科技与中文教学

Journal of
Technology and
Chinese Language Teaching

Volume 1 Number 1, December 2010

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The integration of an online 3D virtual learning environment into formal classroom-based undergraduate Chinese language and culture curriculum

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Abstract: This paper discusses the integration of "Second Life", an online 3D multi-user virtual environment, into a formal classroom-based undergraduate Chinese language and culture teaching program. The paper identifies a range of limitations with the formal curriculum from the perspective of educational theory and language acquisition theory. It then goes on to discuss the theoretical mechanism by which such integration can be achieved and finally discusses the viability and benefits of integration.

摘要： 本文探讨了如何将"第二人生"这个网络三维多用户虚拟环境融入大学本科汉语语言文化课堂教学。从教育和语言习得理论出发，本文揭示了传统课程设置的系列不足并讨论了如何将"第二人生"融入传统课堂的的理论体系以及融入的可行性和益处。

Key words: 3D virtual worlds, constructivism, Chinese language learning, Second Life, task-based learning

关键词： 三维虚拟世界，结构主义，汉语学习，第二人生，任务型学习

1. Introduction

The Monash University Chinese Studies Program (CSP) is one of the largest Chinese language and culture programs in Australia, with over 800 students enrolled in any one semester. The formal classroom-based curriculum for first year beginner students provides a reasonable mix of rules-based learning, drill and pattern-based learning, and conversation practice. Implementation of the curriculum also involves a mix of teacher-centred and learner-centred learning, although the balance has generally been biased

towards the former. The curriculum provides learners with exposure to a range of linguistic and non-linguistic 'inputs' and with opportunities to generate 'outputs', but these are confined to a classroom-based, textbook-centred learning context that involves little spontaneous or meaningful communication in the target language.

2. The formal classroom-based curriculum – structure, nature and limitations

The formal classroom-based curriculum is made up of four parts: lecture, seminar, tutorial and computer lab classes.

The two-hour lecture is essentially an 'input' based activity focused on explanations of new grammar, vocab and content, most of which is in English. 'Input' in the target language is essentially limited to modelling of pronunciation and sentence patterns. Due to class numbers, time limits and class format, there is little opportunity for students to generate 'output' in the target language during class. The main opportunity for 'output' comes in the form of periodic written assessment. Lecture classes are essentially teacher-focused and a passive learning activity for learners.

While still predominantly teacher-focused, seminar classes are designed to have a higher level of interactivity. 'Input' in the target language takes the form of language modelling and simple instructions from the teacher and exercises in the textbook. Learners have some opportunity to generate 'output' in the target language, though it is often limited to reading out answers to set exercises or set passages and drill and skill type exercises. With a few exceptions, learner 'output' in the target language is generally only produced when requested by the teacher, and thus tends to be passive. Due to the numbers involved and time limits, not every student gets an opportunity to generate 'output' and receive feedback each time they attend a seminar class.

The spoken tutorials have generally provided the best opportunity for students to receive 'input' and to generate 'output' in the target language. These classes are more learner-centred, with the teacher playing more of a facilitating role, and learners working together to create and perform topic-based dialogues. 'Input' comes via instructions and feedback in the target language from the tutor and through interaction with fellow students. 'Output' in the target language is mostly limited to performance of the dialogues in the artificial context of the classroom. 'Meaningful communication' in the target language is very limited in that use of the language in this context is an end in itself (practicing language), rather than a means to an end (using the language to achieve something else). Again, due to numbers and limited time, not all students have the opportunity to perform their 'output' and receive feedback from the tutor and their peers every time.

The web-based exercises undertaken by learners in computer lab classes, while very much learner-centred, have in the past generally not been well received by students. As interaction with fellow learners and the teacher is limited, students have expressed a preference for doing these exercises in their own time.

3. Questions for consideration

The limitations of the formal classroom-based curriculum for first year Chinese language and culture students described above have thus raised several questions. How could the formal classroom-based curriculum be made more learner-centred and better reflect widely accepted educational principles such as those of constructivism? What opportunities for 'meaningful communication' in the target language could be created within the formal classroom-based curriculum? If, as proposed by a number of language acquisition theorists, the role of 'comprehensible input' (Krashen, 1985) and 'comprehensible output' (Swain, 1985, 1995) is essential to the language learning process (see discussion below), how could more of these two elements be incorporated within the formal classroom-based curriculum?

In an attempt to answer these questions, it was decided that the computer lab classes would be used to conduct lessons in the 3D online virtual world Second Life. In 2007, Monash University purchased its first 'region' for general educational and research use[1]. In 2008, after the purchase of a 'region' dedicated to the learning and teaching of Chinese language and culture[2], first year and third year undergraduate students began classes in Second Life as an integrated part of their formal classroom-based curriculum.

4. Second Life as an online 3D virtual learning environment

Recent years has seen a continual growth of interest and investment of time and resources in 3D simulations, games and virtual environments for teaching and learning across a broad range of disciplines and institutions (Dalgarno & Lee, 2010; Henderson, Huang, Grant, & Henderson, 2009). Educators and educational institutions around the world see great potential for these platforms as 3D virtual learning environments (3D VLEs) that provide the possibility of rich learner engagement, as well as the ability to explore, construct and manipulate virtual objects, structures and metaphorical representations of ideas (Dalgarno & Lee, 2010).

Second Life is one of over 250 online virtual worlds (Ciaramitaro, 2008; Henderson, et al., 2009). An online virtual world is a three-dimensional graphical space that resides on a computer server(s) connected to the Internet and accessed via three-dimensional graphical representations of the users (avatars). While often perceived of as being similar to 3D computer games or massively multiplayer online role-playing games, some virtual worlds like Second Life, Croquet, Project Wonderland, Olive, Active Worlds, web.alive, etc., are not per se games (Ondrejka, 2008). They do not have pre-set game rules, objectives, roles and environments, but rather are flexible 3D virtual spaces that can be, to a lesser or greater degree, configured by the users themselves to suit their specific needs. These needs can be game-like, but are increasingly oriented towards social networking, education and training, and business (Ondrejka, 2008; Salt, Atkins, & Blackall, 2008).

While not unique to virtual worlds, there are two other important affordances offered by these online spaces. The first is the high level of synchronous interactivity (via text and voice chat, gesture and movement) that greatly facilitates peer-to-peer and student-to-instructor real-time interaction regardless of actual physical location of the participants. The second is the potential for asynchronous interactivity via persistent digital objects such as whiteboards, bulletin boards, slideshows, notecards and programmed non-player characters, which the learners/avatars can interact with even though the 'owner' is absent or offline (Henderson, et al., 2009). It is this high level of synchronous and asynchronous interactivity and configurability of the virtual environment that has provided a unique opportunity for meaningful communication in the target language and for creating an environment rich in 'comprehendible input' and 'comprehendible output' for the first year Chinese language and culture students at Monash University.

5. Constructivism – three perspectives

In a paper entitled *The Potential of 3D Virtual Learning Environments: A Constructivist Analysis* (2002), Dalgarno summarises and re-casts Moshman's discussion of three broad approaches to constructivist learning. Moshman calls these approaches endogenous, exogenous and dialectical constructivism (1982). Each approach is underpinned by several basic principles at the heart of constructivism: knowledge is actively 'constructed' by the learner and not simply passively absorbed; new knowledge is constructed on the foundation of, and at times in contrast with, existing knowledge and experience; each learner constructs knowledge in their own way.

The three approaches differ in terms of the locus of learning. In the exogenous category "knowledge is derived from one's environment" and is a "reconstruction of structures (empirical relationships, presented information, observed behaviour patterns, etc.) pre-formed in the external reality" (Moshman, 1982, p. 373). For endogenous learning, the "locus of activity in the construction of new knowledge is … the organism rather than the environment" (1982, p. 374). In other words, new knowledge is developed through "a reflective abstraction of new structures via intercoordination of, and/or metacognitive reflection on, current structures" and not via an "empirical abstraction of information from the environment" (1982, p. 374). Dialectical constructivism involves, as the name suggests, "continuing interactions between organism and environment". "New knowledge is a constructed synthesis which resolves the inevitable contradictions arising during the course of such interactions" (1982, p. 375). Interaction with the environment clearly includes social interaction with peers and instructors (and others in society in general), and indeed it is this social interaction as the source of new knowledge that forms the core of many of the modern applications of constructivist learning theory.

We would argue that with the addition of interactive lessons in a 3D virtual learning environment like Second Life these three perspectives can be effectively combined within the overall structure of a formal language and culture curriculum with large class sizes to address some of the limitations of the existing curriculum outlined

above. Indeed, Moshman sees exogenous and endogenous learning almost as a subset of dialectical constructivism, and certainly argues for a partial integration of the three paradigms (Moshman, 1982).

6. Integrating Second Life into the formal classroom-based curriculum

6.1 An educational perspective

Integrating learning in a 3D VLE like Second Life into a formal undergraduate language and culture curriculum is one way of effectively bringing together the three constructivist paradigms and addressing some of the limitations outlined above. Lectures provide the structures "pre-formed in the external reality" by presenting the rules of the target language and examples of those rules in action, and are thus of an "exogenous" nature. Seminars provide "exercises requiring the learners to be cognitively active" and to "form and refine their knowledge representations" through formal pattern exercises (Dalgarno, 2002), and are thus also mainly exogenous in nature. We would argue that the speaking-based tutorials fulfil the requirements of endogenous constructivism as outlined by Dalgarno in that the role of the tutor is as a "facilitator in providing experiences that are likely to result in challenges to learners' existing models"(2002, p. 2). The experiences are the topics set for the dialogues that students create and perform, with the challenges coming from both the linguistic and cultural content inherent in each topic, as well as the instructive feedback provided by the tutor. We would argue, however, that the tutorials only fulfil the requirements of dialectical constructivism outlined in Dalgarno in a 'weak' form in that the dialogues performed by students are (a) not 'meaningful communication' and (b) out of context, and therefore not realistic. The collaboration engaged in by students is essentially limited to the construction and performance of artificial dialogues and is usually restricted to pairs. We would thus argue that this is a 'weak', and ergo inadequate, form of dialectical constructivism.

This is where we see a role for the task-based learning undertaken by students in Second Life in completing the picture/framework. The tasks undertaken by students in their lessons in Second Life fulfil the requirements of dialectical constructivism (and thus comply with the basic principles of constructivist learning) in a 'strong' from by facilitating broader and deeper collaborative work and by providing a realistic, meaningful context for the use of the vocabulary, grammar and cultural knowledge learned in the lectures, seminars and tutorials. Because tasks are performed in a context that generally reflects the context of the real world and in an environment that simulates the real world with a reasonable degree of fidelity[3], engagement in and completion of the tasks do provide "realistic" (Honebein, Duffy, & Fishman, 1993) and "authentic" experiences (Lebow & Wager, 1994; Reeves, Herrington, & Oliver, 2002; Weasenforth, Biesenbach-Lucas, & Meloni, 2002). Opportunities for 'comprehensible input', 'comprehensible output', and 'meaningful communication' are also thereby increased greatly. We would argue that this is a 'strong' from of dialectical constructivism.

6.2 A language acquisition perspective

'Comprehensible input' is a hypothesis first proposed by Stephen Krashen (1982). He purports that language learners acquire language by hearing and understanding messages that are slightly above their current second language level. In everyday contexts the degree to which 'input' is comprehensible is extremely variable. The multiple information channels available in 3D VLEs like Second Life enable the level of 'input' to be better tailored to the comprehension levels of specific groups of learners than is possible in similar contexts in real life. What a learner might not understand from text-based information might be better understood from visual observation of the surrounding environment or through interaction with objects in the environment (clicking an object to hear an audio file for pronunciation) or agents within the environment (other learners, automated non-player characters).

We would argue that Krashen's concept of i + 1 is not incongruous with the Piagian idea embodied in exogenous constructivism of learning being seen as "fundamentally an accommodation of the organism's prior structures to those imposed by its current environment" (Moshman, 1982). In Krashen's formulation of i + 1, "i" includes extra-linguistic "knowledge of the world and of the situation, that is, the context" (Wikipedia, - Comprehensible Input). Thus, 'comprehensible' input' includes both linguistic and contextual information. The content of our Second Life lessons is based closely on content students have previously encountered in their textbooks. When designing the task scenarios, in addition to incorporating as much material as possible that students are already familiar with, extra linguistic and contextual material drawn from real life scenarios is also incorporated. Learners thus construct new knowledge and structures through using existing knowledge and structures to explore and interact with the multi-channel 'input' they encounter when completing the set tasks.

