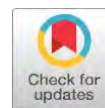


Metaverse magic: Unveiling the pedagogical potential and transformative effects on intercultural communication in English language teaching



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ABSTRACT

The emergence of Metaverse, a three-dimensional virtual space that enables users to interact in computer-generated environments, has opened up new possibilities for language learning and instruction. This study explored the pedagogical potential and transformative effects of incorporating Metaverse environments in English language teaching, with a specific focus on intercultural communication. Drawing on theories such as social constructivism, intercultural communication, and autonomous language learning, this research investigated the impact of Metaverse on language acquisition, intercultural competence, and learner autonomy. The study employed a qualitative approach, including interviews with experts in Metaverse development and English language instructors. The findings revealed several pedagogical implications, including the promotion of immersive language learning experiences, enhanced interaction and collaboration, personalized learning opportunities, and increased motivation. Additionally, the study uncovered the positive impacts of Metaverse environments on intercultural communication and cultural understanding in English language learning. The research contributed to the understanding of how Metaverse could support language education and provides valuable insights for language teachers and students to optimize their language learning experience in virtual environments.



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1. Introduction

The English language is widely used as a second or foreign language throughout the globe and is regarded as a crucial element for international communication and education. In recent years, technological advancements have created new opportunities for language learning and instruction, including the utilization of virtual environments such as Metaverse. Metaverse is a virtual space that enables users to interact in a three-dimensional, computer-generated environment with digital objects (Johnson, 2012). Rapid growth in the use of Metaverse in education has created new opportunities for language instructors and students to engage in authentic communication and cultural exchange.

Multiple theories influence language acquisition in Metaverse environments, including social constructivism, intercultural communication, and autonomous language learning. According to Vygotsky's (1978) social constructivism, language acquisition is a social process that is constructed through interaction and negotiation between students and teachers. In Metaverse environments, language students can interact with both native and non-native speakers, enhancing their intercultural communication skills and language development.

Gudykunst (2003) defines intercultural communication as the exchange of information and messages between people of diverse cultural backgrounds. Language learners can engage in intercultural communication through the use of Metaverse environments, as they can interact with people from around the globe in virtual spaces. This interaction can help language learners develop intercultural competence, such as the ability to comprehend and navigate diverse cultural norms and values.

Willis and Willis (2007) define autonomous language learning as the process of assuming charge of one's own learning, establishing goals, and selecting strategies for language development. The use of Metaverse environments can facilitate independent language learning by providing opportunities for self-directed learning, exploration of virtual environments, and collaboration with others. By fostering learner autonomy, language students can assume responsibility for their own language acquisition and develop problem-solving skills.

Prior research on the use of Metaverse in English language teaching and learning has focused predominantly on the use of virtual environments for language instruction (Liu, 2014; Yu, 2015; Kuo & Tsai, 2011). However, research on the effect of Metaverse environments on intercultural communication and cultural understanding in English language learning is limited (Smith, 2013; Li, 2016). In addition, the potential of Metaverse environments for encouraging learner autonomy, providing formative feedback, and promoting authentic communication practices in English language learning has not been thoroughly explored in previous research (Johnson, 2012; Chen, 2014).



Figure 1. Density of the issue on the use of Metaverse in English Language Teaching and Learning by keywords, *Source: Vosviewers, (2023)*

The Vosviewer Software was utilized to identify research gaps in prior studies. The Vosviewer Software visualizes with the fundamental colors red, green, and blue (RGB). The density visualization enables the examination of a topic's research density or scope. Redder nodes indicate a

greater volume of research on a particular topic, while verdant nodes indicate a dearth of research (van Eck & Walton, 2010). To ascertain the research gap, "Using Metaverse in English Language Teaching and Learning" was entered into Scopus's database along with the keyword search term. Initial retrieval yielded 76 articles; after meticulous selection, 51 research articles pertinent to the topic were identified. Due to the novelty of the topic of Metaverse in the context of English language instruction and learning, there are few articles on the subject.

The research gap in the topics of foreign language and Metaverse teacher areas is highlighted by the green node in [Figure 1](#). Additional research is needed in these areas. The blue node contains keywords related to teaching and education effectiveness, suggesting the need for further investigation in these aspects. This study focuses on incorporating Metaverse environments into the English language classroom, particularly exploring their pedagogical potential and adoption in intercultural settings, which have been underexplored. The presence of foreign language and Metaverse teachers in the green node confirms the limited research in these specific areas, while the presence of teaching and education efficacy in the blue node indicates their potential for future study.

The purpose of this research is to explore the potential of Metaverse environments for supporting intercultural communication and cultural understanding in English language learning. The research questions are:

1. What are the pedagogical potential of incorporating Metaverse environments in English language teaching and how can they be best utilized in language education programs?
2. How does the use of Metaverse environments affect intercultural communication and cultural understanding in the context of English language teaching and learning?

This research will contribute to the understanding of how Metaverse environments can support intercultural communication and cultural understanding in English language learning, as well as provide strategies for language teachers and students to enhance their language learning experience in virtual environments.

