

# ***Metaverse: Innovation in Teaching Methods and Game Design for Teenagers' Second Language***

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**Abstract:** Metaverse is based on reality and beyond reality. Its popularity has made many people understand the world of virtual reality. Neal Stephenson (American writer) described that everyone in the Metaverse has a dual identity, and ontology can exist in the parallel world of the real world and the network at the same time. If the current Internet is regarded as a two-dimensional world, then the Metaverse can be regarded as a three-dimensional world that exists in parallel. It can let second language learners enter the Metaverse, and rely on AI (artificial intelligence), VR (virtual reality), and MR (mixed reality) to obtain a better environment experience of language learning and social language application, to solve the barriers of language learning, combine teaching with fun, and combine learning with fun. Learn from the relaxed and virtual real world, deepen learning, and apply emotion and language cultural motivation to the design of learning games. It is not only the innovation and improvement of second language classroom teaching methods, but also the perfect integration of second language learning and modern high-tech technology, and the complex international Chinese teaching is presented in a popular gamification method, which is more conducive to improving the teaching quality of second language learning.

**Keywords:** metaverse, game teaching, teenagers' second language learning

## **1. Introduction**

Game means have an important and irreplaceable significance in teaching, and the game teaching method is a new teaching method proposed under the background of quality education, aiming to combine teaching with fun, so that students can learn in a relaxed and pleasant atmosphere, so as to improve students' interest in learning. In the Chinese language international education class, integrating the games into the classroom teaching, which can effectively stimulate the students' interest in learning, and let the students learn in happiness. According to statistics, more than 20 million people learn Chinese abroad, among which overseas Chinese children are the main force of Chinese learning, and their demand for learning Chinese and Chinese culture is much higher than other Chinese learners in the world [1]. How to better meet the cultural needs of the majority of young people, it need to choose the appropriate teaching content and design effective teaching programs on the basis of comprehensive consideration of multiple conditions.

### 1.1. Metaverse

Surprisingly within more than half a century, the tide of informatization has grown from nothing to something and even to infinity, which has quickly spreaded across the world and influenced every person. Metaverse originates from informatization.

Education informatization has been upgraded from the beginning to the digitalization of education. Now it is rapidly moving towards the meta universalization of education.

Although the meta universe is not yet mature, AR, VR, MR and other technologies have been applied to different fields. For example, VR is used to watch the landscape and simulate flight driving. AR measures and compares the size of items to be purchased. It is believed that with the continuous development of AR, VR, MR, 5G, AI big data and other technologies, the meta universe has made our life more possible. Under this influence, the meta universe has also begun to enter the vision of the education industry. The integration of intelligent technology and media has added a variety of learning methods for learners, and allows learners to share resources at any place and at any time, cooperate with each other in learning, reduce boring recitation, and establish an endless real-time learning exchange environment that breaks through physical space and time. The duty of education should be considered from the essence of education.

### 1.2. Game-based Teaching

As a highly interactive and attractive educational concept, It can solve the problems of loose teaching content system, single teaching form, incomplete assessment method, etc. The game based teaching refers to the use of game design concepts to adjust the teaching mode, and the introduction of game based elements to integrate and optimize the teaching scheme, teaching content, teaching process and other elements, so as to enhance learners' learning motivation. The research of modern game theory can be traced back to 1938. Johan believes that game is a basic human activity and an inborn and acceptable behavior of human beings [2]. Gorgor invented the first game based teaching machine SAKI to improve the efficiency of student training [3]. Since the 1980s, the academic community has tried to combine the design theory of electronic games with teaching. Bowman took *Pac\_Man* as an example to apply game design theory to teaching design for the first time [4]. In recent years, some scholars have conducted research on game based teaching and have made considerable achievements. Kiesler believes that game based teaching is to integrate game based elements into the teaching process to guide learners to achieve their learning goals [5]. WHY Huang believes that the game based teaching is to skillfully design the learning process, reasonably use resources and integrate the game based elements into the teaching process on the premise of understanding the situation of learners and clarifying the learning objectives [6]. Determining and other scholars defined gamification as the introduction of game design elements in a non game environment [7]. Mishra and other researchers have shown that both entertainment games aimed at recreation and functional games aimed at education can significantly focus players' attention and improve their memory [8]. Karmela pointed out that students in the game based classroom showed higher participation than students in the traditional classroom [9]. Maria José Sousa and others conducted research on game based teaching in the field of entrepreneurship education and found that game based teaching can improve learners' leadership [10]. Putz after two years of research, students found that the game based teaching has significantly improved students' performance, and has a wide range of applicability [11]. Bai found that game based education can improve students' sense of achievement and enthusiasm for learning [12]. Antin and other researchers found that, due to people's pursuit of sense of achievement, virtual rewards can also become a reinforcement of learning reflection, and game based rewards play an obvious role in strengthening learners' reflection [13]. Landers pointed out that on the basis of psychological conditioned reflex theory,

