The Metaverse in Foreign Language Learning: A Theoretical Framework

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Abstract: Inevitably, recent ideas and developments in the metaverse that are based on social interactions can profoundly influence the foreign language learning process since the core of the mentioned process is communication and interaction. However, whether the metaverse can be used in foreign language learning remains a crucial question that is unanswered within a theoretical framework. This paper aims to provide a theoretical basis regarding the use of metaverse in foreign language learning. For this purpose, it first defines and introduces the metaverse, gives a brief history of the concept, and introduces Metaversal games. Then, it focuses on the relationship between the use of the metaverse and the theoretical points of view. It concludes that the metaverse platform can be used as an effective language learning environment in light of the current theories, approaches, and models. The paper also discusses certain problems regarding the use of the metaverse as a language learning platform.

Keywords: Foreign language learning, the Metaverse, theoretical framework

Yabancı Dil Öğreniminde Metaverse: Teorik Bir Çerçeve

Özet: Bahsedilen sürecin özü iletişim ve etkileşim olduğundan, kaçınılmaz olarak, sosyal etkileşime dayalı Metaverse'deki yeni fikirler ve gelişmeler yabancı dil öğrenme sürecini derinden etkileyebilir. Bununla birlikte, Metaverse'ün yabancı dil öğreniminde kullanılıp kullanılamayacağı, teorik bir çerçevede yanıtlanmamış çok önemli bir soru olmaya devam etmektedir. Bu makale, yabancı dil öğreniminde metaverse kullanımına ilişkin teorik bir temel sağlamayı amaçlamaktadır. Bu amaçla çalışma, öncelikle Metaverse'ü tanımlayıp, kavramın kısa bir tarihçesini verip Metaversal oyunlarını tanıtmaktadır. Ardından, metaverse kullanımı ile teorik bakış açıları arasındaki ilişkiye odaklanmaktadır. Mevcut teoriler, yaklaşımlar ve modeller ışığında metaverse platformunun etkili bir dil öğrenme ortamı olarak kullanılabileceği sonucuna varılmıştır. Makale ayrıca meta veri deposunun bir dil öğrenme platformu olarak kullanımına ilişkin belirli sorunları tartışmaktadır.

Anahtar Sözcükler: Yabancı dil öğrenme, Metaverse, teorik çerçeve

3. Introduction

The concept of metaverse mainly depends on social interactions among users. Thus, it may provide opportunities for foreign language learners since the main focus of the foreign language learning process is on communication and interaction. However, several concerns regarding the use of the metaverse as a foreign language learning platform may arise. First, whether the metaverse can be used as a language learning platform or not needs to be clarified in terms of the current theories, approaches, and models on a theoretical basis. Second, the rationale behind the use of the metaverse should be established for implementation and practice after a deeper understanding of the metaverse as a foreign language learning

platform. With these concerns in mind, this paper presents a theoretical contextualization of the metaverse as a foreign language learning environment within the scope of current theories, approaches, and learning models. The article gives a brief synthesis of the theoretical background of the utilization of the metaverse in the foreign language learning process for implications for practice and future research. However, before presenting the theoretical framework, the paper defines the term *the metaverse*, gives a brief history, and introduces Metaversal games.

The metaverse, a combination of physical and digital worlds, is a network consisting of three-dimensional virtual worlds that require virtual and augmented reality (Robertson & Peters, 2021). In other words, it is a virtual world where users can enter through their virtual identities, meet others, make new friends, shop, and create social connections and interactions. It should also be pointed out that the metaverse can include different worlds, namely virtual environments where people can interact with each other.

The term *metaverse* was first used in 1992 by Neal Stephenson in his science fiction novel *Snow Crash* (Grimshaw, 2014). Then, virtual reality headsets were introduced by Jason Lanier in a musical performance in 1992. The headset was named a virtual reality music instrument. In 2000, the term *supranet* was used to refer to a combination of physical and virtual worlds (Hayward et al., 2000). Next, a dystopian novel titled *Ready Player One*, which presented a virtual reality game that allows living in a parallel society by Ernest Cline, was published in 2011. The book was also adapted into a movie by Steven Spielberg in 2018. In 2019, Facebook, one of the most popular network companies, launched a virtual reality platform, *Facebook Horizon*, which was renamed *Meta Platforms* (Roose, 2021). *The metaverse* was one of the most frequently searched terms according to the Google Trends index in 2022.