2. Literature Review

2.1 Metaverse

The term "Metaverse" alludes to a virtual world or shared space in which users can interact in a virtual environment ([Johnson, 2012](#)). In recent years, the concept of the Metaverse has received a great deal of attention, as technological advancements have enabled the creation of immersive, interactive virtual environments that offer a vast array of opportunities for communication, collaboration, and learning ([Kim, Lee, & Lee, 2021](#); [Pham & Tran, 2020](#)). The Metaverse is frequently characterized by its three-dimensionality, which enables users to navigate and explore virtual spaces using avatars or virtual representations of themselves ([Lee & Park, 2022](#)).

Numerous studies have investigated the potential advantages and difficulties of utilizing Metaverse environments for education and training. For instance, [Kim et al. \(2021\)](#) discovered that Metaverse environments can offer students a sense of presence and immersion that is not possible in conventional learning environments. This sense of presence, according to the authors, can contribute to increased engagement and motivation, as well as improved learning outcomes.

Research has also focused on the use of Metaverse environments for intercultural communication and cultural understanding. [Lee and Park \(2022\)](#) found that Metaverse environments can provide a secure and supportive environment for intercultural communication and cultural understanding because users can engage in authentic communication and collaboration with people of different cultures. According to the authors, this can aid in fostering intercultural awareness, empathy, and mutual understanding.

Research has also focused on the function of technology in promoting learning and interaction in Metaverse environments. [Chen et al. \(2021\)](#) discovered that the use of advanced technologies such as virtual reality, augmented reality, and artificial intelligence can enhance the

immersive and interactive nature of Metaverse environments and provide users with personalized learning opportunities.

Literature suggests that Metaverse environments have the potential to provide a variety of advantages for education and training, including increased engagement and motivation, improved learning outcomes, and opportunities for intercultural communication and cultural understanding. However, the field is still in its infancy, and additional research is required to investigate the full potential of Metaverse environments for learning and to address challenges such as the need for effective pedagogy and technology design, as well as equity and accessibility issues.

2.2 Intercultural Communication and Cultural Understanding

The exchange of knowledge, concepts, and attitudes among people with various cultural origins constitutes the complicated process known as intercultural communication (Gudykunst & Kim, 2017). According to Byram and Feng (2008), cultural understanding is the awareness and respect of cultural differences, including beliefs, values, attitudes, and behaviours. Both of these features are seen to be crucial for improving learner motivation and fostering communicative competence in language instruction (Fantini, 2009; Kramsch, 1993).

Extensive research has highlighted the importance of intercultural communication and cultural awareness in English language instruction. Various strategies, including the integration of Metaverse technology, have been explored to promote international awareness and cultural understanding. Lee and Lin (2018) found that incorporating virtual worlds in English language instruction effectively facilitates intercultural communication through authentic and immersive learning experiences. Virtual environments offer a safe and controlled setting for students to practice their intercultural communication skills by simulating real-world encounters.

According to a separate study conducted by Pham and Tran (2020), the inclusion of native speakers as language tutors in online settings has the potential to enhance cultural awareness by affording learners exposure to diverse cultural perspectives and experiences. The authors emphasized that virtual environments offer users access to a vast array of local speakers, thereby augmenting the authenticity of the learning experience and facilitating cultural immersion.

Scholarly research has also focused on investigating the significance of formative feedback in promoting cross-cultural understanding and communication. In a study conducted by Chen and Chiang (2021), it was found that providing students with formative feedback regarding their intercultural communication skills can contribute to the development of a heightened awareness of other cultures, as well as foster learner autonomy. The authors argued that formative feedback offers students direct and constructive criticism, enabling them to identify their strengths and areas for improvement, thereby motivating them to assume greater responsibility for their educational progress. Despite several previous studies on the use of Metaverse in language learning, further investigation is warranted to fully comprehend the impact of the incorporation of Metaverse environment on pedagogical approaches and intercultural communication in the context of Metaverse environment.

3. Method

The interviews were the primary mode of data collection for the study. The study included ten participants, one of whom (Participant 1) was the rector of a cyber-university with expertise in Metaverse development and experience implementing Metaverse technology in the teaching-learning process. Another participant (Participant 2) was a Metaverse developer who specialized in education and learning. In addition, nine instructors who taught technology-integrated courses in English Education departments at universities in Yogyakarta were selected as participants (Participants 3-12).

Interviews allowed for an in-depth examination of the experiences, perspectives, and insights of participants regarding the use of Metaverse environments in English language teaching and learning (Kim et al., 2021). Semi-structured interviews provided a balance between predetermined questions and the freedom to investigate emerging themes and ideas (Lee & Lin, 2018). Participants'

responses were elicited using open-ended questions to ensure a comprehensive comprehension of their experiences (Pham & Tran, 2020). With the participants' permission, the interviews were audio-recorded to assure accurate data capture and subsequent transcription for analysis (Lee & Lin, 2018).

