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# Extended Abstract— Cultural Learning Through Spherical Video-Based Virtual Reality: Facilitating Recognition, Reflection, and Identity Development

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**Abstract.** This work-in-progress paper presents our initial work on exploring how spherical video-based virtual reality (SVVR) can be used in cultural learning to help students develop their cultural recognition, reflection and identity. It focuses on discussing (1) the rationales behind our initiative and (2) the proposed pedagogical framework for integrating VR into Chinese cultural learning in the subject of Chinese language education in Hong Kong.

**Keywords**: VR, Chinese Language Education, Cultural Learning.

## 1 Introduction

Cultural learning plays a crucial role in both native and foreign language education, as it is essential for language learners to gain an insider's perspective on a culture. This not only fosters empathy for diverse viewpoints but also enhances learners' ability to appreciate a wide range of human experiences [1]. However, language teachers often overlook the cultural dimensions of language education, thereby missing opportunities to cultivate deeper cultural understanding [2]. To address this gap, researchers have highlighted the need to integrate cultural learning into language education [3-4]. The most effective way to promote cultural learning is through full immersion in a cultural setting over an extended period. This enables direct, in-person interactions with local communities, leading to a richer understanding of both the country and its latest developments [5-6]. However, such immersion experiences are often constrained by practical barriers, such as time and cost, making them less feasible.

Computer technology helps overcome barriers of time and distance, making it possible for people to engage in immersive experiences [7]. A growing body of studies has explored how technology can assist cultural learning, using tools like email, blogs, Facebook, and Skype to support cross-cultural exchange [3] [4]. However, these tools often fail to create authentic environments that fully immerse participants, limiting their sense of presence and engagement. Immersive technologies, like spherical video-based virtual reality (SVVR), offer a more promising alternative by providing realistic cultural experiences that enhance users' sense of presence and

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connection. While much of the existing research has focused on developing cross-cultural competence among foreign language learners [7] [8], fewer studies have explored how SVVR can support cultural learning for native language learners in multicultural regions like Hong Kong. This study aims to fill these research gaps by building on previous work in cultural learning and SVVR. A theoretical framework is developed, and a mixed-methods approach will be applied to explore the potential of SVVR in facilitating cultural learning in this context.

## 2. Literature review

### 2.1 Cultural learning

Cultural learning involves understanding one's own culture, recognizing behaviors, and identifying similarities and differences with others [9]. It involves the acquisition of knowledge and skills through interactions with the traditions, values, and beliefs of one's own or other cultures, which helps build a stronger appreciation and understanding of diversity [10-11]. This process enhances students' ability to communicate effectively across cultural boundaries, leading to improved collaboration and the generation of new ideas [7]. Additionally, cultural learning promotes empathy and reduces cultural biases, contributing to more inclusive and harmonious communities [7]. By participating in local cultural practices, learners not only strengthen their social values and self-confidence but also become cultural ambassadors capable of representing themselves on a global stage [7] [12].

Recognizing the importance of cultural learning, the Hong Kong Education Bureau has prioritized deepening K-12 students' understanding of traditional Chinese culture within Chinese language education [13-14]. This initiative aims to give students a comprehensive grasp of traditional Chinese culture, such as Confucianism and Taoism, emphasizing their practical significance in modern life. According to the 2021 Hong Kong Chinese Language Curriculum and Assessment Guide (Secondary 4-6), Chinese cultural learning is divided into three stages: recognition, reflection, and identity [15]. These stages guide students in understanding, critically evaluating, and ultimately integrating cultural values into their personal identities.

Cultural recognition refers to the shared meanings and perceptions among individuals in a specific time and place [16]. It represents the collective understanding of cultural elements in a region and is essential for enhancing interest and engagement in cultural learning. In other words, by incorporating culturally relevant practices, narratives, and tools, educators can create meaningful learning experiences that prepare students for a multicultural and interconnected world. By fostering connections with the culture being studied, cultural recognition encourages learners to appreciate its significance [16]. Cultural reflection refers to gaining insights into one's own thinking and emotional responses, while understanding how one's own culture shapes expectations and interpretations [17]. This reflective process is crucial in preventing misunderstandings as learners draw on personal experience during cultural learning [17]. Cultural identity refers to an individual's sense of belonging to a specific culture, influenced by factors such as language, nationality, and individual characteristics, along with the broader political and social dimensions of culture [18]. It plays a key role in cultural learning, helping learners engage with diverse perspectives while shaping their own identity through the experiences of others.