Metaversal games that allow users to create avatars, share experiences, and synchronously interact with others in a virtual world first appeared in 1998. In *There*, a virtual-based game, players can create their avatars, and interact and socialize. Another game, *RuneScape*, allows users to play a role-playing game that was released in 2001. The platform now has 200 million users from all over the world. In 2003, Linden Lab launched *Second Life*, a virtual game through which users can interact in a parallel universe. In 2020, the platform had about one million monthly active users. *Roblox*, released in 2006, provides a platform for users to play games with other participants. Roblox users who created and sold items earned $110 million, according to the numbers in 2019. Today, its daily logging number is nearly 42 million users. *Minecraft*, first launched in 2011 and bought by Microsoft in 2014, now has around 150 million monthly active players. A cycling game, *Zwift*, released in 2014, allows cyclists to compete with other athletes in both physical and virtual environments. Interestingly, the platform hosted the official virtual *Tour de France*. In 2017, Epic Games released *Fortnite Battle Royale*, an online multiplayer game that over 250 million active users use. The platform hosted a virtual concert that 12 million players synchronously viewed. It now has over 350 million registered users. In 2020, Nintendo launched *Animal Crossing: New Horizons* where users can interact with villagers in flora and fauna. After a year, the platform was sold to 33 million users since its launch.

In conclusion, *Snow Crash* was not only a science-fiction novel that introduced the word *metaverse* but also the work that gave inspiration to Sergey Brin, Jeff Bezos, and Mark Zuckerberg, who are the pioneers of building metaverse platforms. This idea also resulted in the appearance of several platforms such as Microsoft Teams, Zoom, and Adobe Connect. The platforms were designed to facilitate virtual interaction, communication, and collaboration.

The metaverse can be seen as a language learning environment since it facilitates interaction, communication, and collaboration. On the other hand, it is unclear how it is associated with certain learning theories, approaches, and models. Thus, it is necessary to discuss related theories and draw a theoretical framework within the scope of the use of the metaverse in the language learning process.

2. A Theoretical Framework

This section provides information about the theoretical framework that is required to establish a link between the metaverse and current learning theories, approaches, and models. For this purpose, interaction and its types are mentioned. Then, the concepts of active, blended, and flipped learning approaches are introduced before mentioning constructivism, scaffolding, collaborative, cooperative, and developmental learning. Next, learner-centeredness and autonomous learning approaches are introduced. Last, the section clarifies situated cognition, self-regulation, and self-determination.

Interaction is a reciprocal action that requires at least two participants who reflect their mutual acceptance (Wagner, 1994) and a process in which they coordinate their behaviors according to response and environment in social groups (Wheeler & Nezlek, 1977). It is extremely significant in human life since it has positive effects on mental health (McGuire & Raleigh, 1986), helps promote cognitive functioning (Ybarra et al., 2008), supports personal and social development (Vygotsky, 1978), and raises awareness of culture (Tappan, 1997). In the general perspective, interaction connects learners, shapes the learning process, improves autonomy (Little, 1995), contributes to comprehensible input (Krashen, 1982), and develops communicative competence and performance in the target language (Prapaisit de Segovia & Hardison, 2008). It also strengthens self-confidence, self-esteem and motivation among foreign language learners (Yashima et al., 2004). Moreover, interaction is connected with technology, since technology increases the interaction quality (Anderson & Elloumi, 2004) and provides collaboration and cooperation in ideal social and educational environments (Dabbagh & Kitsantas, 2012).

Interaction relates to the foreign language learning process since proficiency in the target language is correlated with comprehensible input, and negotiation of meaning via interaction and communication (Ellis, 1999; Krashen, 1982; Long, 1996). *Social interaction* includes events or actions that take place in a defined period of time and relate to the community and behaviors that originate from social experiences resulting from the natural proceeding of group dynamics (Nezlek & Derks, 2001). Social interaction enhances cognitive skills (Peterson & McCabe, 1994) and authentic and natural language acquisition. *Conversational interaction* depends on the negotiation of meaning among learners for comprehensible input and production of the new language (Long & Porter, 1985).

The metaverse may constitute a foreign language learning environment within the scope of interaction since it presents opportunities to raise awareness of the target culture, develop autonomy, receive comprehensible input, and enhance collaboration and cooperation in the foreign language learning context. Furthermore, since it may increase the amount of input, learners may easily negotiate meaning through interaction and communication. The metaversal environment that provides social and conversational interaction may also enhance cognitive capacity and the production of the target language.