The interview data was subjected to thematic analysis to identify recurring patterns, themes, and categories related to the research questions (Chen & Chiang, 2021). This method of analysis enabled the systematic organization and interpretation of qualitative data, thereby facilitating the extraction of meaningful insights (Chen & Chiang, 2020). Through a rigorous process of data familiarization, classification, and data reduction, themes and categories were developed (Chen & Chiang, 2021).

This study's findings contributed to our understanding of how Metaverse environments can facilitate intercultural communication and cultural awareness in English language learning. The incorporation of recent research literature (Kim et al., 2021; Lee & Park, 2022; Pham & Tran, 2020) ensured that the study built on prior knowledge and advanced the current understanding of the subject. Ultimately, the purpose of this study was to provide instructors and students with strategies and insights for enhancing language learning in virtual environments by utilising the potential of Metaverse technology.

4. Findings and Discussion

4.1 Pedagogical Potential of using Metaverse environments in English language teaching

The data findings guided by the first research questions pertain to the pedagogical implications of incorporating Metaverse environment in English Language Teaching (ELT). Based on the participants' responses, there are four pedagogical implications, namely immersive language learning experiences, Enhanced interaction and collaboration, Personalized learning and Increased Motivation as depicted in the concept map generated using NVIVO 12 plus software (2023). Each impact pertains to various understanding perceived by participants.

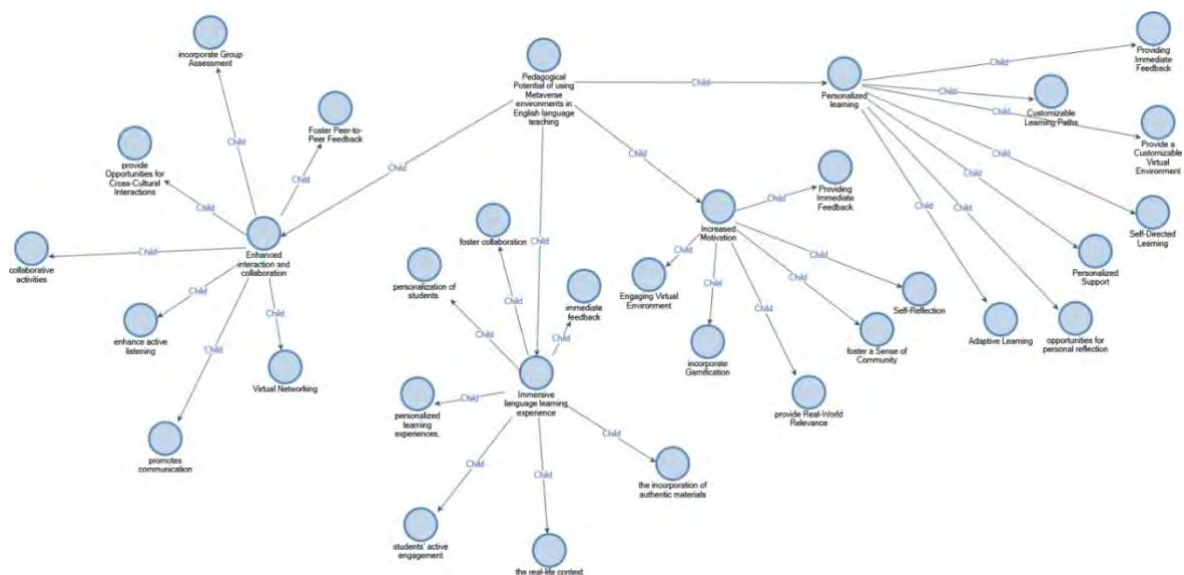


Figure 2. Concept map for Pedagogical Potential of incorporating Metaverse environments in English language teaching, *Source: NVIVO 12 plus, (2013)*

4.1.1 Immersive language learning experience

Table 1. Immersive language learning experience

Pedagogical Potential of using Metaverse environments in ELTL (English Language Teaching and Learning)	Components of Immersive Language Learning Experiences
Immersive language learning experience	students' active engagement the real-life context foster collaboration incorporation of authentic materials personalization of students immediate feedback

As shown in Table 1, participants interpreted immersive language learning experience as pertaining to the learning process, learning materials, and feedback. Using learning activities such as games, simulations, and role plays, students should be encouraged to actively participate in the immersive language learning experience's learning process in order to provide a meaningful context for skill practice (P9). According to P7, the real-world context could also be constructed using virtual environments that simulate real-world situations such as dining in a restaurant, shopping, and traveling. Through group initiatives and conversation exchanges, Metaverse could also enable students to collaborate with native speakers. According to P2, this paved the way for the individualization of students, as he stated, "I suppose Metaverse could lead to the personalization of students." To enhance the experience's engagement and significance." Metaverse could also offer immediate feedback (P11):

To my point of view, Metaverse enables the incorporation of immediate feedback mechanisms, such as automated grading or real-time corrections, to assist language learners in recognizing their strengths and shortcomings and advancing rapidly.