### 2.2 VR and SVVR

VR is an immersive technology that facilitates cultural learning by allowing students to engage in virtual experiences [19]. Its immersive nature allows users to feel present in a non-physical world, achieved through sensory fidelity, interactivity, and engagement [19]. By addressing practical challenges such as safety concerns,

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unpredictable weather, and time limitations, VR provides an ideal platform for cultural education [19]. VR offers a more engaging and authentic learning experience by enabling students to virtually visit historical sites and immerse themselves in the past, something that traditional methods cannot fully replicate [19]. For example, Diehl and Prins [19] explored the effects of VR in cultural learning. They found that VR enhanced students' awareness of insider cultural perspectives, and openness towards new viewpoints. Also, participants used their avatar's appearance to construct shifting cultural identities. However, high-fidelity, animation-based VR can be prohibitively expensive, limiting its widespread use in schools [20-21]. On the contrary, SVVR provides a more accessible and affordable option for teachers seeking to bring immersive experiences into their teaching practice [22]. SVVR is a fully immersive, cost-effective form of VR that is relatively easy to implement [22]. It uses 360-degree videos or photos, which can be sourced from platforms like YouTube or captured with a 360-degree camera [22]. While 360-degree media can enhance cultural learning by providing immersive visual experiences, it is important to recognize their limitations in realism and immersion. Specifically, SVVR provides a panoramic view but restricts users to observing from a fixed point, limiting interaction and engagement [22-25]. Researchers have found that SVVR can significantly enhance experiential learning and improve students' academic performance across various disciplines, including writing education [23], geography education [24], and professional training [25].

Overall, VR has great potential to enhance cultural learning by offering immersive, inclusive, and engaging experiences. However, its use in education requires careful planning, focusing on clearly defined learning objectives, attention to safety and health considerations, and ensuring inclusivity and thorough evaluation [23]. When implemented with an effective learning model, VR can be a powerful tool to help students develop knowledge, skills, and character.

## 3. Learner-Immersed Virtual Experiential Learning in Cultural Learning

We aim to use VR to fill the gaps discussed in Section 1. Our proposed pedagogical framework is based on Kolb's 4-phase Experiential learning model: Concrete experience, Reflective observation, Abstract conceptualization and Active experimentation [26]. This model is well-suited for VR-assisted learning because it effectively encourages learners to immerse themselves in realistic scenarios, fostering deeper engagement and understanding. The proposed framework includes five phases: Reading, First observation, Reflective thinking & observation, Conceptualization, and Experimentation (see Fig.1). In the reading phase, students begin by exploring teacher-selected materials that provide background information on Chinese culture (e.g., Honesty and trustworthiness). This phase aims to establish an initial cultural recognition. In the first observation phase, students enhance their cultural recognition by observing scenes presented through SVVR, which offers immersive cultural experiences. In the reflective thinking and observation phase, students first complete a worksheet designed to guide reflection. They then analyze the similarities and differences between the reading materials and their SVVR observations, fostering deep reflective thinking. Peer discussions follow, enabling students to refine their insights and enhance their worksheets. Subsequently, students reobserve the SVVR scenes, engaging further in the stages of cultural recognition-and-reflection sessions. Students consolidate their understanding and transform their reflections into conceptual knowledge. In the experimentation phase, students apply the acquired knowledge in a writing task, synthesizing their responses from the worksheet and further developing their cultural identity.

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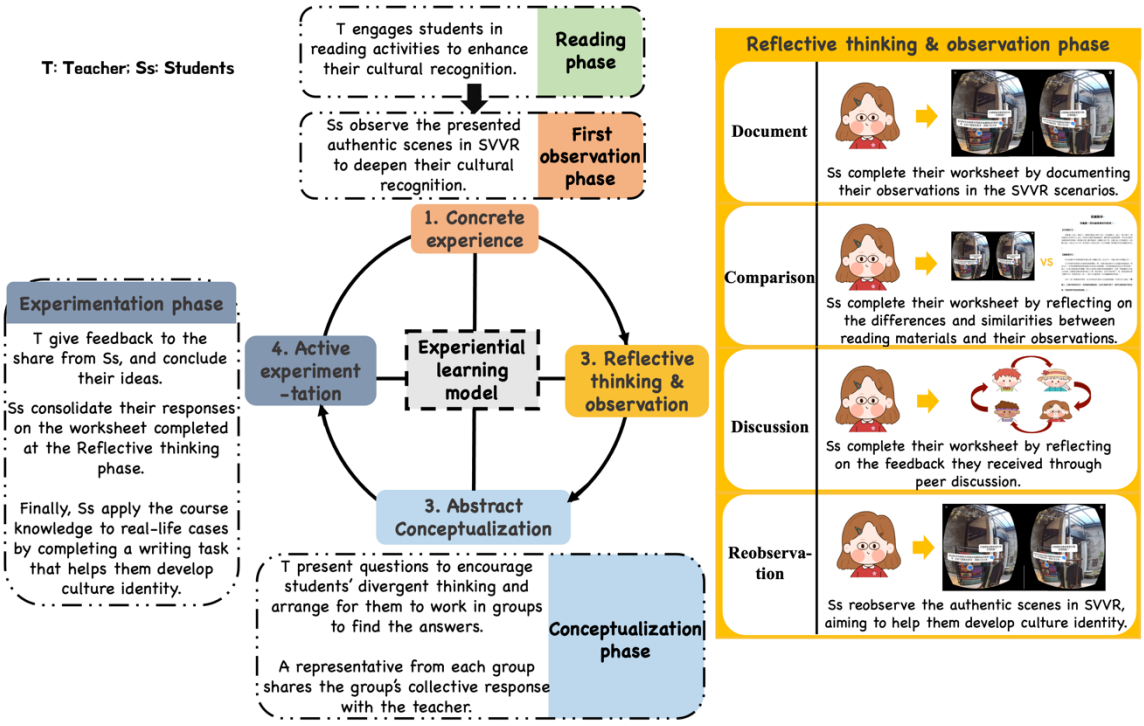