Developed by Merrill Swain (1985, 1995), the 'comprehensible output' hypothesis states that learning takes place when encountering a gap in the linguistic knowledge of the L2. By noticing this gap the learner becomes aware of it and might be able to modify their output so that they learn something new about the language. Although Swain does not claim that comprehensible output is solely responsible for all or even most language acquisition, she does claim that under some conditions, 'comprehensible output' facilitates second language learning in ways that differ from and enhance input due to the mental processes connected with the production of language (production forces learners to pay some attention to form and to process syntactically). Swain defines three functions of output: 1. **Noticing function**: Learners encounter gaps between what they want to say and what they are able to say and so they notice what they don't know or only know partially in this language. 2. **Hypothesis-testing function**: When a learner says something there's always a hypothesis behind it e.g. about grammar. By uttering something the learner tests this hypothesis and receives feedback from an interlocutor. This feedback enables them, if necessary, to reprocess his hypothesis. 3. **Metalinguistic function**: Learners reflect about the language they learn and hereby the output enables them to control and internalize linguistic knowledge.

Again, we would argue that Swain's concept of 'comprehensible output' correlates well to the principles of constructivist learning. The task-based learning that takes place in Second Life provides excellent conditions for the implementation of each of the three functions outlined by Swain. As in real life, learners are required to interact with the 3D VLE and the objects and agents within it to complete the set task, giving them the opportunity to test linguistic and non-linguistic knowledge learned in the classroom (Harris & Graham, 1994) and receive direct and immediate feedback as a consequence of their 'output'. In the case of our Second Life lessons, failure to produce 'comprehensible output', to communicate appropriately, can lead to a learner being unable to move towards completion of the set task. In order to move forward, learners have re-assess their communicative strategy ('notice' where any gaps in communication might exist) and develop a new strategy that will enable them to continue to progress to the end of the task.

The communication engaged in by the students in the target language is 'meaningful' in that it is a means to an ends, which in crude terms is the completion of the set task. In the process of completing the set task, students are required to explore and understand information provided in written, graphical and/or auditory form and through the surrounding environment in teams, and are thus exposed to a variety of meaningful 'inputs' that contribute to the forming of new knowledge essential to completing the task. They in turn have to generate meaningful 'output' as part of their interaction with their peers, teaching staff, a range of digital artefacts that form part of the environment and the lesson, and with the non-player characters imbedded in the environment.

7. Student-focused learning in Second Life – an example

In the constructivist view of learning, collaborative work is important with 'learners working together and developing their understanding of concepts through a social learning process' (Dalgarno, 2002). From the very first lesson on basic Second Life skills, our first year Chinese language and culture students are asked to form teams, and indeed the process of forming teams itself becomes a step in their acclimatisation to the virtual environment and to interacting with their peers.

One lesson in Second Life requires learners to complete two tasks. Students are divided into teams using a system of coloured flags that resemble ancient Chinese battle flags and are required to wear coloured team T-shirts for easy identification. To complete the tasks in time and successfully team members need to work together closely. The tasks consolidate previously learned vocabulary and concepts as well as introduce learners to new linguistic and non-linguistic information. Completion of each task requires a combination of reading textually-based information, listening to audio-based information, visually scanning the virtual environment, conducting conversations with automated non-player characters ('bots') and interacting with automated objects in the environment (e.g. restaurant menus, automatic ticket selling machine, air conditioners, etc.). The role of the teachers is (a) to create the environment / task / instructions /experience (b) scaffold

learners as they work towards completion of the task and (c) confirm that learners have successfully completed the set tasks.

The first task involves purchasing a train ticket to Beijing from the Chinese Island railway station. Each team of students is provided with a different set of criterion (purpose of travel, budget, desired arrival time) which determines what ticket they should buy. Success is measured by purchasing of the correct tickets for the whole team (the tickets can be visually inspected by the teacher). The second task involves enquiring about long-term accommodation for a foreign student studying in China. Teams are given the address of a real estate agent on the island and a list of information they have to gather. Visual inspection of potential accommodation is also required. Success is measured by answering a series of questions with correct information.

The advantages of this kind of team arrangement are obvious. Firstly, it puts the students at the centre of the learning process. Secondly, with more experienced student-mentors in each team to take care of many of the problems encountered and to keep the teams moving, the teachers are to some extent freed up to move amongst the learners, both virtually and in the computer lab, and provide more individualised assistance as required. Help from more experienced team members and individualised attention from the teachers enables better activation of learner's ZPD (Zone of Proximal Development), which Vygotsky defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (1978, p. 86). Thirdly, the forming of teams facilitates the socialisation and peer-to-peer communication process. Fourthly, it makes the teacher's task of managing and keeping track of a large number of learners a good deal easier.

8. Student feedback

A post-lesson survey was carried out on 112 first year Chinese language and culture students after one lesson in Second Life in 2009 focused on familiarising them with the environment and the skills necessary to function in the environment. The survey focused on the question of whether or not students saw learning Chinese in Second Life as an 'acceptable' mode of learning, and in particular, whether they felt there was any benefit from the type of collaborative learning advocated by dialectical constructivism and outlined above. Analysis of the survey data has clearly shown that students are on the whole comfortable with the platform/environment and importantly, 90% of students surveyed felt that they benefited from collaborative interaction with the other members of their group during completion of the set task (see Table 1 on next page).

Table 1: Results from Student Survey

Question	Results				
1. How much access do you have to a computer at home / where you spend most of your time?	**Very limited**	**Limited, but enough to do what I need**	**As much time as I need**		
	7.1% (8 people)	26.8% (30 people)	66.1% (74 people)		
2. Do you have a fast broadband Internet connection (at home)?	None	Excruciatingly slow - even pages of text take a long time to load onto my screen	Slow - text loads but I have to wait for images to appear	Medium - I don't have to wait for pages too often but videos and other large files take a while	Fast - I rarely have to wait for files (including watching long you tube videos)
	2.7% (3 people)	1.8% (2 people)	5.4% (6 people)	59.8% (67 people)	30.4% (34 people)
3. Have you spent time in a 3D virtual world or played a 3D game with an avatar before?	**Never**	**A few times**	**Many times**	**Frequently**	**No response**
	44.6% (50 people)	36.6% (41people)	11.6% (13 people)	5.4% (6 people)	1.8% (2 people)
4. Did you find mastering the basic skills (for example flying, zooming your camera, 'wearing' clothes and other items, etc.) difficult?	**Very difficult**	**Difficult**	**Easy**	**Very easy**	**No response**
	2.7% (3 people)	22.5% (25 people)	56.8% (63 people)	18% (20 people)	0.9% (1 person)
5. Do you feel comfortable in the Second Life 3D environment?	**Very uncomfortable**	**Uncomfortable**	**Comfortable**	**Very comfortable**	**No response**
	0% (0 people)	18% (20 people)	65.8% (73 people)	16.2% (18 people)	0.9% (1 people)
6. Was having peer support helpful learning the basic skills?	**Not relevant**	**Only sometimes**	**Most of the time**	**All of the time**	
	8.9% (10 people)	2.7% (3 people)	49.1% (55 people)	39.3% (44 people)	

In order to establish a base-line for measuring the level of comfort or otherwise students might have with learning in the Second Life environment from a technical / skills perspective, a number of questions were asked about access to computers and the Internet at home, previous experience with similar virtual environments and actual perceived level of difficulty in mastering skills specific to operating within the environment. The majority of students appear to have relatively good access to computers and the Internet at home (66.1% and >90%) and thus were reasonably familiar with both these basic requirements for using an online 3D VLE. Despite the majority of students having had little or no contact with similar virtual environments previously (approx. 80%), over 70% did not find mastering basic skills necessary for engaging in learning in the Second Life environment difficult to master and over 80% felt 'comfortable' in the environment. With respect to the collaborative nature of the environment and the tasks concerned, over 90% of students felt

that scaffolding provided by peers was indeed helpful, which is consistent with the dialectical constructivist view of learning.

A second survey was carried out after a lesson on eating in a virtual Chinese restaurant which focused on the issue of what the students themselves thought was their biggest gain from the specific lesson in Second Life. Detailed findings have been published in the conference proceedings of the 8th International Conference on Chinese Language Pedagogy held in Kunming, China in June 2010, however, it should be noted that a significant number of students (approximately 50%) believe that they benefited from the lesson not just in terms of linguistic knowledge, but also in terms of having had a realistic linguistic and cultural experience that linked classroom-based learning with real life (Huang & Grant, 2010).

Another important measure of the efficacy of language and culture learning in 3D VLEs like Second Life Further is that of self-efficacy. In 2009 a research project was conducted that aimed to explore the proposal that a language lesson in Second Life could sustain or improve students' self-efficacy beliefs through learning activities favouring selective language performance. The quantitative results from the pre and post questionnaires supported the research proposal by indicating a statistically significant increase in student' self-efficacy beliefs in using Mandarin in real-life Chinese settings (Henderson, et al., 2009). Further follow up research is planned for 2010.

9. Conclusion

Over a period of a number of years, faculty engaged in the teaching of Chinese language and culture to first year undergraduate students at Monash University observed a number of pedagogical and logistical limitations in the formal classroom-based curriculum. The curriculum was perceived to be overly teacher-focussed. Due to the structure of the curriculum and large class sizes, inadequate opportunities were available for students to construct new linguistic and non-linguistic knowledge and skills in other than classroom-based and textbook-based contexts. In particular, few opportunities were available for learners to engage in meaningful communicative activities based in realistic contexts that could potentially consolidate existing knowledge and generate new knowledge.

In 2008 the decision was made to incorporate learning in the rich online 3D virtual environment of Second Life as one way of addressing these issues. Since then over 400 hundred Monash Chinese language and culture students (first and third year) have undertaken Chinese language and culture lessons in Second Life and these lessons are ongoing. Formal and informal feedback from students has shown that these lessons are popular and have gone some way to addressing the limitations outlined. However, the authors believe that further research is needed to look at issues such as the effectiveness of learning in such an environment in terms of language and culture learning outcomes and the transferability of linguistic and non-linguistic knowledge and skills learned in the virtual environment to the real world environment.

Notes

1. The original Monash region in Second Life can be accessed by entering the following URL into a standard Web browser, after which a separate page will be opened with a link to the region: secondlife://monash%20university/123/136

2. The Monash region in Second Life dedicated to teaching Chinese can be accessed via the following URL: secondlife://monash%20university%202/83/89/26

3. For a more detailed discussion of 'fidelity', see Dalgarno and Lee (2010).

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Enhancing the learning of Chinese with Second Life

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Abstract: This article reports on a study that incorporates SL into the curriculum of university Introductory Chinese course in Fall 2009, including its implementation and evaluation. Using the existing resources of the SL Chinese School created by Michigan State University, 7 learning tasks were designed to supplement teaching throughout the semester. Along with the face-to-face instruction in class, students were required to study by completing the tasks alone, or with their peers or the teaching assistant in the SL Chinese School outside of the classroom. In performing the tasks, students practiced what was being learned in the classroom, and explored cultural aspects relating to the language. We will discuss both the teaching experience of including SL in the curriculum from the instructor's perspective, and the feedback from students on the learning of Chinese within the virtual world. Recommendations are provided for researchers for future directions as well as for practitioners for effective use of SL in the Chinese classroom.

摘要：本文报告大学初级中文课程对第二人生虚拟软件的应用实践。在为期一个学期的教学中，我们设计了 7 项任务，要求学习者独立或合作完成。我们发现，学习者通过尝试这些任务，可以有效地复习课堂内容、学习文化知识。本文从教和学两个角度探讨第二人生在中文教学中的可行性，并对将来的研究和实践提出建设性的意见。

Keywords: Multiuser virtual environments, Second Life, virtual learning

关键词：多用户虚拟环境，第二人生，虚拟学习

1. Introduction

Multiuser virtual environments (MUVEs) have become an emerging tool in the field of education in this information era. Second Life (SL) developed by Linden Lab, is the best known and the most popular MUVEs with over 4000 people registered on the SL Educators List as of the summer 2009. They are people who are interested in exploring SL, or who are currently engaged in SL-supported education (Kingsley and Wankel 2009). This is not to mention millions of other account-registered users. As a

development space in the format of online 3-D virtual world, SL is, in terms of content, exclusively user-generated. Anyone can enter SL for free. Residents, i.e., those who inhabit the SL world, are able to create a digital character (avatar) to represent themselves, using it to interact with others from around the world. They can not only create almost anything they can imagine but also share the result with others and, thereby, develop interactive and immersive environments. This interaction is unique in that users can fully participate in a virtual world in real time just like they do in the real world. For instance, they can communicate with each other by sending an instant message, verbal exchange, or gesture; they can read a note card and keep it for future use if necessary; they can even watch multimedia presentations. Because of these user-created, community-driven features, SL has, since its inception in 2003, attracted increasing and considerable attention from researchers and practitioners, including foreign language educators (e.g., Clark, 2009; Cooke-Plagwitz, 2008, 2009; Kuriscak and Luke, 2009; Wang et al., 2009). Using six criteria proposed by Jin and Xu (2009), Xu (2010) found that the SL environment, as compared to other computer programs, achieved the highest scores with respect to its effectiveness in the teaching and learning of foreign languages. Some unique potentials of SL as compared to the traditional classroom-based language teaching are well summarized by Cooke-Plagwitz (2008, 2009). Among many other advantages of using SL in foreign language education, there are three that should be highlighted. First, SL enables learners to create their own avatars, which can effectively help introverted students to participate and learn. Second, SL provides a collaborative learning setting, which encourages students to co-construct knowledge. Third, SL forms an immersive environment, which makes students' language practice contextualized.