4.1.2 Enhanced interaction and collaboration

Table 2. Enhanced interaction and collaboration

Pedagogical Potential of using Metaverse environments in ELTL	Components of enhanced interaction and collaboration
Enhanced Interaction and Collaboration	promotes communication enhance active listening foster peer-to-peer feedback incorporate group assessment activities virtual networking

According to the data presented in Table 2, enhanced interaction and collaboration is the second pedagogical benefit of employing a Metaverse environment in language instruction. Participants connected this concept to fostering communication. For example, P8 stated:

Metaverse promotes communication because it encourages students to communicate with each other and native speakers to practice their speaking and listening skills, such as through virtual conversation exchanges or chat rooms.

Moreover, participants acknowledged the importance of interactive presentations and debates for enhancing active listening skills and fostering an appreciation of diverse perspectives (P10). In addition, participant P4 viewed enhanced interaction and collaboration as an opportunity to develop networking skills by encouraging language learners to connect with each other and native speakers via virtual events or online communities in order to establish relationships and foster a sense of community. Additionally, participants P1 and P2 linked increased interaction and collaboration to the facilitation of peer-to-peer feedback and group assessment activities.

4.1.3 Personalized learning

Table 3. Personalized Learning

Pedagogical Potential of using Metaverse environments in ELTL	Components of personalized learning
Personalized learning	customizable Learning Paths adaptive learning self-directed learnings opportunities for personal reflection personalized support customizable virtual environment

As indicated in Table 3, personalized learning is an additional pedagogical potential associated with the use of the Metaverse environment in English language instruction. P9 and P2 interpreted the concept of personalized learning as pertaining to learning paths and virtual environments that can be customized. The former refers to selecting the activities and materials that students will work on in order to align their learning objectives with their personal interests and preferences. The latter is concerned with allowing participants to create their own avatars or select their virtual environments in order to make the learning experience more engaging and significant. P1 and P11 related personalized learning to personalized support and adaptive learning in a similar manner. P1 described:

*Teachers may have more opportunities to provide **personalized support**, such as virtual one-on-one tutoring or small-group instruction, to assist language learners in addressing their unique requirements and receiving targeted feedback.*

4.1.4 Increased Motivation

Table 4. Increased motivation

Pedagogical Potential of using Metaverse environments in ELTL	Components of increased motivation
Increased motivation	engaging virtual environment incorporate gamification provide real-world relevance providing immediate feedback

As depicted in Table 4, integrating Metaverse environments into English language instruction has the potential to increase student motivation. Participants viewed Metaverse as more engaging than other platforms, despite its virtual nature, due to its capacity to generate visually enticing and interactive learning activities. Participant P4 stated that Metaverse had practical application. In addition, gamification could be incorporated into this platform. Participant P6 stated, "Teachers can incorporate gamification elements such as points, badges, and leaderboards into Metaverse to motivate students during the learning process." In addition, Metaverse's ability to provide immediate feedback and facilitate self-reflection were identified as additional strengths.

4.2 The impacts of Metaverse environments to intercultural communication and cultural understanding in English language learning