**Fig.1.** Learner-immersed virtual experiential learning framework.

The cultural learning course will be integrated into the formal secondary Chinese language curriculum in Hong Kong. We have designed a 15-day framework that combines in-lesson, face-to-face instruction with off-lesson individual learning activities (see Fig. 2). The first five days focus on developing students' cultural recognition; the next five days aim to deepen their cultural reflection through reflective thinking and observation, and the final five days are dedicated to fostering cultural identity. Fig. 2 illustrates the specific procedures for implementing the learner-immersed virtual experiential learning framework in a Chinese cultural learning module. A key component of our future work will involve conducting empirical research to evaluate the pedagogical effectiveness of this framework.

The choice and sequencing of in-class and off-class activities were designed to address practical constraints such as class time and resources. In-class activities focus on activities that guide students to learn Chinese culture in a logical sequence, while off-class activities aim to reinforce cultural and linguistic knowledge but also allow for iterative reflective and self-paced learning.

The selection of the scenes and learning materials is catered to the requirements of Chinese Language Curriculum and Assessment Guide (Secondary 4-6) [15]. These scenes were chosen to reflect culturally rich contexts and authentic settings that resonate with the curriculum's emphasis on language and cultural understanding. For instance, scenes exhibiting traditional festivals, historical landmarks, or culturally significant practices were included to provide students with contextualized opportunities to observe and analyze language use within its cultural framework.

By immersing students in these scenarios, the materials intertwine language and cultural knowledge, helping learners understand how language reflects cultural values, social norms, and traditions. For example, students could engage with materials showcasing culturally embedded expressions or idioms and explore how these reflect the underlying philosophies of Chinese culture, such as Confucian principles of harmony and respect. This

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approach not only fosters linguistic proficiency but also deepens students' appreciation of the cultural dimensions of language, bridging the gap between theoretical learning and real-world application.

A teaching Cycle

| | Timeline | Phases | |
|---|---|---|---|
| In-lesson (A 70-minute Chinese lesson) | Day 1 | Reading phase | Cultural recognition |
| Off-lesson | Day 2 | Students consolidate their understanding of the reading materials | |
| Off-lesson | Day 3 | | |
| In-lesson (A 70-minute Chinese lesson) | Day 4 | First observation phase | |
| Off-lesson | Day 5 | Students consolidate their observations | |
| In-lesson (A 70-minute Chinese lesson) | Day 6 | Reflective thinking phase | Cultural reflection |
| Off-lesson | Day 7 | Students consolidate their worksheet | |
| Off-lesson | Day 8 | | |
| In-lesson (A 70-minute Chinese lesson) | Day 9 | Reflective observation phase | |
| Off-lesson | Day 10 | Students consolidate their reflective observation | |
| In-lesson (A 70-minute Chinese lesson) | Day 11 | Conceptualization phase | Cultural identity |
| Off-lesson | Day 12 | Students consolidate their responses to the T's questions during the lesson by forming abstract principles based on the scenarios observed during the first-SVVR learning phase and reflective observation phase | |
| Off-lesson | Day 13 | | |
| In-lesson (A 70-minute Chinese lesson) | Day 14 | Experiment phase | |
| Off-lesson | Day 15 | Students consolidate their writing | |

**Fig.2.** Implementation of the framework in a 15-day teaching cycle.

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