

# Designing a Digital Game-Based Learning Environment for CSL Learners

Yi-Mei Lin<sup>a</sup>, Chi-Syan Lin<sup>b</sup>, Li-Hung Lin<sup>c</sup>, Hsueh-Yu Chen<sup>c</sup>,  
Ming-Huay Hsia<sup>a</sup>, Jung-Tsan Ma<sup>b</sup>

<sup>a</sup>*National Chung Cheng University, Taiwan*

<sup>b</sup>*National University of Tainan, Taiwan*

<sup>c</sup>*Kun Shan University, Taiwan*

telyml@ccu.edu.tw

**Abstract:** As China becomes more influential in the global politics and economy, Mandarin is likely to become an international lingua franca in the near future. Although the importance of learning Chinese seems to be well aware of, learning it is deemed exceptionally difficult for non-native Chinese speakers. The purpose of this paper is to describe the design decisions underlying a massively multiplayer online role-playing game (MMORPG) and its support to situated Chinese learning. The preliminary evaluation results indicated that both the metaphor used and the game narratives designed are suitable for CSL (Chinese as a Second Language) practices. The ultimate goal of the proposed game-based learning environment is to help learners develop competencies of the five C's in Chinese learning.

**Keywords:** Game-based learning, Chinese learning, flow, situated learning, MMORPG

## 1. Introduction

In their dialogue between the well-known historian Arnold Toynbee and Buddhist philosopher Daisaku Ikeda [15], they believe that the 21<sup>st</sup> century will belong to the Chinese. Similarly, the legendary business strategist Kenichi Ohmae [12] argues that the rise and success of globalization will make China become the exemplar of the new economic paradigm.

As China becomes more influential in the global politics and economy, Mandarin is expected to become an international lingua franca like English in the near future. One means to forecast linguistic flow is to examine international air travel [2]. The latest forecast by the International Air Transport Association [5] suggests that major changes will occur in Asia, a region that will by 2011 account for approximately one third of the world's total international air travel. Specifically, routes within Asia-Pacific will increase its share of international passenger traffic from 23% in 2006 to 27% in 2011, higher than routes within US domestic (25%) and within Europe (24%). This is equivalent to a 279 million increase in annual passengers over the five years. Since international travel brings people from different language backgrounds together, David Graddol [2], the author of "*The Future of English?*", thus indicates that most people may need to communicate more than one language and switch between languages for routine tasks, and predicts that Mandarin is the new must-learn language.

Results from the American Council on the Teaching of Foreign Languages and the Modern Language Association provide support to Graddol's prediction. The number of K-12 U.S. students studying Chinese is as much as 10 times higher than it was in 2000. Nationwide, more than 550 U.S. elementary and high schools offer Chinese programs, which is a 100% increase in two years. At the college level, enrollment in Chinese-language courses has increased 51% since 2002 [17]. In addition, in 2006 President Bush launched the National Security Language Initiative to further strengthen national security and prosperity through the development and improvement of Americans' foreign language skills. The plan proposed spending \$114 million on educational programs to expand the teaching of critical need foreign languages including Arabic, Chinese, Russian, and Hindi.

Although the importance of learning Chinese seems to be well aware of, Mandarin is identified as a Category III language by the U.S. National Virtual Translation Center [10], which is deemed exceptionally difficult for native English speakers. The linguist Jialu Xu attributes the notion of 'learning Chinese is not-so-easy' to teaching strategies, instead of to its belonging to a completely different language family. While designing CSL (Chinese as a Second Language) instructional materials educators often neglect the differences between eastern and western learning cultures. Compared to western learning culture, eastern learning culture is more teacher-centered and stresses on drill-and-practice exercises. If educators directly transfer the teaching methods the Chinese are used to into a learner-centered learning environment, CSL learners are likely to be confused and frustrated.

To provide better learning experiences for CSL learners, our work therefore involves developing a massively multiplayer online role-playing game (MMORPG), *Nine Class Club* (NCC), which emphasizes learning participation over content transmission. It is assumed that with a refocus on individual experiences and interactions among participants, the game-based Chinese learning environment may increase motivation and enjoyment felt by an individual, and in turn, enhance learning effectiveness.