game based teaching makes use of people's pursuit of goals, desire to control their own behavior, and expectation of self-worth to make the teaching process attractive and the teaching effect improved [14]. In the era of artificial intelligence, game based teaching can further improve learners' confidence through more timely intelligent feedback. Therefore, the intrinsic motivation of students is stronger, and the teaching effect is better than that of traditional teaching methods. Chung\_ Ho Su's research believes that learners' learning anxiety can be significantly reduced and their confidence in continuing learning can be strengthened through immediate feedback in the game based teaching [15]. Michael Sailer and other researchers believe that game based teaching can achieve good motivational effect through such game based elements as digital badges, virtual rewards and ranking lists [16]. Rob Van Roy also believes that gamification can stimulate learners' confidence through digital badges, completing challenges and other elements, and thus improve learners' learning motivation [17].

## **2. The Innovation of Teenagers' Second Language Teaching Methods and Game Design**

### **2.1. The Characteristics of Teenagers' Second Language Learning Need to Introduce Game**

Classroom teaching has always been the most important link in the second language teaching design, and also the basic way of second language teaching. It directly affects the quality of the implementation of teaching objectives. Classroom teaching is the integration of all factors of various philosophical concepts, theories, methods and teaching tools related to education and teaching. It is not a simple addition of teachers, students and textbooks. Teachers' teaching ideas, students' personality characteristics, teaching materials and other aspects will affect the classroom. Like the first language, learning a second language requires some objective conditions, such as a physically sound language controlling and operating organ, and a certain language environment; They must master pronunciation, vocabulary, grammar and pragmatic rules; They basically experience perception, understanding, imitation, memory and consolidation until the final application. However, second language learning also has very different characteristics from first language learning, such as different motivation and environment of learning subjects, different ways and processes, and especially differences in cultural factors. Classroom teaching is one of the most important ways in second language learning. The second language teaching is also characterized by intensive teaching. In the classroom environment, it is based on language contrast, focuses on the staged input of basic language knowledge, focuses on skills training, and aims to cultivate the communicative competence of the target language, while closely combining cultural factors. These characteristics determine that language interaction is the main content of the arrangement of the second language classroom teaching links, and language interaction is the main way of implementation. In each class type, language knowledge should be practiced. For example, oral expression function items should be tested in oral class, whether language information can be obtained from listening should be tested in listening class, and whether correct sentences can be constructed with grammar knowledge should be tested in grammar class. The teaching links of different course types are different, and naturally they will show different interactive characteristics. There is no doubt that games are a great choice for interaction. Whether in foreign countries or at home, games have been in the process of development. Whether in terms of content or form, games have gradually been used in more aspects, and games have gradually evolved into game teaching methods in teaching. Metaverse education can help to put students in the experience, not just by looking at it, but also by showing it in a three-dimensional space.

## 2.2. Game Design

According to the definition, the purpose of the game teaching method is to enable learners to learn, practice and consolidate what they have learned in the process of "learning by doing" and "playing", and to independently think, explore and research the knowledge for learning. Through the game teaching method, it can activate the classroom atmosphere, change the stereotyped and boring image of our country in the past, and make students happy to learn. More feasible teaching methods should be added to the structural system of TCFL. Metaverse education can realize TCFL to learn the most authentic and daily expression in Chinese real cultural background and real life scenes. This diversity of game design allows learners to improve their language ability from multiple angles and form a positive language migration. One of the characteristics of games is interactivity. In the classroom of TCFL, the advanced technology of metaverse can be used to create an atmosphere for everyone, bringing all teachers and students into the scope of language games, so that everyone can become the main participants of language games. Sykes and Reinhardt also points out to the five core features that digital games can promote the development of TCFL: goals, interaction, feedback, context, and ending. Students can interact verbally through metaverse education. Interactive content involves both the game context and the social context [18].