A major reason for the growing attention to the use of MUVEs like SL for educational purposes is that the students whom we teach nowadays are part of the "Net Generation"—a term first coined by Tapscott (1998) and later used by Oblinger and Oblinger (2005). Though different from each other with respect to the definition of the timeframe during which the Net Generation was born, they noted some characteristics of this particular group: (i) preferring to work as part of a group or team; (ii) enjoying the learning by doing; and (iii) desiring to access information immediately and easily. This kind of learning behavior is the direct result of recent advances in information technology, such as television, computer, Internet, iPhones, MP3, iPod, iPad, etc., as well as video games. Having grown up with various entertaining digital gadgets, most of which are designed to help them learn, Net Generation students or "digital natives" (Prensky, 2001) come to school with an expectation that they are learning for fun (Hay, 2000). Consequently, as observed by Oxford and Oxford (2009), in order to reach and teach these native speakers of the digital languages associated with computers, video games and Internet, educators must revisit and revise traditional pedagogy, and design and develop new techniques using the media and methodology that they understand. Trevett-Smith (2010) made a similar remark, "At a time when students will turn to Google rather than visit the library, or search Wikipedia instead of asking for a reference librarian, professors need to rethink how we use technology in our classrooms."

It is readily apparent that educators of the 21st century must explore the use of technology to support learning. Nonetheless, how to effectively apply technology in

educational settings in order to advance learning outcomes remains a question to be answered. In particular, how should the MUVEs like SL be integrated into the Chinese curriculum so as to make the learning more effective and enjoyable? Oxford and Oxford (2009, p. 3) claim that "teachers cannot simply use technology for technology's sake; they must take advantage of specific age- and content-appropriate tools to accomplish specific pedagogical objectives." This research attempts to examine whether the SL environment supports the learning of Chinese for university students. The ultimate goal of the study is to identify appropriate ways to use SL to enhance student learning.

2. Second Life in Education

According to Clark (2009), there are at least 250 colleges and universities in the world that apply SL to promote teaching, support learning, and/or facilitate research in nearly all disciplines. Much work has been done exploring and examining the function of virtual world for higher education. *Higher Education in Virtual worlds* (Kingsley and Wankel, 2009) is one of the first serious publications that targets educators who are interested in using MUVEs in their teaching practice. Covering both the theoretical perspectives and the practical case studies of the use, and the potential use of virtual work in higher education, their book offers a wide range of valuable insights, and suggestions for educators, whether they are novice or experienced in technology-supported teaching.

At the university where the author is working, the educational benefits of SL have been exploited since 2007 when a piece of "land" was leased, which was later built into virtual Pirate Island for the sole use of the university community. Instructors of different disciplines have thus been able to engage students to learn by either creating things or using the resources specially developed on Pirate Island. For example, graduate students in the English Program were able to co-create a learning environment, i.e., House of 7 after Hawthorne's novel, The House of Seven Gables, within SL, while taking a literature course (Balkun et al., 2009). This case study shows, among other results that, with the integration of SL, the orientation of the course undergoes a transformation from teacher as "communicator of knowledge" to student as "builder of knowledge", which is difficult to achieve in the real-world classroom. Salt Marsh Dynamics (Trotta and Marian, forthcoming) is a case-based learning scenario, which makes the learning of endangered eco-systems possible for college students taking Ecology and Environment Geology courses. Such community and situated learning effectively supports team building and creative problem solving skills. In a series of studies (Hewitt et al. 2008; 2009; 2010), healthcare administration faculty used the Play2Train simulation, a virtual world platform to conduct training in SL adopted by a variety of academic and health institutions, to help both on-campus and online students in the Master of Healthcare Administration to learn how to prepare for, and manage crisis and emergency risk communication. By applying the emergency preparedness best practices in a real-time virtual learning scenario, students learned how to communicate during a crisis, think critically, and develop collaborative leadership as well as decision making skills.

With respect to foreign language education, there has been extensive research on the effects of virtual world learning. For example, Clark (2009) explored teaching hybrid Spanish courses with the instructor teaching grammar and organizing communicative activities in class while students discussing topics and completing projects in SL outside of the classroom. By building a Spanish *hacienda* in SL which provided additional elements of language and culture, the author was able to create an immersion experience for students. Clark further argues that with students being able to meet either in a real or virtual world to perform activities, SL can be an ideal place to teach single lessons or an entire course of a traditional Spanish 1. Sykes (2009) reports on an empirical study that examines the interlanguage pragmatic development by learners of Spanish in MUVEs with respect to making appropriate requests in Spanish. The findings obtained from interview data and in-class presentation indicate that, through the use of a synthetic immersive environment, learners became more aware of the complicated pragmatic issues. Although the study showed little improvement from pre- to posttest, anecdotal evidence suggests that students who were examined learned the subtleties of making appropriate requests in Spanish. Wang et al. (2009) discuss an ongoing research collaboration between an American university and a Chinese university, which explored the integration of SL into a program of teaching English as a foreign language during two semesters in China. They found that the Chinese students of English were able to, through the SL platform, conveniently exchange ideas and opinions with English native speakers on issues that both groups found interesting, a valuable learning experience that would not be easily achieved in real life, if at all. Besides work that involves the teaching of Spanish or English, there are two published studies relating to the teaching of Chinese as a foreign language. One is Henderson et al. (2009)'s empirical research on a collaborative activity to identify and order Chinese food in Mandarin in a virtual Chinese restaurant. The study found that there was a significant improvement between students' pre and post self-efficacy ratings which, the authors believe, was the result of a lesson incorporated in SL that enriches the students' experiential learning opportunities. The other study is Grant and Huang (2010) that discussed the integration of SL as one way of addressing some issues that exist in college level Chinese language instruction. That is, the pedagogical and logistical limitations of formal classroom-based curriculum, textbook-centered context, and teacher-focused methodology. The authors suggest that incorporating learning in an online 3D virtual environment like SL provides learners with valuable opportunities to actively communicate in realistic and, therefore, meaningful ways. According to Cooke-Plagwitz (2009), SL works particularly well for the students of the Net Generation whose learning styles have been greatly affected by the evolution of information technology. Kuriscak and Luke (2009), after investigating language learners' attitudes toward SL, report similar findings: students welcomed the opportunities afforded by SL to interact with native speakers.

There are two well-developed SL sites which offer free resources specially designed for the teaching and learning of Chinese as a foreign language. One is Second Life Chinese School developed by Michigan State University (MSU). This virtual Chinese School is a place where individuals can independently learn the Chinese language and experience its culture at their own pace. Embedded in the restaurant, park, apartment building, museum, stores as well as classroom, bookstore, and office are

challenging but entertaining quests, all serving as great teaching materials. Thus learners can come to practice as many times as they want until they pick up the patterns of usage. For more information about the design concept of this Chinese school, please check into the site, http://confucius.msu.edu/secondlife/overview.html. With a registered account in SL, anyone can log in to experience the beauty of this virtual Chinese School.

A second well-developed SL site is Chinese Island by Monash University, Australia, available from http://slurl.com/secondlife/Monash%20University/72/170/28. On this island, the railway station, airport, bank, inn with tea house, clinic, multi-purpose building, village, as well as traditional Chinese college, courtyard house, and garden, are "used as a basis for Chinese language classes in both first-year and media studies classes" (http://www.monash.edu.au/international/dvc/virtualworlds/monashsecondlife.html). The aforementioned research by Henderson et al. (2009) and the study by Grant and Huang (2010) utilized the resources in this site.

In the section below we will report on a study that incorporates the resources available on MSU's Second Life Chinese School in the teaching of Introductory Chinese at college level. We will talk about the rationale of the research and its implementation, evaluation, implications, and recommendations.

3. Integrating SL in Chinese Language Instruction

3.1 Research questions and logistics

There are three particular questions that we were interested in for this study: (i) Is it feasible and plausible to integrate the SL resources into a one-semester university introductory Chinese? (ii) Does SL support students' learning? (iii) Do students welcome the use of SL as part of their Chinese learning process?

A total of 26 university students in two sections of beginning Chinese were involved in this Fall 2009 study. Except for four students who had some Chinese backgrounds due to either being born in a Chinese family or taking some Chinese before, the rest had zero Chinese skills. All the students except one belonged to the Net Generation, with an age range of 18 to 24 years old. On the first day of class, students were informed of the mandatory SL project for which they would receive 16 points toward the total grade of the course upon satisfactory completion of all the required SL activities.

Before elaborating on the details of methods, a note is in order about the conditions under which the author conducted the project using SL. First, the author's university is a "most wired" campus, which not only supplies wired and wireless access to the internet, but also provides a laptop to each full-time undergraduate student. The models of the laptops which students have received are either Thinkpad T500/T61 or X200/X61. These models are, configurationally speaking, sufficiently sophisticated to run the SL application. Additionally, the university offers a Language Resource Center,

furnished with all the basic language learning tools, including the SL platform. With such a ubiquitous computing environment where students can get online anywhere and anytime, optimum learning outcomes can be expected. Besides good infrastructure, helpdesk support technicians who can fix any issues with laptops concerning hardware or software are available during normal office hours. Finally, the university has Teaching, Learning and Technology Center (TLTC), where knowledgeable instructional designers regularly provide training and, thereby, assist faculty to employ emerging technology to maximize student learning.

The author of this study first received training on SL. With some familiarity with the basics of the SL application, the author was able to brainstorm with two instructional designers from TLTC to identify strategies for the best use of SL for the teaching of Chinese. The discussion and technical support from the experienced instruction designers made it easier to initiate the project. Kuriscak and Luke (2009) recommended that an in-class SL tutorial for students be provided in advance so that all will be uniformly informed of what is available in the SL platform, and what they need to know in order to be able to complete the learning tasks assigned. Inspired by this recommendation, we planned a 75-minute in-class hands-on crash course on SL in the second-day class of the semester. Conducted by said instructional designers, students were shown, step by step, how to (i) download the SL application, (ii) install it onto their own laptop, (iii) create account to log in, and (iv) navigate in SL. For their convenience, the tutorial documents and links were made accessible online. In addition, any other in-class follow-up or walk-up support was available either in the Language Resource Center or at the university Helpdesk whenever students need assistance.

3.2 Tasks and requirements

To make the project support the curriculum, meaningful tasks were created that incorporated resources of the SL Chinese School of MSU. The primary purposes of including these tasks were (i) to engage students to review what was being taught in the classroom, and (ii) to enable exploration of culture and language outside the class. There are two reasons why MUS's SL Chinese School was particularly chosen for this study. First, the site of the SL Chinese School was developed under the design-based research methods for an embodied experience for learners of Chinese. The author of the current study attended Zheng et al. (2009)'s presentation about this virtual school at CALICO 2009. Second, as a virtual learning facility developed and sponsored by a higher institution, the site was not only free, but relatively safe for students.

As can be seen from the comprehensive list of tasks in Table 1, each task spanned two weeks consistently in order to provide the students with sufficient time to review what they had learned in the classroom and then to practice by doing the task. Each task had a theme which included the pronunciation of Chinese sounds, the ability to identify and write Chinese radicals and characters before proceeding, to the 5 topics that are related to Greeting, Family, Date and Time, Hobbies, and Visiting Friends. These 5 topics are the first 5 chapters from *Integrated Chinese Level 1 Part 1* (Liu et al., 2008), which were used as part of teaching materials in that semester.

The first task was to familiarize students with the SL platform and the SL Chinese School. While this task did not involve any Chinese, learning to be able to walk around with appropriate dress, and getting to know how to chat through instant message or voice is the first set of basic skills that students must grasp in order to carry out the virtual learning activities in the SL Chinese School. This task was added to increase students' level of comfort with the virtual learning technology. However, as we will see in the next section, just performing one task might not be enough to prepare for an efficient virtual learning.