Active learning, based on constructivism, is a student-centered teaching model that requires interaction between students and content (Meyers, 1993). In this model, the teacher provides the content and related materials in accordance with students' levels and learners' characteristics. In this way, students can discover knowledge, engage in activities by using problem-solving and critical thinking skills, and construct knowledge (Er et al., 2012). In this perspective, the metaverse can be used in an environment where the content and activities are shared, and their problem-solving and critical thinking skills are used to discover and construct knowledge.

Blended learning allows online interactions between the teacher and students, integrates face-to-face and technology-driven components, presents a context through which learners' expectations, needs, and skills are met, presents an authentic language learning environment, and prepares them for autonomous learning (Hockly, 2018). It is also favorable since it solves certain problems such as overpopulation, time limitation, and insufficient language exposure (Aborisade, 2013). In this context, the metaverse can be preferred as the technology-driven component to solve the problems listed above, prepare learners for autonomous learning, and meet learners' expectations, needs, and skills.

Flipped learning is a student-centered approach that includes interactive learning activities in traditional classroom sessions and individual learning in a technology-based environment outside the classroom. Learners use online materials to gain information on the theoretical part and then collaboratively work on the activities in face-to-face classes. In this way, students can learn in accordance with their individualized pace and learning styles (Romero et al., 2019). Thus, flipped learning provides a flexible environment, intentional content, and learning culture (Filiz & Kurt, 2013) through diversified platforms, learning experiences, and progressive activities (Chen et al., 2014). The metaverse can be used as a platform to reach online materials and content and support language learners in accordance with their individualized pace and learning styles.

Constructivism proposes that learning is a process that takes steps to move in further directions (Piaget, 2005) and establishes basic components to reach learning outputs by processing the items as the products of personal view (Wood et al., 1976). Learners can be involved in the learning process and construct their knowledge via interactions, as learning is based on meaning-making, inventing, conceptualizing, and

evaluating knowledge. In other words, they develop meaningful relationships between what they already know and what they come across (Resnick, 2018). In this way, they can construct information in their new experience within the limits of social and cognitive processes, culture, and interactions and reinterpret knowledge via socio-cognitive experiences. Thus, learning should follow a simplistic order and expand basic items into more complex ones by participating in the process and interpreting the environment. In this way, they can communicate with the world, investigate, invent and acquire knowledge (O'loughlin, 2007). Learners should comprehend grammar, vocabulary, discourse, pragmatics, and communicational aspects in the language learning process. Moreover, learners acquire new information in the language context and construct it in a continuum. For example, they comprehend by hearing, evaluating prior knowledge, and gradually constructing the new language. They play active roles in interpreting, processing, and developing ideas in the target language through activities such as research works and projects (Matthew et al., 2009). In this context, the metaverse offers characteristic transformation, brings learners to take action during activities, and changes their personal points of view. Learners are in an environment where they can change their surroundings in accordance with their learning needs, expand their world depending on their experiences, and reach the direction they desire regarding their realities. In brief, metaverse enhances knowledge construction in the course of social interaction and communication for language learners, accomplishes their needs for constructing knowledge, and establishes communities as language learning environments.

Scaffolding is a process through which learners' tasks and activities are presented by considering their intellectual readiness. In the process, learners observe and internalize the actions presented by their teachers and peers (Vygotsky, 1978). Scaffolding can be applied to language learning with the help of teachers and peers considering learners' capacities (Hammond & Gibbons, 2001). The tasks presented should be adjusted to the learning aims and content by using visual aids and demonstrations to achieve this. Metaverse constitutes a suitable platform for scaffolding since it has task-based characteristics by dividing the tasks into pieces.