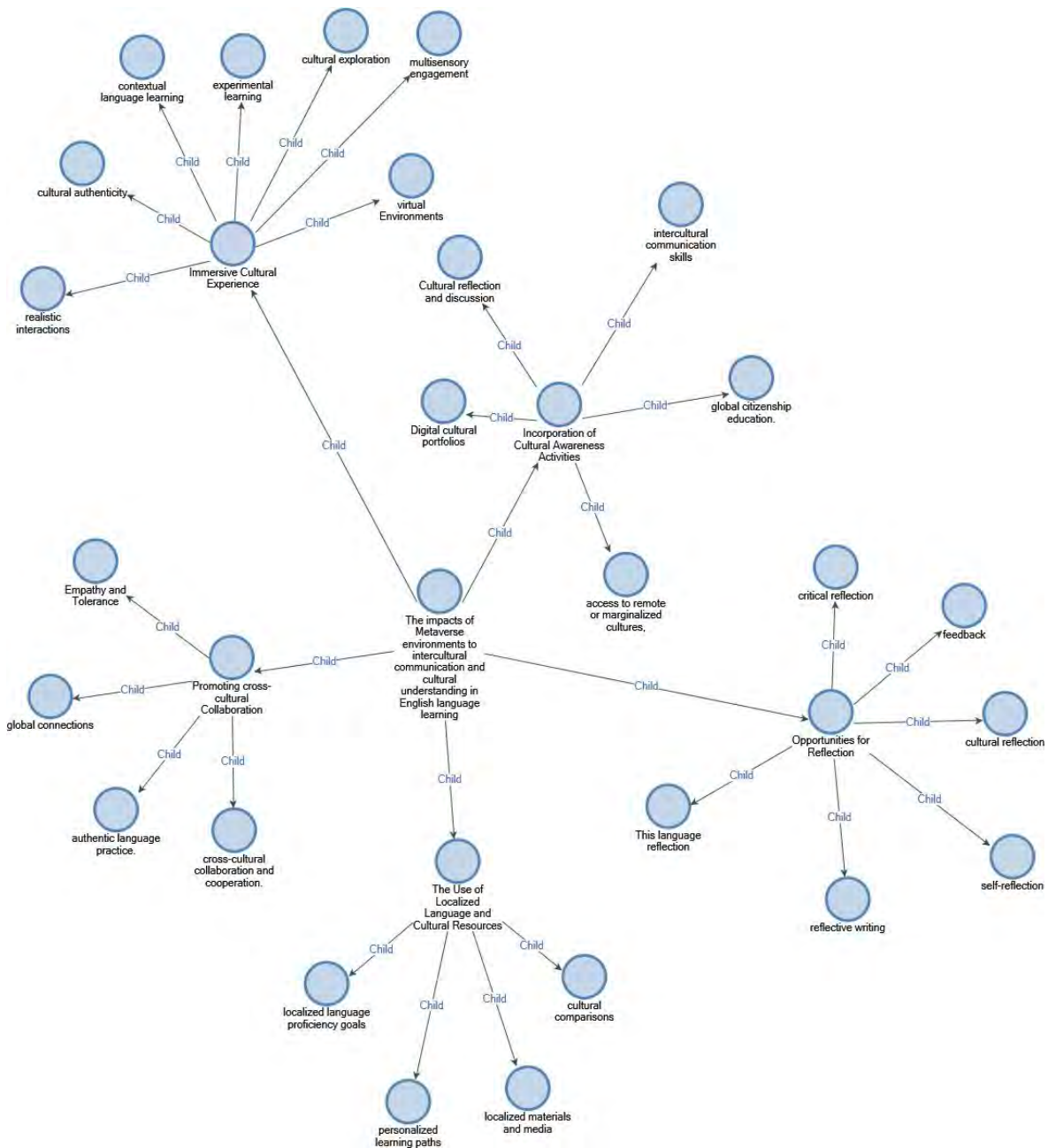


Figure 3. Concept map of the impacts of Metaverse environments to intercultural communication and cultural understanding in English language learning, *Source: NVIVO 12 plus, (2023)*

4.2.1 Immersive Cultural Experience

Table 5. Immersive cultural experience

The impacts of Metaverse environments to intercultural communication and cultural understanding in ELTL	Components of impacts
Immersive Cultural Experience	realistic interactions multisensory engagement cultural exploration cultural authenticity contextual language learning experimental learning

As illustrated by the data in Table 5, the incorporation of Metaverse environments into English language instruction, as stated by the interviewees, facilitated immersive cultural experiences, thereby fostering intercultural communication and cultural understanding. As demonstrated in the table, the participants' perspectives emphasized the significance of interaction, engagement, culture, and learning. Students were able to practice their English language skills by interacting with avatars representing individuals from the target culture, simulating genuine interactions, according to the participants. The participants remarked that such interactions involved multiple senses, including visual and auditory stimuli, which heightened the feeling of being physically present in the cultural context. This sensation of physical presence enabled authentic exploration of cultural content, including customs, traditions, values, and behaviors. One participant mentioned that students were able to precisely depict cultural practices, settings, and people. Additionally, the participants emphasized that immersive cultural experiences facilitated contextual language learning and experiential learning, allowing language learners to practice their abilities in authentic cultural contexts.

4.2.2 Promoting cross-cultural Collaboration

Table 6. Promoting cross-cultural collaboration

The impacts of Metaverse environments to intercultural communication and cultural understanding in ELTL	Components of impacts
Promoting cross-cultural collaboration	global connections authentic language practice cultural awareness cross-cultural collaboration and cooperation empathy and tolerance

As observed in Table 6, cross-cultural collaboration is the second effect of Metaverse environments on intercultural communication and cultural understanding in English language acquisition. Participants associated this concept with various aspects, including global connection. Through the Metaverse environment, students were able to participate in virtual language exchange programs or online communities, engage in real-time conversations, exchange information about their own culture, and gain new perspectives. This exposure to diverse cultures promoted intercultural understanding and communication skills. Increased global connectivity allowed students to acquire authentic language practice, cultural awareness, and fostered compassion and tolerance. Participants viewed these elements as ingredients for enhancing cross-cultural cooperation and collaboration. As P2 indicated:

The Metaverse provides a collaborative space where students from diverse cultural backgrounds can collaborate on projects, duties, and problem-solving activities. This encourages coordination, cooperation, and the development of interpersonal skills essential for cross-cultural collaboration and cooperation. Through shared experiences and collaborative efforts, students develop an appreciation for diverse perspectives, the ability to negotiate meaning, and the ability to work towards common objectives.