Table 1: Tasks for SL Project

Tasks	Weeks	Goals	Students required to
1. Know your way	Week 2	Practice the basics of SL	Dress up oneself; walk & fly
2. Visitor Center	Week 4	Practice pronunciation	Say place names
3. Look for radicals	Week 6	Practice radicals & Characters	Identify radicals/ characters
4. Self-introduction	Week 8	Learn to introduce oneself	Introduce oneself
5. Ask questions	Week 10	Learn to say Zhè shì shénme? Nà shì shénme	Describe things in rooms
6. Tour cities in China	Week 12	Learn to say Wǒ xǐhuān… Yīnwéi	Watch PPT and make sentences
7. Talk about hobbies	Week 14	Learn to talk about hobbies	Ask each other questions
8. Let's have a party at Mr. Li's	Week 16	Learn to say things at a friend's place	Reply when welcomed or offered with drinks

Tasks 2 to 8 were created for enhancing the learning of materials covered in the class. Since the subjects were beginners of Chinese, they just finished learning *pinyin* by the end of the 4th week. Task 2 offers them an opportunity to become familiar with the SL Chinese Island by getting to know where each place is located, and learning how to say the place names correctly in Chinese. In doing the task, students reviewed *pinyin* and used it for a real function. In order to assist students with this task, an audio file was made and posted online in advance, which contains the reading of all the place names recorded by a teaching assistant. To utilize the road signs and places names written in Chinese characters as well as in *pinyin*, we had students look for, and identify the radicals that they had learned in the classroom by doing Task 3 after they were introduced radicals around the 6th week. With characters associated with *pinyin* and English presented in the visual landscapes on the Island, all these adding authenticity and meaningfulness, the learning of Chinese radicals and characters became a less daunting task. After students learned the topics of Greeting, and Family, we encouraged them to learn the lessons offered by the SL Chinese School by doing Task 4. For this task, students were guided to explore different ways of introducing oneself, and greeting each other. Tasks 5, 6 and 7 all required paired work. Task 5 expected students to learn extra vocabulary related to furniture and objects in an apartment, and to learn to ask the questions *Zhè shì shénme* "What is this?" *Nà shì shénme* "What is that?" and answer the

questions. For Task 6, students must first of all watch a PPT slide available on the site, which is an itinerary of travelling in China. After watching the PPT slide, students were required to talk about which city they wanted to see if they were offered an opportunity to visit China, and provided a reason. Students were instructed to do some research, in advance, on the places of historical interests in China, and include the sentence pattern such as "Wǒ xǐhuān… yīnwéi" in their conversation. Task 7 concerns hobbies, which the majority of students were interested in talking about. Task 8 is a group activity, which required everyone in the class to go to Mr. Li's to have a party. This task was scheduled at the last-day of class, when students had finished the chapter *Visiting Friends*, and had obtained a good grasp of basic structures and vocabulary to carry a simple conversation.

Table 2: Requirements of Task 5

Now that we finish Chapter 1 *Family*, teleport to Lianhua Apartment Building of Second Life Chinese School with your partner, and do the following:

a.   Visit each of rooms in the building, i.e., R101, R102, R201, R202, R301, R302
b.   Learn the new words for things/objects inside the rooms by clicking each of them
c.   Learn to say the wh- question, *Zhè/Nà shì shénme*? (What is this? What is that?)
d.   Learn to answer the questions by using each of the new words just learned
e.   Submit your dialogue via email

Figure 1: Bedroom and Kitchen in an Apartment

For a better understanding of how tasks work, take a look at the requirements of Task 5 in Table 2. For this task, students were required to visit, in pairs, the apartment in Lianhua Apartment Building. While in the room, students must first learn the new vocabulary about each of the objects that they saw in the rooms, and then learn how to ask and answer questions using *Zhè shì shénme* "What is this? *Nà shì shénme* "What is that?" What is nice about this virtual apartment is that not only does it consist of different rooms, such as the living room, bedroom, and the kitchen, each room is furnished with furniture or objects that one would usually see in a real-world apartment. Furthermore, each piece of furniture or object has *pinyin*, and character embedded behind the scene, which will pop up after being clicked. For instance, after clicking the pot on the oven in

the kitchen, as shown in Figure 1, one will see *guō* 锅 showing up. When the cupboard above the counter is clicked, the door will open, and *yán* 盐，*yóu* 油 will show up if they are clicked respectively. This kind of interactive way of presenting the vocabulary helps students to learn and memorize new words.

Figure 2: Instructor Greeting Each Student

Figures 2 and 3 show the two screen shots of Task 8 when it was in progress. In Figure 2, the instructor, as a hostess, stands at the door, greeting each student when s/he enters Mr. Li's home. Figure 3 shows the scene of students at the party in the living room.

Figure 3: In the Living Room of Mr. Li's

Task 8 was completed in Language Resource Center, where each computer was fully powered, so that during the process of the task, students would not run into the potential problem of losing batteries. Another advantage of using the Language Resource Center was that each workstation was equipped with a headset, so that students could talk to one another with a good quality voice.

As instructed, all the tasks had to be completed outside of class. Each task was posted on Blackboard, a course management application, in due time. A reminder of the assignment was also sent to students via email reminding them to do the task. Depending on the nature of task, students must perform Tasks 1, 3, 4, 6 alone; they must complete Task 2 with the teaching assistant; they must finish Tasks 5, 6, 7 in pairs; they must participate in Task 8 with the whole class. There were two ways for the instructor to check students' assignment. One was through a follow-up in class, asking students questions about the task. The other was to have students submit their work via email. Thanks to the built-in function available in SL, students, after chatting, can easily copy and paste the record of their dialogue, located in the 'history' window of the local chat box, and email it to the instructor. Students must submit their dialogue for the tasks involving a partner, for which they received comments or corrections.

3.3 Learner attitudes and performance

As mentioned above, except for one, all other students who were involved in this study belonged to the Net Generation. Although only a very few of them had heard about the SL program, this group appeared very excited on the first day when they were informed of the project. Some students picked up navigation skills right away in the tutorial class; some were able to modify their avatar's appearance so as to look great. Figure 4 shows the work from a pair of students for Task 5, asking and answering questions about the objects and furniture in both living room and the kitchen.

Figure 4: Student Work for Task 5

However, to our surprise, as the time passed by, some students gradually became late in doing the assigned tasks as required, and some even did not bother to try. An examination of the students' general performance on tasks, as shown in Table 3, indicates that only 7 out of 26 students completed all the tasks properly, for which they received full credit, i.e., 16 points. 15 students did the tasks ok, but left some tasks incomplete, thus, receiving 12 to 14 points. 4 students did only a few tasks.

Table 3: General Performance of Tasks

No. of Students perform very well	No. of Students perform OK	No. of Students did not perform well
7 (27%)	15 (58%)	4 (15%)

Given that this group, except for one student, was a part of Net Generation, why did only one third of them perform well with the technology-related tasks? Why did some students not complete the tasks as expected? Was that because of difficulty with the language or was that because of problems with their computer? Was the failure of completing the tasks an indication of a lack of capability, or a lack of learning motivation? Furthermore, what was students' learning experience? Did they learn? In order to find out what students thought about the project, the author administered a questionnaire at the end of the project.

Here the discussion will focus on the two particular questions in the questionnaire: (i) *What do you think of the Second Life tasks developed for this semester*? (ii) *Do you want me to continue to integrate Second Life in the teaching/learning of Chinese in Spring 2010?* The feedback from the students was mixed regarding the first question. On the one hand, some students expressed a positive experience about the virtual learning. For example, one student wrote, "it helps learn, and it's fun". One said, "it was a fun interactive way to learn Chinese". Another student said, the tasks "allowed me to talk to others in the class and I get to know them". These students enthusiastically suggested continuing the tasks in the following semester when answering the second question. For example, some even provided such suggestion as designing tasks that have "more interactions and tasks with incentives to encourage students to go on to Second Life", or having students "do some of the gamed tasks, like find a girlfriend". On the other hand, there were less encouraging comments from students. For instance, I "couldn't get navigation around the Island, -- couldn't always find the location", or "couldn't find a partner", or "I felt that technical difficulties were much", or "my computer didn't work properly", or "I got too frustrated and confused on technology rather than Chinese". Not surprisingly, this last comment was from the student who was not part of Net Generation, and who did not perform any other learning tasks except for the first and the last one. It is obvious that this student did not feel comfortable with the technology. Those students who commented negatively suggested not continuing the project, because (i) they did not have time to do assignments; (ii) they could not find a partner to work with. Out of these negative comments, the complaint about the difficulty of using the computer technology in SL, which had prevented them from completing tasks, was beyond our expectation. However, this finding is along the lines of the observation made by Kuriscak and Luke

(2009, p. 193). That is, the Net Generation students may be strong with playing special technology, i.e., the technology that is involved in the programs especially designed for generating funs, but they are less experienced or motivated with utilizing technology for learning. While the SL technology has been shown to be effective for beginners of Spanish, as observed by Clark (2009), the current study suggests that the technology seemed to discourage some of our students from trying it enthusiastically.

4. Discussion and Conclusion

With respect to the three questions that we raised above, here are some tentative answers. In terms of whether it is feasible and plausible to integrate SL in Chinese language instruction, the answer is obviously YES. While the learning experience with SL is mixed, there are some observations on the benefits of using the SL from the teaching perspective. First, SL offers an opportunity for students to interact with each other easily. This kind of interaction in SL will make the learning a co-constructive and enjoyable social experience if the instructor can develop a workable strategy to help students find their partners. For today's students who are busy with working as well as studying, the SL platform offers them a convenient and comfortable place to meet and practice the language if the tasks designed can assist them with learning and progressing. Secondly, explorations of cultural aspects such as objects, buildings, landscapes, places of interest, etc. in the virtual world make visitation of the country possible without costing anything. Here, again, tasks are crucial in the sense that they must be interesting enough to attract students to explore the authentic contexts on their own, and engaging sufficiently to sustain their motivation for repeated exploration. Thirdly, SL presents creative ways for students to learn the language meaningfully in a context. With contextualized interactions and meaningful communications, language learning is no longer merely repetition, and recitation, which are usually boring, and less effective (e.g., Lee and VanPatten, 2003). It is no doubt that SL plays a significant role in connecting students for social and experiential learning.

In regards to the question to what extent SL supports the learning of Chinese, further empirical research is required. Possible directions would be to conduct an experimental study, which should examine and compare the learning of Chinese in two different conditions: one is the regular teaching without the use of SL; the other is the teaching plus the support from the SL. Only when the quantitative data on the effect of the learning is obtained can a substantial conclusion be made. However, caution must be exercised to avoid a hasty conclusion or overgeneralization. Sometimes just one empirical research may not be sufficient enough to offer a conclusion about the effects of technology-supported language teaching. In the study of the second language acquisition of Spanish pragmatics, as the data obtained did not support any significant progress from pre- to posttest, Sykes (2009) suggested some further considerations for future studies in design, implementation and research.

In terms of the question whether students welcome the use of SL in their learning of Chinese, responses and reactions varied. We speculate that many unknown factors

could be at work in that regard. Maybe the tasks are time-consuming, therefore many students could not afford time to do. It was possible that the technology involved in SL was a bit complicated so that students had to give up. Another possibility is that the percentage of the overall marks for the SL project is a bit too low so students felt that their efforts were not worthwhile, or they were not motivated enough to explore on their own. There might be some other reasons involved. Thus, it would be informative and helpful, for future study, to require students to write up journals recording their frustration and excitement with the virtual learning. In exploring the use of SL in Chinese language instruction, instructors need to be aware of students' thoughts and reflections. In the case of those students who did not perform certain tasks as assigned, it would be necessary for the instructor to find out immediately why students failed to do the work, and address the issue right away. If it involves the language, the instructor should go over the difficult points again and make them clear to students. If it is a technology-related problem, the instructor should help by arranging a better support service. If it is related to the lack of time or the lack of partners, the instructor should work with students to resolve the issue. Using the virtual world to support the teaching of Chinese is much like having students perform task-based learning. In order to achieve effective outcomes, the instructor should play multiple roles: a teacher, an architect, a chairperson, a resource person, or a facilitator (e.g., Willis, 1996; Lee and Vanpatten, 2003). As pointed out by Clark (2009, p. 168), "If students are living and working within the Second Life community, they are discovering knowledge on their own. Our role as teacher will change from being authority figures and knowledge-keepers to being guides".

For the teachers who are interested in including SL into their Chinese teaching program, here are three important suggestions. First, increase the weighting of marks for the SL project so as to raise students' awareness of the significance of performing the tasks in the virtual world. The current study shows a small number of students who completed all the tasks satisfactorily, while many others left some tasks incomplete. Such a result could be derived from the possibility that the students did not have much incentive to make their best efforts for a time-consuming, challenging, but lower-weighted project.

Second, in addition to arranging learners to practice with their own peers, try to recruit native speakers to participate in the project so that learners could access the expertise of native Chinese speakers. College students in China or Chinese students studying in the same American university would serve as best partners, as they are in the same generation group as the learners, thus showing the same interests to communicate with each others. The earlier and richer exposure to the native language that students receive, the better learning outcomes they achieve.

From the current study, we find that more research is required with respect to the designing of tasks that can serve "curricular goals and instructional models". While SL is a powerful tool, tasks or activities form the crucial part of the pedagogy. That means the instructor needs to develop pedagogically-sound tasks to motivate learners to learn. With so many resources available on SL islands, instructors must identify and select right materials, and use them to create engaging activities. To that end, instructors must take

into account learner backgrounds, pedagogical issues, and teaching goals. The purpose of utilizing SL is to enrich and extend real-world classroom teaching and learning. As remarked by Oxford & Oxford (2009, p. 2), "successful integration of technology into the classroom in a pedagogically sound manner involves more than simply introducing a software program or other innovation to the students in a classroom. Technology integration must be thoughtfully planned out based on curricular goals and instructional models". Our study highly suggests that more planning is required before such a project is undertaken. For example, to run a successful group activity on the SL platform like "Let's have a party at Mr. Li's", we suggest the following. (i) Try to meet students in a bigger space. If that is not possible, break the class in small groups so that each time the instructor is with a small group instead of the whole class. This way, the interaction between the instructor and students is easier and more effective. (ii) Give clear directions to students as to what to do and what not to do while the instructor is having a dialogue with one student or there is a conversation between two students. Just like the natural conversation taking place among a group of people in the real world, everyone should follow a rule in terms of who at what time takes a turn to speak. Maybe the instructor can run a Round-Robin activity by asking one question and having each student respond. This practice is even more important in the virtual world; otherwise, it will be too noisy with many persons speaking at the same time. (iii) Prepare some activities in advance and assign the activities to those students who are waiting to have a dialogue or who have done a dialogue with other students. (iv) Make sure that everyone including the instructor test out the built-in microphone so that when doing a group activity, the equipment works properly. There is a button beneath TALK on the SL viewer, which can be clicked to enable the avatar to speak hands free. This feature is very useful for the instructor who has to use hands to navigate in order to interact with students. Unfortunately we did not know the availability of that function until the task was completed.