## 2. The Design of NCC

NCC is a three-dimensional virtual environment combining strategies used in popular online games to engage participants with lessons from social theories of learning to facilitate cognition and metacognitive skills. McLellan [11] characterizes three-dimensional technology as a promising tool that evokes users' feeling of immersion, a perceptual and psychological sense of being in the space presented to one's senses. Once the level of immersive 'sense of presence' and engagement is achieved, an enhanced level of motivation, interaction, learning, and satisfaction becomes achievable. Previous research has examined the association of presence with learning satisfaction and social interaction in online learning. Social presence has been associated with enhanced online interpersonal interaction [7, 9, 16]. Additionally, students with high overall perceptions of presence often score high in terms of perceived learning and perceived satisfaction with their experiences in networked learning environments [4, 8, 9, 14]. Given the importance of keeping students interested and engaged in learning experiences, leveraging the appeal of 3D immersive technology to motivate students seems to have great potential.

### 2.1 The Architecture of NCC

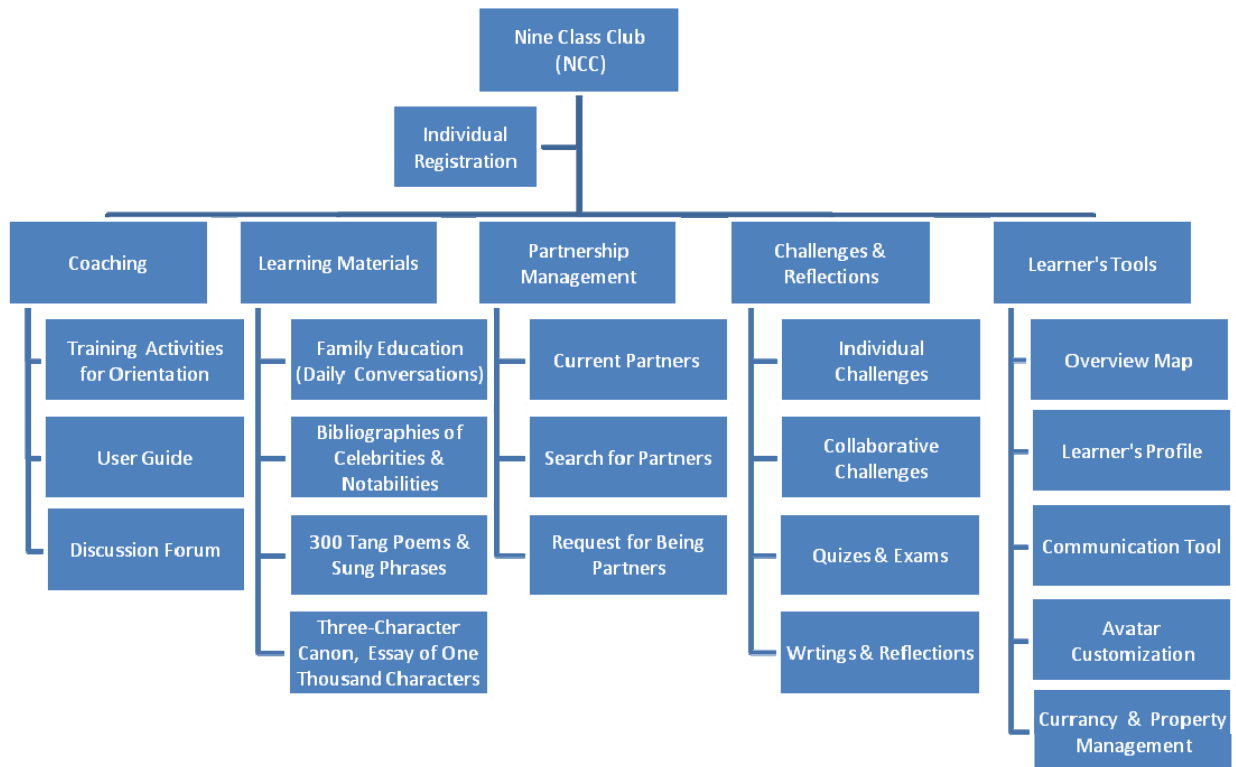


Figure 1. The architecture of Nine Class Club.

## 2.2 The Interfaces of NCC

The metaphor chosen for our research is based on the Chinese Civil Service Exam system in Ming-Qing Dynasties. The overview map of the ancient Chinese village is shown in Figure 2. The interfaces of the prototyped NCC game are illustrated in Figure 3 and Figure 4.



Figure 2. The overview map of the prototyped village.