4.2.3 Incorporation of Cultural Awareness Activities

Table 7. Incorporation of cultural awareness activities

The impacts of Metaverse environments to intercultural communication and cultural understanding in ELTL	Components of impacts
Incorporation of cultural awareness activities	intercultural communication skills cultural reflection and discussion digital cultural portfolios global citizenship education access to remote or marginalized cultures

Based on the information in Table 7, several major findings emerge from the responses of participants regarding the pedagogical potential of the Metaverse in English language instruction. According to P6, "Students can enhance their intercultural communication skills through the Metaverse." Learners may, for example, engage in simulated intercultural communication scenarios in which they negotiate cultural differences, demonstrate proper etiquette, and develop intercultural communication skills." This emphasizes the significance of utilizing the Metaverse to promote intercultural competence. In addition, as mentioned by P8, students could construct digital cultural portfolios to document their cultural learning experiences and demonstrate their cultural awareness and language proficiency development. Incorporating cultural awareness activities in the Metaverse not only aligned with the goals of global citizenship education, as stated in P7, but also provided access to remote or marginalized cultures, as highlighted in P1, thereby promoting inclusiveness and increasing students' global awareness.

4.2.4 Opportunities for Reflection

Table 8. Opportunities for reflection

The impacts of Metaverse environments to intercultural communication and cultural understanding in ELTL	Components of impacts
Opportunities for Reflection	self-reflection cultural reflection language reflection critical reflection reflective writing feedback

As can be seen in Table 8, Utilizing the Metaverse to encourage self-reflection and personal development (P1) revolutionized English language learning. "Interacting with diverse characters in the Metaverse and interacting with virtual environments allowed me to reflect on my language skills, cultural awareness, and personal development," said one participant. It facilitated the identification of strengths and areas for growth, resulting in increased self-awareness and development" (P1). Through immersive virtual experiences and interactions, students ruminated upon their language proficiency and cultural sensitivity. Students developed a deeper appreciation for diversity as they evaluated cultural practices critically and compare similarities and differences (P12). Language activities, such as virtual discussions and role-plays, enabled students to assess their language proficiency, identify their assets, and set learning objectives (P4). Metaverse environments offered real-world scenarios that cultivate problem-solving and critical thinking skills, thereby honing decision-making abilities (P3). Activities involving reflective writing enhanced comprehension and written communication skills (P10). Teachers provided students with personalized feedback, guiding their reflective practice and enhancing their language and intercultural competencies (P2). The transformative power of the Metaverse in English language learning resided in its ability to foster reflection, cultural awareness, metacognition, critical thinking, and effective communication.

4.2.5 *The Use of Localized Language and Cultural Resources*

Table 9. The use of localized language and cultural resources

The impacts of Metaverse environments to intercultural communication and cultural understanding in ELTL	Components of impacts
The Use of Localized Language and Cultural Resources	localized materials and media cultural comparisons localized language proficiency goals personalized learning paths

From the data shown in [Table 9](#), utilizing localized language and cultural resources to teach English in the Metaverse had proved to have a significant impact on language acquisition. One participant, P1, stated, "Integrating virtual novels, newspapers, films, and music that reflect specific cultural contexts allowed me to gain an immersively deeper understanding of the language and culture." In addition, P2 emphasized the importance of cultural comparisons within the Metaverse, where students were able to explore various regions and compare language use, customs, and societal norms, thereby increasing their appreciation for cultural diversity. P3 highlighted how teachers could tailor language instruction to the needs and interests of their students by establishing localized language proficiency objectives that provided practical language skills for specific cultural contexts. As acknowledged by P4, the availability of personalized learning paths within the Metaverse encouraged students to delve deeper into the language and culture of their choosing, resulting in a more engaging and pertinent learning experience. In conclusion, the incorporation of localized language and cultural resources within the Metaverse provided a dynamic and immersive language learning environment that improved students' language proficiency and cultural awareness.

5. Discussion

5.1 Pedagogical implications of using Metaverse environments in English language teaching

The findings of the study reveal several pedagogical implications of using Metaverse environments in English language teaching. To deepen the academic discussion and incorporate recent literature, let's explore each implication in relation to relevant scholarly work.

5.1.1 *Promotion of Immersive Language Learning Experiences*

Through the incorporation of considerable language practice and real-world circumstances, the usage of immersive Metaverse environments in English language training fosters language learning immersion ([Willis, 2018](#)). By including real-world scenarios, simulations, and role-playing activities, metaverse environments that are in line with task-based language teaching (TBLT) principles enable learners to use language authentically ([Widdowson, 2017](#)).

Additionally, in Metaverse contexts, personalized learning experiences are essential, including individualized feedback and assessment ([Pane et al., 2017](#)). These learning environments adhere to the tenets of individualized learning by adjusting to the needs of each learner and giving prompt feedback. This individualized approach increases the efficiency of language learning in the Metaverse by allowing students to advance at their own speed and concentrate on areas that need development.

5.1.2 *Enhanced Interaction and Collaboration*

Metaverse environments offer learners enhanced opportunities for interaction and collaboration, in accordance with Vygotsky's sociocultural theory ([1978](#)). Collaboration, peer-to-peer feedback, cross-cultural interactions, and virtual networking are identified as crucial factors. Within an interactive and supportive environment, language development is promoted through group initiatives, role-playing, and virtual conversations. [Byram \(2018\)](#) argues that cross-cultural interactions in Metaverse environments foster intercultural understanding and communication skills.