To conclude, this study has shown an integration of SL in the one-semester university beginning Chinese course. It is found that some students enjoyed the virtual learning, while others were discouraged for various reasons. However, the author observed some benefits of the SL-supported teaching, and intends to conduct further research to explore its effectiveness along the lines of the suggestions recommended. As an emerging tool, SL has much to offer the field of Chinese language instruction, and learns of Chinese. For its best practice, focus should be on developing tasks that aim to enhance students' learning.

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Integrating Second Life into a Chinese language teacher training program: A pilot study

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Abstract: Second Life (SL), a 3-D Multi-User Virtual Environment, has been found beneficial to foreign language education because of its immersive and interactive environments. This cross-continental study explored feasibilities of using Second Life to provide field experiences to pre-service Mandarin teachers in a program of Teaching Chinese as a Foreign Language in Taiwan. This study also investigated pre-service teachers' insights of teaching Chinese in such a virtual environment, as well as the difficulties these teachers encountered when integrating Second Life in teaching Chinese. The study found that the more teaching experience the pre-service teachers gained in teaching Chinese in Second Life, the more positive an attitude they would develop toward adopting Second Life in teaching Chinese virtually, and in contrast, the less frustrations they would have for technical challenges when teaching in Second Life.

摘要：因 3-D 虚拟第二人生所提供互动式及沉浸式环境的特质已被许多研究证实有利于外语教学，本研究以跨国合作的模式设计融合第二人生及实境教学培训台湾的华语师资，同时调查学生教师对在网路虚拟实境教学的观感及其所遭遇的困难。结果发现若学生教师于第二人生的教学经验值增加，他们对于此类教学模式的态度就越正面，尤其是在技术上及教学上遇到的困难的时候。

Key words: Second Life, virtual learning environment, Chinese teacher training, Teaching Chinese as a Foreign Language

关键词：第二人生，虚拟世界，华语/中文/汉语教师培训，华语/中文/汉语作为外语教学

1. Introduction

Virtual reality (VR) is a combination of technologies which allow multiple users to interact with each other in a computer-simulated environment that can be a replica of the real world or an imaginary cyber world. Seventy-five virtual worlds existed in the Internet (Johnson, 2008, cited in Gregory & Tynan, 2009), for example, Second Life, World of Warcraft, the Sims 3, IMVU, and Active Workds, etc.. Since VR was adopted into education in West Danton High School in England in 1991, researchers and educators have investigated applications of VR technology from its potentials for general education to its integration to specific subject areas. Researchers found that, compared with traditional two-dimension interactive web tools, such as Skype, Google Doc, digital Whiteboards, and Google Wave, the three-dimension VR promotes more authentic and physical interactions, immersion, students' awareness of the target culture, knowledge construction, and learning (O'Brien & Levy, 2008; Von et al.,2001).

One of the emerging VR drawing increased attention is a 3-D virtual world—Second Life. Second Life was developed and launched in 2003 in the California-based Linden Research Lab (http://lindenlab.com). In this virtual world, replica of any objects in the real world can be built and operated by so-called "residents" or the users, through their own digital representatives—avatars. The avatars can fly, move, and walk, and quickly relocate on different islands, which are rich in graphic illustrations by using teleport functions. In addition, the avatars can communicate with other avatars by text or voice chat (Hislope, 2008; Schiller, 2009; Theodore, 2009). Because of these immersive, interactive, physical and graphic capabilities of Second Life, it has grown explosively to become the second best thing to a face-to-face meeting. Up to 2009, Second Life had 21,332 islands from over a 100 countries (Schiller, 2009). Back to 2007, Garner Inc. predicted that by the end of 2011, 80 percent of active Internet users will have an avatar in any of the virtual worlds, which indicates the era of virtual reality is upon us.

Because of Second Life capabilities for communication and interaction, as well as its affordance of immersive simulations, many companies and organizations have purchased and created their own virtual space, called islands in Second Life for various purposes including business, educational use, political use, and special group use. Many organizations have chosen Second Life to provide professional training, especially training that can be dangerous or simply impossible to do in the real world.

For example, some key IT companies including Cisco, Dell, and Samsung have built their learning and training virtual spaces in Second Life. In 2008, IBM's Academy of Technology held a Virtual World Conference and an annual meeting drawing over 200 participants. The virtual world training and conferences have proven to be a cost effective model. Children's Memorial Hospital in Chicago, Illinois has replicated its facilities to successfully provide disaster drills to train doctors, nurses, and other related staff for

emergence response planning. Because Second Life can engage learners in simulated experiential activities, "Second Life is the next realm of delivery for training" (http://www.secondlife.com).

Second Life also provides an arena for educators to seek innovative ways to provide engaging and constructive learning in virtual environments. Since Linden Lab released "Campus: Second Life" in 2004, more and more educational institutions have built their virtual campuses for teaching, learning, training, or advertising purposes. For educational use, USA Today reported that more than 300 universities have utilized Second Life as an educational tool, with some for distance education courses, and some for use by professors to supplement existing face-to- face courses (Sussman, 2007). A report in 2008 (Lester, 2008, cited in Gregory & Tynan, 2009) claimed there are approximately 1,000 educational institutions using Second Life in different ways to serve different needs. Such innovation can be easily found from literature and Second Life websites: Harvard law school and Harvard Extension School's Cyber One: Law on the Court of Public Opinion (Schiller, 2009), Ohio University's Nutrition Games, Healthinfo Island and VNEC (Virtal Neurological Education Centre) developed by University of Plymouth, UK (Boulos, et al., 2007), Second China from University of Florida, 3D Collaborative Learning owned by Graz University of Technology, Austria (Chang, et al., 2009). Many of the universities have their own Second Life virtual campuses such as Harvard, Princeton, Drexel, Ball State, Stanford, Ohio, and Bowling Green (Descy, 2008; Schiller, 2009). University of Central Florida has received a National Science Foundation grant to teach science and physics in Second Life (Cart & Elseth, 2009).

When adopting Second Life for education, pedagogical possibilities for extending traditional classroom activities and learning become enormous. Applications of Second Life in the classroom are as innovative as the virtual technology itself. Conklin (2007) suggested 101 uses for Second Life in the college classroom to encourage learning in a more collaborative and social way. The VR technology has proven to be a useful educational tool by studies over the decades in terms of promoted interactions, resources sharing, increased motivation, a sense of realism, the student-centered nature of interactions, identification with a target culture and reduction in anxiety levels (Billings, 2009; Bricken, et al., 1992; O'Brien & Levy, 2008; Shim, 2003).

However, among various applications of Second Life in education, conducting teacher training in this engaging virtual space is still a new territory that has not yet been thoroughly investigated. Foreign language teacher training, especially Mandarin Chinese language teacher training, in Second Life is even more sparse. Web technology has opened new horizons for teaching Chinese using computers and the Internet (Yao, 2009). Understanding how to use emerging technology to enhance teaching and learning in Chinese becomes essential in order to engage 21st century learners who are digital natives (Bennett, Maton, & kervin, 2008). This pilot study pioneered a Mandarin Chinese teacher training model which utilized Second Life as a platform allowing teacher education students in Taiwan to gain field experiences teaching Chinese to American students and to understand how to integrate emerging technology in teaching Mandarin as a foreign language. Based on surveys and an open-ended question (see Appendix), this

study investigated perceptions of pre-service teachers in a Teaching Chinese as a Foreign Language Program in Taiwan regarding using Second Life as a learning and teaching platform. This study adds to the understanding of benefits and drawbacks of using Second Life in teaching and learning Mandarin Chinese, and it also provides practical suggestions for integrating Second Life into a Mandarin Chinese teacher training program.

2. Related Studies

2.1 Teacher Training and Field Experiences

Tsui (2003) stated that teacher' knowledge is embedded in and developed through their reflective and personal daily practices. Teachers' knowledge includes five categories: knowledge of subject matter (subject disciplines and learning theories), curriculum (the structuring of learning), instruction (classroom routines and student needs), self (individual's characteristics), and knowledge of the milieu of schooling (the social structure of school). When discussing the relationship of these five categories of knowledge, Tsui stressed the dynamic features of the relationships: "teacher' knowledge shapes practices, but it is also shaped by the practices" (Tsui, 2003, p.46). Therefore, educators of Chinese teacher education argue that Chinese teacher training should include content knowledge, curriculum and instruction, and practical training (Chien, 2008).

Tsui (2003) also pointed out that the nature of teacher knowledge is situated in the specific context in which teachers operate. Teacher's knowledge can contextually develop as they respond to the specific context of the school and classroom setting in which they interact with students. Thus, providing pre-service teachers authentic teaching contexts to gain some field experiences is critical to developing teacher knowledge. Through field experiences, pre-service teachers can obtain first-hand experience through one-to-one encounters in classrooms, so that they may develop good teaching practices. For this reason, field experiences are frequently an integral part of courses in teacher education (Grable, Kiekel, & Hunt, 2010).

2.2 Teacher Education in Second Life

Despite the explosive use of Second Life in many aspects of life, the body of knowledge related to teacher education in the virtual world is very sparse. Two studies that addressed this topic applied a comparative approach to explore pre-service teachers' beliefs and field experiences that they developed in both the physical and virtual classrooms. Gregory and Masters (2010), in their pilot study exploring learning of different kinds of thinking skills (known as Six Thinking Hats), found that some students preferred the traditional face-to-face lesson; others could see the benefits of using a virtual world in the right circumstances. The researchers compared prospective teachers' beliefs and experiences regarding their learning and engagement in a virtual environment and those in a face-to-face situation. This comparison yielded a positive correlation to perceptions of using virtual world as a teaching and learning tool. This study suggested

that Second Life is a feasible environment for teacher training and real life activities can be duplicated or improvised in the virtual environment.

A strong argument for the need and possibility to conduct teacher training in the virtual world was presented by a group of researchers (Grable, et al., 2010). These researchers asserted that since doctors, pilots, and military staff can be trained virtually, teachers could also be trained through digital field placements. This assertion was aimed to solve a problem in the researchers' online teacher training degree program: the online program could not offer field experience courses. To solve this problem, the researchers (Grable et al., 2010) implemented distance learning technologies to their online secondary education teacher training courses. The technologies such as compressed interactive videos and a videoconferencing software that incorporates an interactive whiteboard and communication tools allowed pre-service teachers in secondary math, physics, business and Spanish to complete their field experiences in the virtual classroom. Four pre-service teachers' field experiences in a traditional thirty-hour field observation are compared to their virtual field experiences. The researchers compared the two types of field experiences in three domains: planning, classroom management, and instruction. Their study found that the students majoring in physics, business, and math showed a mixed attitude in the three domains no matter where their field experiences were gained. However, the students majoring in Spanish showed a more positive attitude in all three domains in their virtual field experiences than those in the traditional settings. These results suggested that the virtual environment was feasible for prospective Spanish teachers to obtain valuable field experiences.

A current study (Mahon, Bryant, Brown, & Kim, 2010) looked into a specific aspect of teacher training—using Second Life to enhance classroom management practice. The researchers created their management simulators of 30 middle school students, and used artificial intelligence methods to infuse the simulation with random student behavior that would arise in a real classroom. In this mixed method study, the researchers found that participating students perceived the simulation to be a useful learning experience because Second Life provided a creative and intriguing approach to studying classroom management skills. The real-like classroom setting and behavior simulators put pre-service teachers in the situation where they had to make culturally and linguistically appropriate responses to address those behaviors. A shared opinion observed from the above three studies indicated that, regardless of technical challenges, Second Life is promising a "non-judgmental, risk-free environment" (Gregory &Masters, 2010, p. 2) for pre-service teachers to practice their teaching skills.

2.3 Demand for Mandarin Teacher Training in Second Life

2.3.1 Positive Foreign Language Learning Experiences in Second Life

Before Second Life was launched, foreign language educators had applied other types of game-based virtual reality technologies to foreign language education for decades. Researchers agreed that VR can enhance foreign language learning (Salies, 2002; Schwienhorst, 2002; Von der Emde, et al. 2001). Von et al. (2001) identified pedagogical

benefits of using VR in foreign language learning in five aspects: (1) authentic communication and content, (2) autonomous learning and peer teaching in a student-centered classroom, (3) individual learning, (4) importance of experimentation and play, and (5) students as researchers.