Collaborative learning that depends on Vygotsky's Social Learning Theory (Vygotsky, 1978) suggests that learning is performed with the help of peers sharing the same social learning environment. In other words, two people can learn new things together by collaborating; thus, they work as a group during the learning process. In the process, they act as researchers by communicating with each other and creating ideas that are new to other learners (Matthew et al., 2009). Learning is closely and directly related to the use of social skills and responsibility in addition to collaboration. In this way, learners can understand each other, show respect for ideas, feel motivated, and continue interaction. The teacher does not act as an authority; instead, they support learners regarding social development, educational goals, administration, and technical issues (Ryan et al., 2013). In this process, learners can find the missing parts of the learning process by observing others' behaviors until they can achieve the tasks. Learners can share knowledge and help each other negotiate the meaning (Peterson, 2012). In the language learning process, the purpose is to learn structures and vocabulary and use the target language in communication. In this perspective, collaboration supplies input and output and provides an atmosphere to gain autonomy and independence (Zhang, 2010). Metaverse supports interaction among learners and learning new information. Moreover, it includes simulation and representation of real-life situations, helps learners to form and exhibit behaviors in virtual reality, and supports social interactions that consist of communicative tasks and activities through collaboration. In brief, metaverse enables language learners to meet in a platform for cooperation and collaboration, enhance ideas, provide assistance and feedback from teachers and peers, and improve language learning capacity.

Cooperative learning requires cooperation among learners within social interaction, the condition for language learning in an environment where learning experiences are reconstructed (Arnold, 1999). It emphasizes the importance of interaction since learners need comprehensible input and output in an ongoing context (Zhang, 2010). In this scope, the metaverse constitutes an environment where language learners share their experiences, receive comprehensible input, and produce language.

Developmental learning depends on learners' efforts to establish knowledge in a social context. Learners define the target and find appropriate ways to reach them in the learning process (Zuckerman, 2003). In the process, interaction enhances their learning capacity and development. Similarly, *experiential learning* is a process through which learners exhibit efforts and experiences for providing knowledge (Kohonen, 1992). The tasks used in the process support learning and enhance interactions. The metaverse constitutes a social environment and context to reach language learning goals by showing efforts and experiences.

Learner-centeredness is a process through which learners are aware of learning situations by being involved in activities and tasks. In this process, they easily internalize the activities and tasks when actions are meaningful and personal and interpret meaning from the context (Dang, 2006). In this perspective, the metaverse can be regarded as an environment that provides engaging activities that promote involvement. On the other hand, it should be pointed out that methodology, strategies, and learning outcomes should be planned since learners' actions alone may not be sufficient to foster language performance and confidence. To this end, it can be implicated that metaverse can be used as a language learning environment that provides a free space for language learning without any isolation from activities in a collaborative effort.

Autonomous learning includes a learner-centered notion and allows language learners to achieve learning tasks by controlling their learning process in a dynamic relationship between learning incomes and outcomes (Benson, 2007). Learners can choose the appropriate approaches, methods, and techniques, monitor, control, and assess their learning process. Thus, learners can be experts since they can adjust their learning strategies by combining their beliefs and needs to reach their goals (Mercer, 2011) and realize their own learning styles. In this process, self-awareness is a considerable variable that may influence achievement in the target language. In other words, they know what is learned and how to use information. Learners can raise their self-awareness, be active in taking responsibilities, and take control of their learning process in a metaverse-based language learning environment. To be brief, autonomous learners can initiate and end the learning process, choose and obtain the materials, arrange their learning strategies, assign time for studying, and evaluate themselves. In this way, they can build their self-confidence, self-esteem, and self-efficacy (Macaskill & Denovan, 2013). Metaverse provides an autonomous language learning environment that supports individuality and increases individual productivity without an authority figure. In this way, they can be actively engaged in the course, control their own learning process, make comments about others, and decide time limits in this interactive environment (Macaskill & Denovan, 2013). In this way, learners can independently take responsibility for their learning process in accordance with their needs, expectations, and decisions.

Situated cognition suggests that knowledge is affected by the context of the new language, culture, and activities (Brown et al., 1989). Thus, it contradicts that human cognition comes prior to social variables during the learning process (Semin & Smith, 2013). Moreover, learners try to integrate themselves into a culture and social groups. Then, they gain the information after enculturation. For instance, when readers practice, they come across a new context, think about the meaning, interpret words, and create contextual relations (Brown et al., 1989). In a situated cognition-based learning environment, learners can understand the concepts better and develop higher language skills. In this process, social factors and authenticity contribute to language learning. In terms of virtual learning, situated cognition supports social interactions among learners. Metaverse, in this context, is useful for various learning situations regarding the integration into a new culture and social groups. It can serve as a collaborative environment that enables learners to discuss actively and overtly and solve problems via communication.

