, demonstration, problem solving, as well as individual and group instruction and out-of-class teaching. It refers to the fact that especially situative learning, game-based or gamified learning, and cooperative learning can be supported optimally in such a metaverse which also subjugates learners to get more autonomous while learning. Learners gain autonomy in their actions by being able to access on XR. At this point, it is worth remembering that technology alone is no guarantee of learning success (Kılıç 2004, p. 309; Schön et al. 2011: p. 65). Therefore, to promote learning processes through the use of digital media in a meaningful way, it is essential to develop didactic concepts. Extracurricular or out-of-class activities for language learning can be carried out in virtual world by means of metaverse. There is a lot of research related with such experiences. For example, Grant et al. (2013, p. 7) researched whether students experience less foreign language anxiety (FLA) in a multiuser 3D virtual simulation compared to the real world. According to the study, it was found that there might be more than one source of FLA in both classroom and virtual environments. The research also revealed the fact that students found the virtual environment less stressful in terms of language use. According to the results of another metaverse study by Garrido-Iñigo and Rodríguez-Moreno (2015), creating a metaverse in foreign language learning motivates students due to the feeling of active participation and involvement in the activities. The study by Can and Şimsek (2015, p. 122) was about the development and implementation of learning applications on the 3D platform Second Life for prospective foreign language teachers. According to the research results, it was found that the movement in the virtual environment was not compelling. It was also found that the majority of participants actively used the environment by touch. Around 79% of the participants stated that the interaction is often natural. An extensive study on "Augmented Reality Trends in Education" was conducted by Bacca et al. (2014, pp. 133–149), in which 32 studies on AR in education were reviewed according to the following factors: benefits, advantages, limitations, effectiveness, challenges, and characteristics of AR. Each study had a number of participants (*N*) ranging from 30 to 200. An essential finding is that the effectiveness of the use of AR in teaching was particularly demonstrated in the context of abstract and complex subject concepts. It also yielded significant advantages in learning gains, learner motivation, and collaboration over traditional analog learning settings.

Discussion, Conclusion and Recommendations

The research describes the practical and desirable use of VR for foreign language learning in a futuristic perspective to find out whether metaverse virtual worlds are a possibility for authentic language learning and to provide some basic concepts to researchers interested in foreign language teaching and technological developments. It discusses the benefits and limitations of authentic environments offered by the metaverse as a VR for foreign language learning.

With each passing day, educational technologies offer new opportunities for language learners. Immersive technologies, being at the top of these technologies, can offer the possibility of creating a virtual world parallel to human life. The fact that Web 3.0 technologies and various metaverse environments will create an economic ecosystem through XR technologies can open the doors to an alternative life to reality.

The advantages of XR environments via metaverse in foreign language teaching could be counted as follows: it provides access to environments where learners can actively speak the target language and improve their language skills in it. It helps language learners overcome their FLA. It enables language learners to integrate themselves with new technology. It is cost effective and can be done over the internet and with VR goggles without having to travel to the target land. Thanks to avatars, it reduces shyness and increases the level of active social presence. In this regard, digital literacy in metaverse would follow a more complex and changing literacy, which may mean that digital literacy will be key to daily life and socialization. It can be concluded that those institutions which use online platforms to expand instruction, on-campus living, and off-campus learning over the long term will be successful in the future.

Virtual worlds offer considerable financial relief by eliminating the need to travel abroad; some requirements such as VR goggles, a fast and stable internet infrastructure, and the ability to use this technology pose a challenge for society in general to embrace these technologies. Meeting such a challenge is not that *trivia* that teachers can struggle for or succeed in themselves alone. Virtual reality laboratories can be created by giving support to projects by educational institutions in order to spread them to the general public. In this way, at least for students who do not have financial means, it will be possible to use it. In addition to the necessary infrastructure, there must be trainers who know and can use the technology to organize these processes. Because with reference to the research conducted on the education-related issues during the COVID-19 outbreak, the experience level of teachers and the technical infrastructure of the educational institutions could be proclaimed to have been insufficient. To avoid this situation again, it seems essential for teachers to get relevant experiences and practices in metaverse and VR.

In addition to some of the positive developments that this new virtual world will bring to people's lives, the negative effects of virtual environments and the devices that enable them on people and society should not be ignored. For example, it was concluded by some studies on education that instruction on the Second Life platform improves student performance, but on the other hand, it was found that students experienced negative situations such as dizziness and nausea when wearing VR glasses.

In conclusion, life in metaverse virtual environments creates a brand new living space that might offer different experiences than their real lives; it has been an undeniable fact that the metaverse habitat could be referred to as beyond imagination and thus might have positive and/or adverse effects on the users not only physically but also psychologically. Considering that social media addiction causes loneliness, a highly intense and immersive environment is likely to put people into physical isolation, which, therefore, will result in distortion in the reality perception of individuals surviving in meta-universes. Another challenge that is not easy to overcome, but must be tackled nonetheless, is the legal requirements. Metaverse environments are not legally bound by a country's constitution, which inevitably raises the question of the extent to which people can protect their rights in that environment. Furthermore, it has not been scientifically revealed what sort of perception of reality in people such long-term vital activities performed in the metaverse will bring forth. At this juncture, a long term use thoroughly necessitates to be analyzed in light of both quantitative and qualitative data provided by experts in the field of language education.

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