Language learning is divided into four levels: language knowledge, language skills, strategies and cultural awareness. Provide an immersive, interesting and productive language learning experience based on students' learning characteristics. Based on the set teaching objectives, the teaching objectives of Lesson 3, Unit 10, prepared by the domestic edition of the Chinese textbook "Chinese" for the second grade of primary school, "An Excellent Horse". The teaching objectives of this course are shown in the following table:

Table 1: Teaching objectives of "A Good Horse".

Objective	Classification	Instructional design
Cognitive goals	Vocabulary	1. Read 13 words such as "suburbs, scenery" correctly, and make no more than 2 words correctly. 2. Write 9 words such as "wave, scenery" correctly, and no more than 2 errors.
	Text	Read the text correctly, fluently and emotionally, and answer the changes and the reasons before after my sister and according to the text.
	Grammar	Understand that "again... again" sentence pattern represents the meaning of a thing that has two characteristics at the same time, and can form words and make sentences.
Skills target	Listening/ Speaking	1. Use VR to design the "real environment" described by the text, so that students can feel the sound and immerse themselves in the digital creation scene to accept the virtual sensory (listening, visual, taste, smell) signals. 2. Use AR to enhance the sense of reality of learning language, stimulate and enhance the language environment of our learning, and at the same time, perform the text in the form of dialogue body, and the language is natural and smooth. 3. Try to interact with other students in real time using MR. Use a sentence pattern "again... again".

Table 1: (continued).

	Reading	Use XR wearable electronic devices to create a good virtual and realistic environment, and read the text correctly, fluently and emotionally.
	Writing	Use the above mentioned VR, AR, MR, XR, 5G, AI technology to copy Chinese strokes and related writing knowledge, and make writing Chinese is not boring and difficult to understand. Can correctly write 9 words such as "wave, scenery" at a speed of 12-20 words per minute, with no more than 2 wrong words.
Emotional Culture Background	APL environment	<ol style="list-style-type: none"> <li>1. Imagine, talk about the pictures you imagine, and feel the beauty of spring.</li> <li>2. Students have a desire to describe their own experiences.</li> </ol>

### 2.3. Class Game Innovation

Metauniverse is a new world created by blockchain, intelligent and immersive devices in a virtual learning environment, which has a great impact on teachers' organization, guidance and management as well as students' interaction and learning in the learning scene, and affects teachers' and students' enthusiasm for interaction and learning. To improve the enthusiasm of students in the virtual learning scene, teachers should fully understand the situation of students, design interesting and meaningful teaching content, stimulate students' enthusiasm for learning, and improve students' enthusiasm to participate in interaction. Teachers should always encourage students to actively participate in interaction in the scene, express their own ideas and views, and enhance students' enthusiasm for discussion in the virtual learning scene, so as to achieve the purpose of language learning and application. a parallel space with the real world is built, and Sociolinguistic skills, language and culture and other metacognition. Thus, fun, entertainment and situational learning are integrated, and the learning motivation is stimulated by participating in gamified language learning.

### 3. The Influence of Metaverse on the Game Design of Teenagers' Second Language Learning Classroom

Based on 5G or higher level 6G technology, Metauniverse has high coverage, high speed, low delay, low energy consumption and large-scale equipment connection, providing learners with a real sense of immersion; In the meta universe, the language environment and scenes can be digitally transformed, real-time interactive dialogue and social networking to form a stable and lasting optimal language communication and communication environment settings, and achieve the best communication effect.

According to the previous research, the discourse patterns of the second language classroom teaching mainly include the introduction section, the new section, the practice section, the expansion section and the summary section. Among them, according to the differences in course type, course content, teacher style, etc., it is also necessary to summarize the sub lesson segments with different functions in each lesson segment. In most Chinese teaching, each class segment has its irreplaceable significance, which together constitute an organic whole of the Chinese classroom. Such as review, explanation of functional language, students' exercises, and students' autonomous

paragraph discourse expression. Therefore, as an integration of cutting-edge digital technology, our universe will be applied to all kinds of operational scenarios for young people's second language learning to achieve high-quality development of digital education, which will certainly open a new space for human digital education.