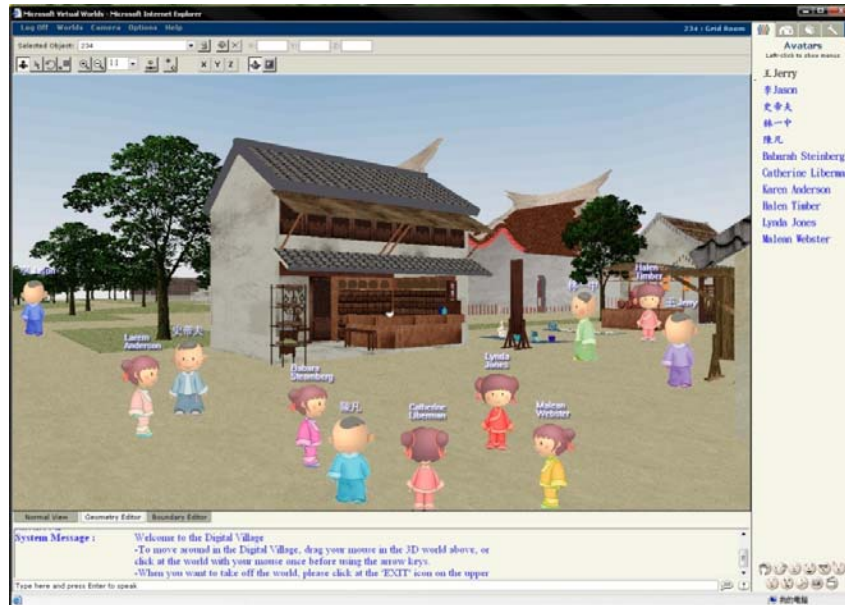


Figure 3. The interface of the NCC game.

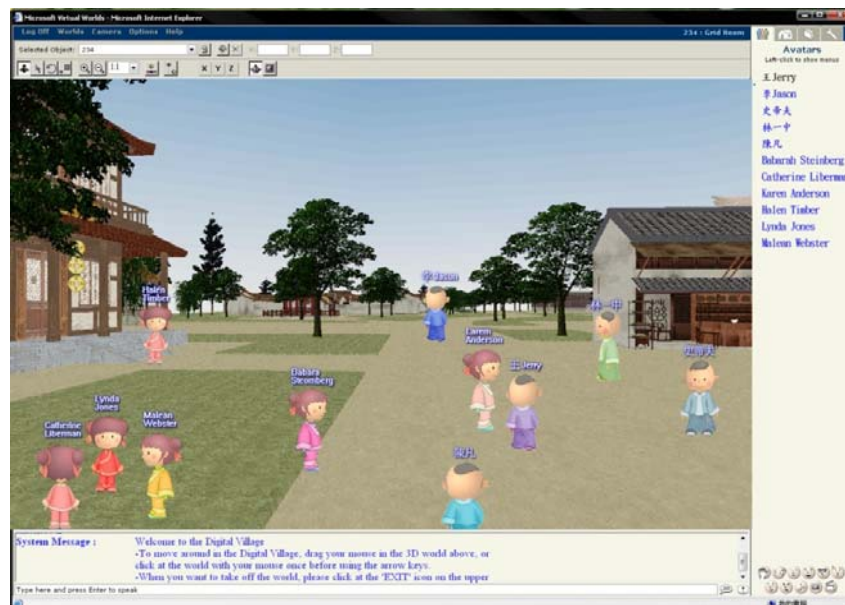


Figure 4. The interface of the NCC game.

### 3. The Next Step

Advocates of game-based learning argue that the implications of video games in educational context seem promising for supporting learning [1, 3, 6, 13]. The project therefore tries to integrate principles of game flow experiences into the design of a learning environment to facilitate Chinese language education. Additionally, through incorporating the key elements of situated learning into its design, NCC endeavors to actively engage learners in the process of learning as they explore the environment, interact with participants, solve small quests, and reflect on their experiences.

The evaluation paradigms used in this project include ‘quick and dirty’ evaluation, predictive evaluation, and usability testing. However, given that the research team has just completed a low-fidelity interactive prototype of NCC at the very moment, the proposal

only reports results from the ‘quick and dirty’ evaluation done by three experts in the field of Chinese culture and online games. The preliminary evaluation results indicated that both the metaphor used and the game narratives designed are suitable for CSL practices. The next step of the project is to complete a high-fidelity interactive environment for predictive evaluation and usability testing. The ultimate goal of the project is to help learners develop competencies of the five C’s (i.e., Communication, Cultures, Connections, Comparisons, and Communities) in Chinese learning.

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