Different from the game-based VR, Second Life is a multi-user-created cyber environment where people around the world carry out social interactions for certain purposes such as commerce, business, and education. This emerging 3-D virtual world allows immersive and interactive real-life communications with people around the world, thus bringing great benefits to foreign language education. Second Life has added new dimensions to second language study (Sweley, 2008).

Through visiting foreign islands, real communication with native speakers of target languages becomes highly possible and feasible for the foreign language learners (Swelley, 2008). Additionally, exchanging different cultures becomes attainable in Second Life (Hislope et al., 2008; Thompson & Garetty, 2009). For these reasons, an increasing number of language educators start to view Second Life as a tool for supplementing foreign language classes.

Some empirical studies have tested the effectiveness of teaching foreign languages in Second Life. Hislope, et al. (2008) reported the perceived benefits and drawbacks of using Second Life in her intermediate Spanish course in Spring 2008 as a way to promote more out-of-class contact with native Spanish speakers. Results of a survey with 20 open-ended questions administered to15 students showed both positive and negative experiences with learning Spanish in Second Life. Students liked interactive, creative, and gaming-like aspects of Second Life. The reported negative experiences with Second Life focused heavily on technical issues and the high learning curve of navigating in Second Life. Regardless of challenges, 13 of 15 students reported that Second Life could help them improve their comprehension of Spanish.

Wang et al. (2009) conducted an international cooperative study to investigate students' technology readiness for and their perception of using Second Life as a language learning platform, as well as students' perceptions of integrating Second Life into a Teaching English as a Foreign Language (EFL) program. Sixty one EFL learners in China met weekly with American partners to complete assigned learning tasks. This evaluation research showed that EFL learners positively perceived Second Life as a language learning tool, and they perceived the EFL program in Second Life to be interesting and successful.

Garcia-Carbonell et al. (2001) stated that in traditional classrooms, language teachers normally control the students' conversation frequency, topics and responding time; therefore, language input to promote communicative competency seemed very limited. Simulation and gaming, however, seem to provide a nice solution to the problem that lacks language exposure outside of the classroom.

2.3.2 Demand for Teaching in the Virtual Environment

One significant impact of advanced technologies on 21st century education is the increasing demand for teaching via alternative and innovative methods. Learners in the 21st century are digital natives (Bennett, et al., 2008), therefore teaching in the virtual environment via internet teleconferencing and other types of learning management system is one effective way to engage students. With the needs for qualified teachers, it is important that teacher candidates be exposed to alternative delivery methods to learn a different set of skills for future career opportunities. The effective use of technology in the classroom depends on teachers being familiar with the technological options that are available and suitable to particular learning goals. Therefore, it is necessary for teachers to develop some experiences with the technology by stepping into any classroom, virtual or traditional (Grable, et al., 2010).

The best situation for learning teaching skills is through teaching in the real classroom (Tsui, 2003). However, Chinese teacher training programs in Taiwan have faced a challenge for not being able to provide enough opportunities and environments for pre-service teachers to teach Chinese as a foreign language to non-native Chinese speakers. As a solution to this practical problem, Second Life is found to be feasible for pre-service Mandarin teachers to practice teaching to non-native Chinese speakers in a one-to-one format (Cheng, Zhan & Chen 2010).

2.4 Second Life Capabilities for Language Teacher Training.

Second Life allows almost unlimited imagination and imitations of reality. This affordance of Second Life technology makes it feasible to conduct teacher training in this virtual world. Specifically, Second Life offers a very immersive and interactive instructional context, along with various means for instructional design, communication, and teaching observation and reflection. All of these components in Second Life contribute to the effectiveness of language teacher training.

2.4.1 Instructional Context

Second Life users can build almost anything their skills allow and interact with objects and other residents from all over the world within the environment (Carter & Elseth, 2009). Depending on the learning objectives, Second Life classrooms can be built to illustrate an instructional context where specific language learning topics are presented by rich graphics and colorful objects to satisfy learners with different learning styles. The virtual avatar presence of teachers and students adds a real feeling of being in a class. In addition, avatars can fly, move, and walk as well as teleport to relocate at an instructional context in different islands within the environment. It can provide a friendly, appealing, and contextually relevant space for native speakers of a target language to interact with learners (Wang, et al., 2010).

2.4.2 Means for Instructional Design

Because Second Life is a user-generated virtual world with built-in tools for constructing and scripting, language teachers can create an immersive and interactive learning environment by using different instructional design strategies. Many instructional strategies commonly used in the traditional classroom are also available in Second Life. For example, depending on the needs for instructional activities, animations, audio or video clips, PowerPoint Presentation, note cards containing any information, words or phrases can be developed outside and easily be uploaded to Second Life. These materials can be attached to any object in Second life and retrieved with a simple mouse click. The micro-worlds allow users to interact with others and build objects within the environment, thus adding to the interactive nature of the world (Carter & Elseth, 2009).

2.4.3 Means for Communication

Communication in Second Life takes place via two avenues: text-based chat (can be asynchronous or synchronous) and live voice chat. The communication can be conducted individually or in a group format. Users can communicate verbally in real time, which adds another layer of authenticity to the text-based interaction. In addition to communications through text messages and audio conversations, avatars can also communicate with simple non-verbal gestures (e.g., waving, thumbs-up). These forms of communication allow language teacher to create an engaging and interactive learning environment that helps language learners practice speaking a target language, such as Mandarin Chinese, that many CFL learners have a very limited opportunity to hear, use, and practice in the real world.

2.4.4 Means for Observation and Reflection.

Second Life also offers capabilities to record events taking place within the environment. This allows teacher training programs to capture screen shots and to record entire lesson in Second Life. Teacher trainers and pre-service teachers can later review and reflect on their personal performances and interactions with others by watching their own recorded video clips in Second Life (Cheng, Zhan, & Chen, 2010).

2.5 Statement of Problem and Research Questions

Based on a review of the literature, researchers believe that virtual reality can be a very useful environment for Mandarin pre-service teachers to obtain some field experience and to learn special skills for teaching in the virtual environment. These special skills may be translated to teaching in not only other types of virtual environments but also in the classrooms. Yet, data-based research to support this belief is very limited. Three sets of questions triggered the researchers to conduct this collaborative study between two institutions, one in Taiwan and the other in the United States, with technical support from Institute for Information Industry (III), a non-profit information technology association in Taiwan. This pilot study pioneered conducting a Mandarin Chinese teacher training in the virtual world. In this study, a special virtual space the Virtual Living Lab

(the VLL) was built in Second Life by III, and the VLL is used as an instructional environment in which pre-service teachers design, develop, and deliver learning tasks tailored to learners of Chinese in the U.S. The research questions are:

1. How do Mandarin pre-service teachers perceive the Second Life as reflected in the Virtual Living Lab after training? Is there any difference of perceptions between their 1st time and 2nd time teaching?
2. How do Mandarin pre-service teachers perceive teaching Mandarin in a virtual environment? Do their perceptions change between 1st time and 2nd time teaching experiences?
3. What difficulties do Mandarin pre-service teachers encounter when teaching in the Virtual Living Lab?

The purpose of paper is to report results of the pilot study of integrating Second Life into a teacher training program. Based on surveys of objective items supplemented with one open-ended question, this study investigated how pre-service teachers of Mandarin Chinese in Taiwan perceived Second Life as a teaching platform. This study adds to the understanding of benefits and drawbacks of using Second Life in teaching and learning Mandarin Chinese, and it also provides practical suggestions for integrating Second Life into Mandarin Chinese curriculum.

3. Theoretical Framework

Researchers of the study believed that creating social and authentic interactions could enhance language production, promote communication and assist language acquisition in foreign language settings. Therefore, Communicative Language Teaching (CLT) and constructivism are adopted as the main theoretical frameworks of this study.

Communicative Language Teaching approach in a foreign language classroom enables students to communicate in the target language, and to actively negotiate meaning (Gass & Selinker 2008; Larsen-Freeman, 2000). One tenet of CLT approach requires a maximum use of target language in language teaching, thus bringing the following benefits to foreign language classrooms: (a) the more the students are exposed to the target language, the more they learn, (b) students' motivation is increased, and (c) higher exposure to the target language positively associated with student language proficiency (Turnbull, 2001). Second Life can provide such a high exposure to language learners who may not have access to native speakers of the target language in real life.

Constructivists believe that learning occurs through interactions in the learning environment rather than messages transmission from the instructors. It is through interaction that people construct meaningful knowledge (Mcdonough, 2001). Jonassen et al. (1995) pointed out that constructive environments involved four attributes: context, construction, collaboration and conversation. These four attributes, which also are key elements in Second Life, are interwoven in a learning process. Constructivism has been widely adopted to support Computer Assisted Language Learning (CALL). Some

examples included using e-mail, websites, and videoconferencing as venues to help learners to construct knowledge via interaction in the cyber space (Mcdonough, 2001). Beyond the functions of these tools for knowledge construction in the virtual world, Second Life allows learners to be "physically" situated in the virtual context where they can construct their linguistic and cultural knowledge through the authentic interaction with native speakers of the target language. As Rieber (1992) pointed out, visually based virtual environments are an extension of constructivist learning theories, and the virtual world is an immediate application of the infusion of constructivism into instructional design.

4. Method

4.1 Research Context – the Virtual Living Lab (VLL)[1]

The primary Second Life island/region for this study, the Virtual Living Lab, was an on-going construction island designed for Mandarin Language learning built by a non-profit association in Taiwan, Institute for Information Industry. The target users of the VLL were Mandarin learners in the United States. According to Institute for Information Industry (2010), the mission of this 3D virtual learning environment is to build up a culture-enhanced Mandarin language environment to best simulate real-life learning experiences. The islands, scenes, as well as specific objects in the Living Lab were built around common topics including an airport, duty free shops, hotels, restaurants, a night-time market, streets, and a subway station.

Figure 1: Airport and duty free shops
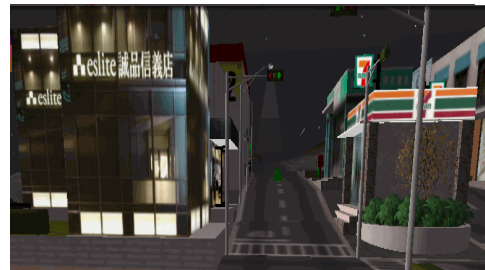

Figure 2: Night market

Figure 3: Hotel

Figure 4: Street and shops

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[1] http://slurl.com/secondlife/Virtual%20Living%20Lab/119/186/21.

Figure 5: Restaurants

Figure 6: Subway

4.2 Research Process

The literature suggested three essential elements contributing to the success of teaching and learning in Second Life: teacher presence in the virtual activities, training on Second Life skills, and the effectiveness of group activities (Wang et al., 2009; Wang & Braman, 2009). Based on these three elements, the research process of this study was divided into five stages as illustrated in Figure 7.
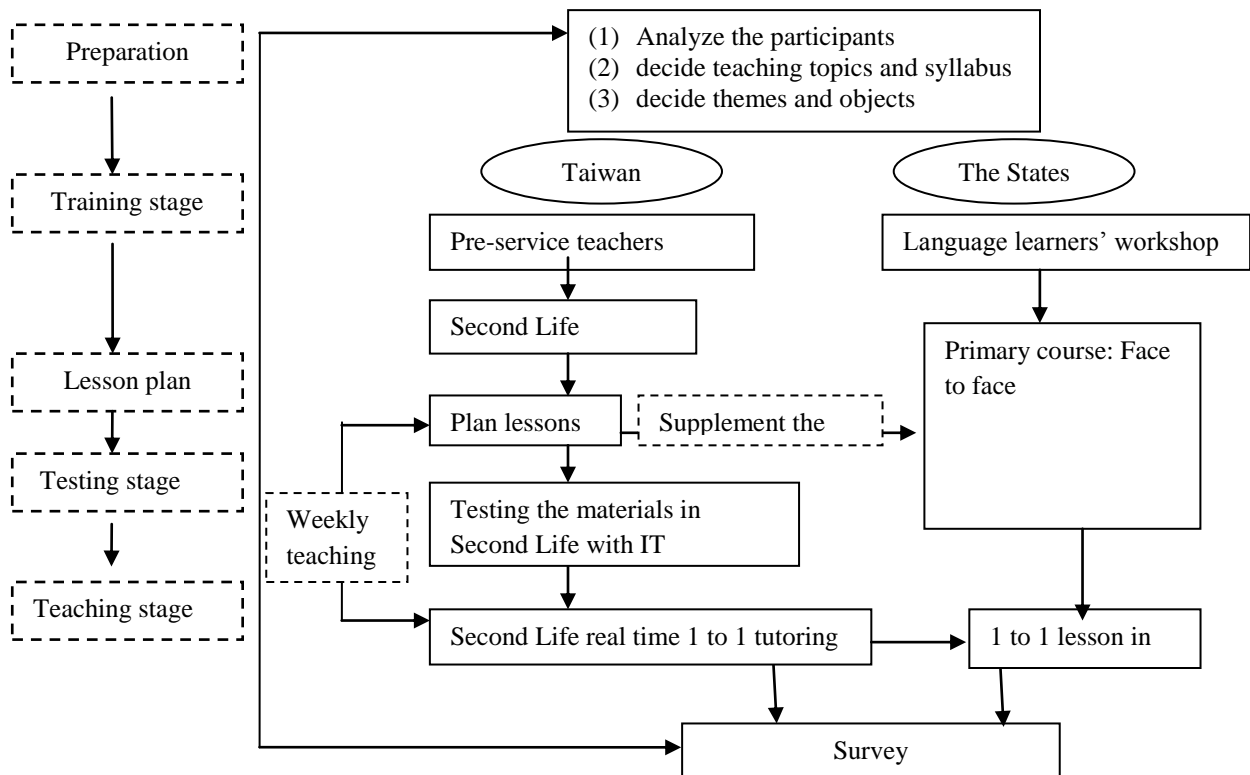

Figure 7: The research design

Preparation stage. During this stage, researchers first analyzed the Mandarin learners' language background and pre-service teachers' teaching background, and then decided the themes for Second Life activities. All the activities were integrated in the existing curriculum for the teacher training class and the Mandarin Chinese class. Based on the teaching and learning needs, the IT group built possible objects that could be used as instructional tools. Since this cross-continental study involved three institutions located in two time zones with a15-hour difference, establishing a carefully planned schedule and matching the pre-service teachers in Taiwan and the Mandarin learners in the States were also very important tasks that were completed in the preparation stage.