Self-regulation is a mental organization process through which learners transform their cognitive abilities into language learning abilities through tasks and activities. Learning is stimulated to improve mental capacity and requires the mental involvement of learners (Zimmerman, 2002). Thus, learning environments should allow learners to take responsibility for the learning process and adjust to learning outcomes (Xiao & Yang, 2019). In this context, the metaverse can be seen as a language learning environment that enhances self-regulated learning since it enables learners to shape and organize their learning environments and to follow their intellectual goals.

Self-determination relates to basic psychological needs, cognition, and behavioral variables and includes autonomous and controlled motivation (Deci & Ryan, 2012). In other words, motivation and social conditions directly and closely affect the learning process. The focus is on autonomy since it is necessary for acquiring new information. When learning situations support autonomy and self-determination, learners can foster their creativity, cognitive development, attention, and motivation. In other words, when they can have a chance to choose what they learn, they can be more interested in learning the content. In this way, they can be aware of their needs, show a better performance, and internalize the new information. The metaverse can be seen as an environment where learners feel intrinsically motivated since it enables them to learn independently depending on their feelings, thoughts, experiences, and needs. Moreover, it can provide social interactions and cooperation opportunities, provoke a desire to learn a new language, and increase competence in the target language.

3. Conclusions

It can be considered that there may be a potential relationship between the use of the metaverse in the foreign language learning process and the current theories, approaches, and models. From this perspective, several conclusions can be noted:

- The metaverse may constitute an ideal platform for raising awareness of the target culture and the dynamics of new social groups.
- Social and conversational interactions in the metaverse increase the amount of comprehensible input, the negotiation of the meaning, and production in the target language.
- The learning content, activities, and materials can be shared via the metaversal environment where language learners may use problem-solving and critical thinking skills and discover and construct language knowledge.
- Using a metaversal environment in language learning may solve some potential problems such as time limitations and overpopulation in face-to-face classrooms and be designed according to the learners' needs and expectations, pace, and learning characteristics. Learners can shape and organize their environments to reach their intellectual goals.
- The metaverse can be used as a language learning environment where learners can expand their language proficiency via social interactions and communication with their teachers and peers in established communities.
- The metaverse can be used to share task-based visual materials and demonstrations in accordance with language learning aims and content. Real-life situations and simulations shared on the metaverse may support communicative tasks and activities through collaboration.
- Feedback from teachers and peers and sharing experiences in the metaverse as a social learning environment may improve foreign language learning capacity and production.
- The metaverse may provide a free space for language learning in a collaborative effort and a learner-centered approach without isolation and an authority figure in accordance with learners' decisions, needs, and expectations.
- The metaverse may bring active and overt discussion opportunities in the target language.
- Social interactions via the metaverse may provoke a desire and motivation to learn a new language independently.

Beyond the possible benefits, some problems may be faced when using the metaverse as a foreign language learning environment. First, security, privacy, and accessibility issues may constitute problems since foreign language learners are not only adults but children and adolescents who must have obligatory language classes in different parts of the globe. The second problem is that interaction in a metaversal environment may adversely affect children and adolescents' development of communication, socialization skills, relationship building, and social awareness in the real world (Poth, 2022). Moreover, certain problems such as addiction disorders, game addictions, cyberbullying, abuse and health problems that may result in depression and anxiety may arise among foreign language learners. As a final point, some technical issues related to providing infrastructure for hardware and software may not be possible with regard to the scope of financial and technical inequities around the globe.

Some recommendations for practice and research can also be noted. First, foreign language teachers should be instructed about the benefits and challenges regarding the use of the metaverse in the foreign language teaching and learning processes. The instruction should include the theoretical background of the metaverse in the mentioned processes, technical issues, material development, and social and psychological problems among learners. To achieve this, in-service and pre-service teaching programs should be implemented regarding the utilization of the metaverse. Second, research on various issues in terms of the metaversal language learning environments is warranted. For this purpose, researchers should first focus on teachers' and learners' perceptions of and attitudes towards the metaverse as a language learning environment. In this scope, qualitative studies should be prioritized for an in-depth and better understanding of the attitudes and perceptions of the target groups, namely, teachers, students, school administrators, material developers, curriculum designers, and language policymakers. In the near future, descriptive and experimental studies should be performed to understand the consistency between the theoretical basis and practice in a metaversal language learning environment.

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Note on Ethical Issues

The author confirms that the study does not need ethics committee approval according to the research integrity rules in his country (Date of Confirmation: 09/22/2022).