### **3.1. Perceptual Inquiry and Task Push**

Teachers are guides in the teaching process. In the teaching process, teachers should flexibly adjust the key and difficult points of teaching according to the teaching content and students' learning situation, rather than rigidly follow the established content in the platform courseware. Teachers can make full use of the background data of the meta universe digital platform to accurately monitor students' vocabulary mastery. First of all, teachers can grasp the overall learning situation and vocabulary learning situation of the student from a macro perspective. The overall learning situation should include five aspects, such as age and Chinese level, attendance, classroom performance, and homework completion. The vocabulary learning situation includes the students' easy to read and wrong words, easy to write and use words. The understanding of this situation will help teachers prepare for the classroom from both the teaching materials and students, and improve the pertinence of the classroom. Secondly, teachers can import the word teaching and practice of each class at each level on the platform, and pay attention to the students' word reading and writing in each class from the specific words. In addition, in each link of word teaching, teachers can record the words that students are easy to make mistakes, forget and misuse. In the subsequent classroom teaching and unit testing, they focus on reviewing such words until students fully master them.

### **3.2. Immersion Perception and Quality Improvement**

Use the Chinese character function of various online numerical software to strengthen vocabulary writing practice. In addition to traditional paper and pen writing exercises, students can also use electronic copybooks on Skritter, Art of Chinese and Writing Chinese Characters Game to practice the stroke order of Chinese characters. They can not only help students write Chinese characters, but also help students understand the pronunciation, meaning and even evolution history of the written Chinese characters. More importantly, they turn Chinese character writing into a game, which can reduce the boredom caused by repeated writing of Chinese characters with paper and pen. The improvement of Chinese reading and writing ability will bring them a greater sense of achievement over time.

### **3.3. Promotion of Game Based Teaching and Expansion of Language and Culture**

First, improve classroom management skills with the help of information technology and professional books. In teaching practice, effectively strengthen the understanding between teachers and students, and enhance the emotional exchange between teachers and students. This link has played a positive role in classroom teaching. Teachers can also use other network technologies to monitor students' online performance, such as the number of times to answer questions, the time to join and exit the classroom, the number of times to receive praise and the number of trophies received, and regularly reward and punish students according to the exported form. Teachers and students to build classroom rules is also an important way to improve the effectiveness of classroom management. In addition, teachers should practice various basic teaching operations in advance before teaching, such as playing courseware, playing games, using classroom tools, and the process of starting and finishing classes.

The second is to design novel and diversified online exercises to enhance the interest of vocabulary practice. One of the advantages of online teaching is that it can use a large number of



excellent network resources, such as games, videos and website resources. The practice form can be traditional writing, or you can try to use online interactive resources. The new online exercise can not only make up for the shortcomings that the current amount of homework after class is too small to meet the students' review needs, but also can be used as a new form of exercise to reduce students' boring mood and promote the update of teaching resources on the teaching platform. First of all, the teaching platform can delete the repetitive content and excessive mechanical exercises in the homework on the basis of retaining the existing exercises. Secondly, on the basis of improving the paper work, the teaching platform can also add games to the vocabulary practice. Online game is a good way to practice words and sentences writing and reading aloud. Movie and TV dubbing can serve the communicative practice of words, and dialogue with virtual characters can improve students' comprehensive Chinese ability.

Finally, the appropriate amount of Chinese test questions added to the homework is conducive to better Chinese teaching. Test the children's Chinese learning results before and after class, and use the test results to analyze the deficiencies of students' Chinese language ability at the current stage. The test results are helpful for teachers to design Chinese classes that are more suitable for students' learning needs.

#### 4. Conclusion

This paper uses the emerging technology of Metaverse, according to the game theory of the second language teaching design, through VR, AR, MR, XR, 5G, AI technology input and assumption, etc. Let's focus more on the field of meta-universe language teaching, make more innovations by judging these new input or interactive technologies, and make more contributions to the second language teaching. It can make students' learning process more relaxed and pleasant. Under the premise of maintaining the learners' enthusiasm, the virtual rewards of gamification teaching can bring higher satisfaction. Let these rewards or honors bring clearer guidance and motivate learners to move towards more challenging goals. Combined with the new technology in the era of artificial intelligence, the construction path of a set of gamification teaching design of mass innovation education is put forward in the three teaching behaviors of theoretical teaching, practical teaching and innovative application.

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