In addition, peer-to-peer feedback in Metaverse environments is consistent with the principles of peer-assisted learning, which improve language proficiency, learner autonomy, and self-reflection (Cheng et al., 2019). Engaging in peer-to-peer feedback exchanges in these settings fosters language growth and fosters a sense of community among students. Overall, Metaverse environments provide a rich collaborative space for language learners to interact, engage in cross-cultural interactions, and benefit from exchanges of peer feedback, thereby enhancing their language learning experiences.

5.1.3 *Personalized Learning*

The pedagogical implications of personalized learning in Metaverse environments include the customization of learning paths, adaptive learning techniques, self-directed learning approaches, instant feedback, personal reflection, personalized support, and the customization of the virtual learning environment.

Recent research supports the effectiveness of individualized language instruction. Learners can select activities and materials based on their interests and preferences (Benson, 2017). In Metaverse environments, students can take command of their education by selecting activities that align with their individual needs and motivations.

5.1.4 *Increased Motivation*

Engaging virtual environments, gamification elements, real-world relevance, a sense of community, immediate feedback, and self-reflection all contribute to increased motivation in metaverse environments for English language instruction. Self-determination theory and research on second language acquisition (Deci & Ryan, 2000) emphasize the significance of intrinsic motivation, autonomy, and competence. Metaverse environments provide visually appealing and interactive virtual settings that encourage originality, zeal, and participation. The incorporation of gamification elements is consistent with motivational theory, as it offers extrinsic rewards that positively influence engagement and perseverance (Dornaiei, 2001). The development of a supportive community fosters motivation and inclusivity (MacIntyre & Legatto, 2011), while real-world relevance helps students perceive the practical applications and value of language skills (Lambert & Gu, 2014). In addition, immediate feedback and self-reflection allow students to monitor their progress, increase their self-efficacy, and promote metacognitive awareness (MacIntyre & Legatto, 2011).

Recent research validates the pedagogical implications of employing Metaverse environments in English language education. According to research on virtual reality (VR) in language acquisition, VR-based activities improve immersion, motivation, and language performance (Wang & Sun, 2021). The use of gamified elements in a virtual environment increases students' motivation, engagement, and appreciation of language learning (Li & Lan, 2021). (Chen & Lin, 2023) Virtual social interaction in a Metaverse environment has positive effects on language development, collaborative skills, and intercultural communication skills. These results highlight the significance of Metaverse environments for immersive language learning experiences, proficiency enhancement, and student engagement.

5.2 **Impacts of Metaverse Environments on Intercultural Communication and Cultural Understanding in English Language Learning**

The second research question aimed to explore the impacts of Metaverse environments on intercultural communication and cultural understanding in English language learning. The findings revealed two overarching themes: immersive cultural experience and promoting cross-cultural collaboration. This discussion section will delve into these themes, providing an analysis of the participants' perspectives and the implications for language education.

5.2.1 *Immersive Cultural Experience*

Previous research has demonstrated that cultural immersion in Metaverse environments is feasible. Kim et al. (2021) highlight the capacity of immersive features to boost presence, engagement, and learning efficacy. Pham and Tran (2020) emphasize experiential learning and cultural comprehension through virtual cultural activities and interactions. Lee and Park (2022) highlight the significance of cultural authenticity and its impact on the growth of intercultural competence.

Kim et al. (2021) state that Metaverse environments offer authentic learning environments where students can interact with authentic settings, avatars, and cultural artifacts. Virtual cultural activities facilitate experiential learning, active participation, and intercultural communication, according to Pham and Tran (2020). By engaging in genuine interactions and observing authentic cultural practices, comprehension, cultural sensitivity, and empathy are enhanced (Lee & Park, 2021).

5.2.2 *Promoting Cross-Cultural Collaboration*

The research's findings are consistent with the existing literature on the effect of Metaverse environments on intercultural communication and cultural comprehension. A significant aspect of utilizing Metaverse environments for English language acquisition is cross-cultural cooperation. (Kim, Lee, & Lee, 2021) Metaverse environments facilitate global connections and real-time conversations with individuals from various cultures, thereby enhancing intercultural comprehension and communication skills. Students' linguistic competence is enhanced by engaging in dialogues and collaborative projects with native or proficient speakers in virtual environments (Lee & Park, 2021).

The literature provides additional evidence for the function of Metaverse environments in fostering cultural awareness. Exposure to various cultural norms, values, and traditions in virtual reality promotes cultural understanding and competency (Pham & Tran, 2020). Metaverse environments facilitate the development of collaboration and interpersonal skills by providing a collaborative space for intercultural interaction and cooperation (Chen & Chiang, 2021). The literature and analysis corroborate that Metaverse environments provide transformative opportunities for cross-cultural collaboration, intercultural communication, and cultural and linguistic skill development in English language learning.