Second Life training stage. Hislope, (2008) and Wang and Braman, (2009) all pointed out that in-class training on "getting around" in Second Life could reduce the frustration of users. Therefore, the two researchers arranged some in-class, hands-on activities to help pre-service teachers (6 hours total) and the Mandarin students (2 hours total) familiarize themselves with the Second Life environment and functions, such as registration, manipulating the avatar, teleporting to different locations, and chatting in text and voice. Pre-service teachers were expected to be more familiar with these functions because they were to direct the students to complete tasks in the virtual Mandarin class.

Lesson planning stage. Based on the themes and context (such as shopping, hotel reservations, food, and night-time market) in the Virtual Living Lab, the pre-service teachers designed the lessons and created tasks for their matched Mandarin students. All of the lessons matched the students' language levels referring to their textbook, *Integrated Chinese Level 2 Part 1*. Before teaching, the lesson plans were reviewed by the professor in Taiwan. Then, the pre-service teacher modified their lessons and delivered them in the VLL. Each of the lessons was taught twice to different Mandarin learners in different weeks.

Technical testing stage. Before meeting with Mandarin learners in the Virtual Living Lab, all of the pre-service teachers practiced teaching in the Living Lab to test their uploaded instructional PowerPoint slides, functions of objects, and functions of hardware, such as headsets, graphics display, and Internet connections. The technicians from III provided immediate assistance when problems occurred.

Virtual teaching stage. The teaching in the virtual world in this study was designed in a one-to-one format (one leading teacher and one student). Chung Yuan University requires undergraduate students to take a minimum of 36 hours of tutoring in order to satisfy the teaching training component in the program of study, so such training format enhanced students' professional knowledge of one-to-one tutoring. Researchers believe that the teacher training model involved in providing field experience was a better way to train pre-service teachers to prepare for authentic professional life. In the study, the pre-service teachers were undergraduate students who did not have much teaching experience, so their teaching skills were not matured enough to handle many of the unexpected issues that can arise in class. To help the participating teachers reduce their anxiety, the researchers grouped 5 to 6 pre-service teachers to teach one Mandarin learner.

Such group work was designed to reduce teaching anxiety and increase teaching effectiveness. Group members played different roles such as teachers, technicians or other roles that were needed in scenarios and tasks. When teaching a session, some of the members were teachers who took turns to provide instruction on vocabulary, grammar, or tasks. Some members acted as technicians to videotape the whole teaching session. Some members played specific roles needed in scenarios or tasks to assist learners in accomplishing the task. Each group taught two sessions to different students in different weeks. Each teaching session lasted about one hour. During the teaching hour, the class was videotaped and observed by the two professors. Technicians from III were also virtually present to provide technical support.

4.3 Participants

The study was implemented as a cooperative project between Taiwan and the United States. The target population of this study was a group of pre-service teachers in Taiwan. To administrate this study, in Fall 2009, the 3rd-year pre-service teachers from an undergraduate Mandarin Teacher Training Program in a mid-size private university in Taiwan were selected. Pre-service teachers who were junior standing or above were preferred because many of them had a certain level of tutoring credit hours or some teaching experience. Since group work could create more scenarios and reduce 'technology anxiety' for first time user of Second Life, the researchers grouped pre-service teachers for this project. Thirteen Mandarin learners (intermediate level) from a mid-size university in the United States were willing to participate in this international project, and accordingly, the sixty five pre-service teachers were divided into 13 groups (with 5-6 trainee teachers in one group) to match the 13 American students.

The research team consisted of one professor from the Teacher Training Program in Taiwan, one Chinese professor teaching the 13 American students, and a few technicians from a non-profit technology organization in Taiwan. The two professors also participated in this study as trainers of pre-service Mandarin teachers.

4.4 Instruments

A two-part survey was designed to solicit information about pre-service teachers' perceptions of the VLL as a teaching platform and their teaching experiences in using such a platform to teach during project implementation. The survey was carried out after each session of teaching Mandarin Chinese in the VLL. The survey included four sections: (1) demographic information (1 item), (2) attitudes toward *Virtual Living Lab* (9 items), (3) readiness for teaching in a virtual environment (12 items), and (4) one open-ended question. Demographic information only had one item asking for the name of the pre-service teacher's avatar, which was aimed to match two data sets from the survey which was distributed after each teaching session. Sections (2) and (3) were five-level-Likert- scale questions (strongly disagree=1, disagree=2, neural=3, agree=4, strongly agree=5). Survey items 5 and 8 were negative statements, indicating a reverse five-level-Likert-scale: "1= strongly agree" and "5=strongly disagree." The open-ended question, "*Have you met any difficulties in terms of technical and instructional issues?*" was to

collect qualitative data soliciting any challenges and difficulties the pre-service teachers encountered in their virtual teaching process. In order to investigate pre-service teacher' attitudes and perceptions in-depth, the survey was given in Chinese, and then was translated into English for the purpose of this paper.

4.5 Data Analysis

This study had a total of 65 participants who were in the Mandarin teacher training program in a university in Taiwan. Thirty nine participants completed two sets of survey. After data screening, these 39 participants were included in the data analysis. The collected data was run through SPSS for both descriptive and statistical analysis. The descriptive analysis looked into means, frequency and percentage of each item from survey section (2) (*the attitudes toward Second Life as reflected in the VLL)* and section (3) (*readiness for teaching in a virtual environment*). In order to investigate whether any changes occurred in pre-service teachers' perceptions of the VLL and their teaching experience in such an environment, a paired-*t* test was employed to compare the means of the teachers' first and second teaching sessions. Qualitative data from survey section (4) (the open-ended question) was analyzed by the two professors. During the analysis process, emerging themes regarding the difficulties were formed and frequencies of types of difficulties were counted (Punch, 2005).

4.6 Results

4.6.1 Results of Research Question # 1: How Do Mandarin Pre-service Teachers Perceive the Second Life as reflected in Virtual Living Lab After Training? Is There Any Difference in Perceptions Between Their 1st Time And 2nd Time Teaching?

Since this research group created the VLL, for instructional purposes, collecting the insights of the pre-service teachers was seen as crucial for its future improvement. The first research question in this study sought to fulfill this purpose. Table 1 presents results of the descriptive analysis and significance levels of paired-t tests which indicate changes in pre-service teacher's perceptions of the VLL as a teaching environment and of their experiences teaching in the Lab. The data showed that, when teaching the second lesson, about 17.9% more of the pre-service teachers found that they enjoyed using their avatar ($mean_1$=3.36, $mean_2$ =3.95, $p<.05$).

After the second session of authentic teaching, 26.5% more of the pre-service teachers strongly believed that the VLL offered an interesting setting for language communication ($mean_1$=3.54, $mean_2$=3.95, $p<.05$); 25.6% more of the teachers enjoyed chatting with other avatars in the VLL($mean_1$=3.13, $mean_2$=3.72, $p<.05$); 30.8% more of the participating pre-service teachers thought working with the gestures and actions of their avatars became easier ($mean_1$=3.00, $mean_2$=3.69, $p<.05$); about half of the pre-service teachers (48.1%) believed that the VLL was good for Mandarin teaching and learning ($mean_1$=2.97,$mean_2$=3.44, $p<.05$). However, after the second teaching session, even though 7.8% more of the pre-service teachers believed that the VLL offered great possibilities for teaching Mandarin Chinese, there was no significant difference in the

participating teachers' attitudes between the two teaching sessions ($mean_1$=3.54, $mean_2$=3.85, p>.05).

Survey item 5 (*I still cannot get use to the virtual environment*) and item 8 (*The features in Virtual Living Lab seem to be hard for me to manipulate*) were negative statements. Regarding these two negative statements, after teaching the second lesson, fewer pre-service teachers agreed to item 5 (15.4%) and item 8 (20.5%). Perceptions reflected in the responses to items 5 ($mean_1$=3.26, $mean_2$=2.51, p<.05) and item 8 ($mean_1$=3.28, $mean_2$=3.00, p<.05) showed significant differences between the first and second sessions of teaching. These results indicated that pre-service teachers gradually overcame the difficulties and challenges as they gained more experience.

Table 1 Results of the Differences in the Attitudes to Second Life as Reflected in the Virtual Living Lab

Items	1st Mean	%	2nd Mean	%	P value
1. Changing avatar's appearance is very enjoyable.	3.36	56.4	3.95	74.3	0.00*
2. Working on the gestures and actions of my avatar is easy to me.	3.00	38.4	3.69	69.2	0.00*
3. The virtual living lab offers an intenerating environment for language communication.	3.54	56.5	3.95	82.1	0.01*
4. I enjoy chatting with other avatars in the virtual living lab.	3.13	38.5	3.72	64.1	0.00*
5. I still cannot get use to the virtual environment.	3.26	48.7	2.51	15.4	0.00*
6. In terms of Mandarin learning, I believe virtual living lab offers great possibilities.	3.54	58.9	3.85	66.7	0.97
7. Virtual living lab is good for Mandarin learning.	2.97	33.3	3.44	48.7	0.04*
8. The features in virtual living lab seem to be hard for me to manipulate.	3.82	66.7	3.00	20.5	0.00*
9. Overall, I do enjoy time in this virtual living lab.	2.87	30.7	3.64	71.8	0.00
Mean	3.03		3.63		

*significance p<.05

4.6.2 Results of Research Question #2: How do Mandarin Pre-service Teachers Perceive Teaching Mandarin in a Virtual Reality? Do Their Perceptions Change Between the 1st Time and 2nd Time Teaching Experiences?

Teaching in a virtual reality environment is an innovative instructional delivery method, especially in the field of teaching Mandarin Chinese. The researchers believe that although this different teaching environment may develop a unique set of teaching skills, pre-service teachers still need fundamental professional knowledge, such as understanding the teaching objectives and teaching strategies such as when and how to correct students' errors. Therefore, some items in the survey could be common in other studies of teaching Mandarin Chinese in a traditional face-to-face situation.

As shown in Table 2, after teaching the second lesson, pre-service teachers' perceptions of teaching in the VLL had significantly and positively changed. 10.3% more of pre-service teachers believed that teaching in the VLL was as effective as teaching in a face-to-face environment (mean$_1$=2.92, mean$_2$=3.47, p<.05). 10 % more of the pre-service teachers believed their "teacher talk" was more appropriate for their student in the second lesson (mean$_1$=3.46, mean$_2$=3.74, p<.05). 10.2% more of the pre-service teachers came to better understand one-to-one format teaching (mean$_1$=3.79, mean$_2$=3.4.13, p<.05). In addition, 28.2% more of the pre-service teachers believed that, after teaching the first session, they came to be prepared for the unpredictable issues in the future class (mean$_1$=3.38, mean$_2$=3.89, p<.05), 23.1% more of the pre-service teachers believed they were qualified for teaching the VR class (mean$_1$=3.05, mean$_2$=3.55, p<.05), 5.1% more of pre-service teachers agreed that they had come to know more about how to evaluate their own teaching proficiency (mean$_1$=3.28, mean$_2$=3.61, p<.05).