5.2.3 *Incorporation of cultural awareness activities*

Aligned with language education objectives, the study highlights the significance of cultural awareness activities in Metaverse environments for intercultural communication and cultural understanding in English language learning (Kim et al., 2021; Lee & Park, 2022). These activities promote cultural competence, reflective thought, language proficiency, and global consciousness among students. Through simulated scenarios, reflective assignments, and digital cultural portfolios, students acquire intercultural communication skills, develop an appreciation for cultural diversity, and contribute to the education of global citizens (Kim et al., 2021; Lee & Park, 2022). In addition, the accessibility of remote or marginalized cultures through the Metaverse broadens the worldviews of students and promotes inclusivity (Pham & Tran, 2020).

Therefore, incorporating cultural awareness activities into Metaverse environments is essential for intercultural communication and cultural comprehension in English language learning. These activities foster intercultural communication skills, reflective thought, the creation of digital cultural portfolios, global citizenship education, and access to marginalized or remote cultures. The Metaverse provides a transformative platform for language educators to cultivate students' cultural competence, language proficiency, and global awareness.

5.2.4 *Opportunities for reflection*

Metaverse environments offer valuable opportunities for reflection, thereby promoting intercultural communication and cultural awareness in English language learning. Participants emphasize self-reflection, cultural reflection, language reflection, critical reflection, and reflective writing, among other forms of reflection. Literature emphasizes the importance of self-awareness and development (Kim et al., 2021), intercultural competence and an appreciation for diversity (Pham & Tran, 2020), metacognitive awareness (Lee & Lin, 2018), critical thinking skills (Chen & Chiang, 2021), and written communication proficiency (Lee & Park, 2022). In addition, feedback and assessment within Metaverse environments play a crucial role in fostering reflective practice and continuous improvement among learners (Pham & Tran, 2020). Opportunities for reflection in the Metaverse contribute to the development of language proficiency, intercultural competence, critical thinking, and written communication skills (Kim et al., 2021; Pham & Tran, 2020; Lee & Lin, 2018; Chen & Chiang, 2021; Lee & Park, 2022).

There are significant pedagogical implications of incorporating Metaverse environments into English language instruction. These environments align with task-based language teaching (TBLT) and communicative language teaching (CLT) and provide authentic and immersive language learning experiences. Consistent with sociocultural theory and intercultural comprehension, they facilitate social interaction, cooperation, and cross-cultural interactions (Pham & Tran, 2020). Collaboration and peer feedback promote language development and a sense of community (Pham & Tran, 2020). In addition to personalized learning experiences, immediate feedback, and adaptive techniques, Metaverse environments permit learners to advance at their own pace (Kim et al., 2021). By implementing elements such as gamification, relevance to the real world, and a sense of community, these environments enhance motivation, intrinsic motivation, autonomy, and language proficiency (Lee & Park, 2022). Through immersive cultural experiences and cross-cultural collaboration, they also improve intercultural communication and cultural awareness (Pham & Tran, 2020). The use of Metaverse environments in English language instruction is consistent with current research, offering innovative methods to foster immersive language learning, boost motivation, and promote intercultural communication and cultural understanding (Kim et al., 2021; Pham & Tran, 2020; Lee & Park, 2022).

6. Conclusion

The findings of the study shed light on the pedagogical implications of using Metaverse environments in English language teaching. The integration of Metaverse environments promotes immersive language learning experiences by incorporating real-life contexts, meaningful language practice, and authentic cultural materials. This aligns with task-based language teaching (TBLT) and communicative language teaching (CLT) principles, emphasizing the importance of authentic and purposeful language use. In addition, Metaverse environments adopted in English language teaching also enhance interaction and collaboration, personalized learning, engaging virtual environment and immersive cultural experiences.

Various recommendations can be implemented to improve language acquisition in Metaverse environments. Encourage immersion by incorporating real-world scenarios, simulations, and role-playing activities to promote authentic language use. Include authentic cultural materials to increase cultural sensitivity. Enhance interaction and collaboration by developing collaborative assignments and virtual conversation exchanges to encourage social interaction and language practice. Personalize learning experiences by customizing learning paths, employing adaptive techniques, and creating visually appealing and interactive virtual environments with gamification elements to boost motivation. Promote intercultural communication and cultural comprehension by connecting learning activities to real-world relevance and keeping abreast of the most recent research and professional development programs in order to effectively integrate Metaverse environments into language teaching practices.

On the basis of the discussion and conclusion of this study regarding the pedagogical implications of using Metaverse environments in English language instruction, a number of recommendations and implications for future research can be made. Several important areas should be the focus of future research in the field of language-learning environments in the Metaverse. There is a need for longitudinal research to examine the long-term effects of these environments on motivation, language proficiency, and skill transfer. Studies comparing Metaverse environments to traditional teaching methods or other technology-enhanced approaches can aid in understanding the distinct advantages of these environments. Examining learner factors such as language proficiency and prior experience with virtual environments will cast light on individual differences in the effects of Metaverse environments. In addition, research should investigate the requirements for teacher training and the various pedagogical approaches utilized within Metaverse environments. Future research can advance our understanding of the potential of Metaverse environments for language education by addressing these areas. The field of English language teaching can advance evidence-based practices and technology-enhanced language learning by addressing these recommendations and implications for future research.

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Declarations

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