Table 2 Results of Pre-service Teachers Perceptions toward Teaching in the Virtual Environment

Items	1st %	1st mean	2nd %	2nd mean	P value
I believe that teaching in a VR environment is as effective as teaching in a face-to- face environment.	41.0	2.92	51.3	3.47	.004*
I believe it is less stressful to teach in a VR environment than in a face-to-face environment.	43.6	2.79	23.1	2.71	.562
I know the objectives of this VR lesson very well.	74.4	3.82	82.1	4.05	.146
I am well-prepared for the 1st / 2nd VR lesson.	69.2	3.74	82.1	4.00	.067
I understand one-to-one format teaching.	79.5	3.79	89.7	4.13	.007*
I understand the teaching process of this lesson.	87.2	3.97	87.2	4.16	.128
I believe my "teacher talk" is appropriate for my student.	48.7	3.46	59.0	3.74	.010*
I know how to correct my student's errors	30.8	3.28	43.6	3.39	.378
I am well prepared for this class in terms of class content, questions, and examples.	74.4	3.77	79.5	4.03	.077
I have prepared for the unpredictable issues in the class.	48.7	3.38	76.9	3.89	.001*
I believe I am qualified for this VR class.	33.3	3.05	56.4	3.55	.001*
I know how to evaluate my own teaching efficiency.	48.7	3.28	53.8	3.61	.010*

* significance $p<.05$

However, regardless of the increased means, some aspects of pre-service teachers' perspectives of teaching in the virtual world did not show significant differences (p>.05). In specific, regarding item 2, 20.5% fewer of pre-service teachers thought teaching in the virtual world was less stressful than teaching in a face-to-face setting (mean$_1$=2.79, mean$_2$=2.71). Similarly, a high percentage of the pre-service teachers believed that they knew the objectives of both lessons (item3, mean$_1$=3.82, mean$_2$=4.05), but there was no statistically significant difference (p>.05). When asking the pre-service teachers whether they were well-prepared for both classes, 12.9 % more of them thought they were well-prepared in the second lesson (item 4, mean$_1$=3.74, mean$_2$=4.00), but there was no

significant difference between first lesson and second lesson (p>.05). A good number of pre-service teachers believed that they understood the process of their teaching in both sessions (item 6, mean$_1$=3.97, mean$_2$=4.16), and there was no significant difference (p>.05). The results of item 8 showed that a small number of the pre-service teachers (mean$_1$=3.28, mean$_2$=3.39) had sufficient confidence to correct students' errors, but there was no significant difference. Of course, since the pre-service teachers were all inexperienced teachers, such results were predictable. Item 9 showed that a good number of pre-service teachers believed that they were well prepared for teaching in terms of presenting class content, forming questions and providing examples (mean$_1$=3.77, mean$_2$=4.03) and there was no significant difference (p>.05).

4.6.3 Results of Research Question #3: What Difficulties Do Mandarin Pre-service Teachers Encounter When Teaching in the Virtual Living Lab?

Regarding difficulties that the pre-service teachers encountered at two times when teaching Chinese in the VLL two categories of difficulties emerged from the detailed qualitative responses to the third research question. The first category is related to technical challenges, and the second category is related to instruction.

4.6.3.1 Difficulties Encountered During the First Teaching Session

4.6.3.1.1 Technical Challenges

Technical problems were mentioned by many participants. Low Internet speeds and insufficient computer capacity were the most common problems. When these problems occurred in the VLL, these problems blocked out the users, reduced the speed of graphics display and PowerPoint slide shows, and froze the computer or audio effects. In the data, 17 participants addressed the problems associated with PowerPoint and audio effects, five participants had been blocked out, seven had difficulties with graphics display, and nine experienced situations where their computers froze. When teaching in Second Life, both teachers and students relied heavily on quality voice connections and high speed graphic displays to exchange information. If one user did not hear other users, the lesson was delayed for long periods or canceled. The following comments from pre-service teacher illustrate some of these problems.

> *"the process of my lesson was serious delay due to the issues of displaying PowerPoint slides "(Participant ID #24).*

> *"the capacity of my computer was not sufficient to run* [the VLL] *in Second Life, so it was very easy to be blocked out or get my computer freeze while teaching" (Participant ID #25).*

> *"I can't hear the voice, so I could not communicate with others, but my speakers and microphone were running perfectly with other software" (Participant ID #28).*

Using Power Point slide shows in Second Life is one of a number of instructional strategies used to transfer information, such as presenting new vocabulary and new sentence structures, or explaining exercises or tasks. The Internet bandwidth and computer visual card capacities may influence the speed of PowerPoint display in Second Life. Sometime, the pre-service teachers and students could not view the same slide at the same time. When this issue happened, a lot of pre-service teachers felt panic and they believed such problem affected the effectiveness of teaching. The following comments reflected this problem.

> "my student and I could not view the same slide due to my poor computer" (Participant ID #53).

> "Second Life requires high capacity hard ware, my computer and school computers cannot run Second Life smoothly, a lot of graphics and PowerPoint sides cannot be displayed"(Participant ID #59).

> "the problem of displaying PowerPoint slides caused serious delay of the lesson"(Participant ID #37).

4.6.3.1.2 Instructional Challenges

The instructional challenges faced by the pre-service teachers derived from three sources: the lack of the knowledge of the students' language proficiency level, undeveloped skills of how to clearly explain tasks to the students, and inability of how to communicate with the students in teacher's language. Before teaching, the pre-service teachers did not have opportunities to talk with their students. The teachers referred to the textbook used by the students to figure out the students' language proficiency level. Therefore, seven pre-service teachers mentioned that they were not sure about the language level of their students, even though they were given the copies of students' textbook. Due to the fact that some pre-service teachers either were not familiar with the textbook, or had very limited experience teaching Mandarin, their anxieties in the first time lesson were very high. Although this problem is a planning issue that is separate from the technology, this problem affected teaching results.

> "my student's language level were better than I expected, our lesson seemed to be too easy to the student " (Participant ID #29).

> "I was not confident about the student's language level, so part of the content was too easy to my student and the usage of language from me seemed to be too hard" (Participant ID #25).

4.6.3.2 Difficulties Encountered in the Second Teaching Session

4.6.3.2.1 Technical Challenges

After teaching the first class, the pre-service teachers developed some strategies to cope with technical issues and to improve their instruction. The responses to the open-ended question after the second time teaching showed that all of the teachers had made some progress. Regarding technical issues, four participants were temporarily blocked out by the system, three had difficulties viewing the graphics, three had problems displaying PowerPoint slides, four had computers freeze, ten had audio issues, and ten did not have any technical problems. Even though the same technical problems still occurred, the pre-service teachers understood they could solve the problem by some simple ways such as switching to computers with high speed internet connection or testing all possible technical devices before teaching. The following responses from the pre-service teachers provide details of how they coped with problems when they arose.

> *"for second class, most of the problems associated with software and hardware have not happened, because we have done millions of tests and got a nice computer" (Participant ID #15).*

> *"even though my account was blocked 10 minutes before class began, I got it back on time and the system was more stable than the one at the first class. We also used better computers and no audio problems. It became easy to communicate with the student…" (Participant ID #30).*

4.6.3.2.2 Instructional Challenges

Instructional issues in the second time teaching dramatically dropped. With experience from the first teaching session, a lot of the participants had a better idea of the students' language proficiency level, so they were more comfortable teaching the second lesson. Only two participants mentioned that they still had problems with instruction due to uncertainty about their students' language level.

> *"I still have difficulties to catch the language level of my student"*
> *(Participant ID #13).*

5. Discussions

This study found that using the VLL in Second Life as a platform for Mandarin teacher training in Taiwan is promising. This finding supports previous studies (Grable, et al., 2010; Mahon, Bryant, & Kim, 2010; Mullin, Beilke, & Brooks, 2007) which found that Second Life was a feasible and meaningful context to offer field experience in teacher education. The collaborative teacher training model of this study utilized a specially designed virtual space in Second Life (the VLL) to provide real teaching opportunities for pre-service Mandarin teachers in Taiwan to teach learners of Chinese in

the United States. Such field experience also served as a promising solution to solve a practical problem in Mandarin teacher training programs in Taiwan, where teaching practice normally has to be a mock dry-run because of the lack of target foreign students in real classrooms. The training model investigated in this study enabled pre-service Mandarin teachers to experience teaching target students abroad without even stepping out of their home campus.

The findings yielded from the surveys showed that teacher training in Second Life prepared participating pre-service Mandarin teachers for their profession in the following three aspects, which may help them better meet the demand for teaching digital natives in the 21st century to via different instructional delivery methods. First, through the training on integrating Second Life in virtual teaching, the pre-service teachers learned how to effectively use different applications in the virtual classroom. They became more skillful at using applications such as PowerPoint and audio software to enhance instruction and to engage students. Second, the pre-service teachers developed an awareness of the complexity of using technology in the classroom and learned how to cope with unpredictable technical and instructional issues that may not directly occur in technologically based instructional environment. They came to understand that to teach effectively in the virtual environment, or indeed using any kind of technology to teach, it was not enough to just have appropriate technical facilities such as a high speed Internet connection and powerful computers with high definition graphic cards. Before teaching takes place, it is necessary to test the hardware and software to assure interactive instruction. Third, the pre-service teachers developed positive attitudes toward using the emerging technology for teaching Chinese in virtual environments such as Second Life. This attitude will empower them to integrate new technologies in an innovative and meaningful way to enhance their teaching in the 21st century in which technology has become an integral component of teaching and learning.

The carefully planned virtual training not only helped the pre-service teachers grow in terms of their knowledge about integrating technology into teaching, more importantly, it helped them develop pedagogical strategies that would benefit their professional life in both virtual and physical situations. First, the virtual training helped the pre-service teachers develop self-confidence in teaching. Self-confidence may help these teachers to more actively interact with their students, teaching contexts, and teaching materials. The pre-service teachers came to understand that teaching in the virtual environment and in physical situations can be equally effective as long as teachers have clear instructional objectives and are prepared thoroughly for the lessons and for unpredictable issues.

Such results may be associated with two carefully planned stages of this research: *lesson planning stage and virtual teaching stage*. During the lesson plan stage, a group of pre-service teachers were required to prepare their lessons together and their lessons were further reviewed by the professor in Taiwan. During the virtual teaching stage, both professors in Taiwan and in the United States observed the entire class and provided immediate feedback on site at the end of each lesson for future improvement. With such an intensive training process, pre-service teachers improved very quickly in their teaching.

One very encouraging and important finding of this study is that, through the one-to-one teaching format, the pre-service teachers learned how to effectively communicate with students by using "teacher talk." Language teachers need to adjust their language use for instruction based on student language proficiency level, but it is a difficult task for teacher training if there is no authentic teaching takes place. Through the real teaching experience in the virtual environment, the pre-service teachers learned how to assist communication in the target language. They learned to use topics familiar to the students to stimulate language output; used more standard pronunciation and expressions to model language use; used simplified vocabulary and sentence structures to provide comprehensible input; carried out regular checks for understanding. The pre-service teachers might not be able to develop their teacher talk skills so quickly if they did not teach target students in a real class, even if the class was in the virtual world.

Last but not the least, an important finding of this study was that pre-service teachers learned how to self-evaluate the effectiveness of their teaching by observing responses from their students' achievement of their instructional objectives, and by reflecting the whole teaching process. This set of skills will help the pre-service teachers be able to analyze various factors contributing to the success of teaching.

6. Implications for Chinese Language Teacher Training

This study has echoed other studies which believed Second Life as a "worthwhile venue for virtual learning in teacher education" (Mahon, Bryant, Brown, & Kim, 2010, p. 131).   In terms of pre-service language teacher training, this study has the following implications where teacher training is carried out in a virtual world.

1) Utilizing the virtual reality technology to provide an authentic teaching experience is an alternative and effective way for pre-service Chinese teachers in a Chinese-speaking environment to obtain valuable field experience. The authentic teaching experience gained in the virtual classroom can certainly help pre-service teachers understand what is going on in a real Chinese language classroom, thus helping them to develop strategies for solving technical and instructional problems as a result of the training.
2) Teaching and learning with technology as a tool can help pre-service teachers develop positive attitudes toward emerging technologies and help them better understand how to use technology to enhance instruction.
3) When conducting teacher training in a virtual world such as Second Life, "on site" observations and timely feedback from teacher trainers are crucial to training efficiency. The feedback and comments provided "on site" will help pre-service teachers develop contextualized knowledge so that they reflect on the weakness in their teaching for future improvement.

7. Limitations and Suggestions for Future Research

This study was a pilot study designed to pioneer conducting a Mandarin Chinese teacher training model in the virtual world. Although some findings are encouraging, this study reveals the following limitations in the research design and process, thus the findings may not be simply generalized to other situations where teacher training is conducted in a different virtual world.

1) Issues with the credibility and reliability of the survey: This study was a pilot study in which the two researchers created the survey to explore pre-service teachers' perceptions of teaching Chinese in Second Life. The credibility and reliability of the survey items were not tested. Therefore, the data from the survey may not fully reflect the attributes of teaching Chinese in the virtual world.
2) Issues with teaching improvement: In this study, the pre-service teachers taught the same class twice to different target students who had the same levels of language proficiency. This design did not allow the pre-service teachers to demonstrate their improvement in teaching different levels of students. In addition, the pre-service teachers only taught two hours in the virtual environment. Such a short time of teacher training may not be long enough to lead substantial improvement in teaching.
3) Issues with group teaching: This study arranged five to six pre-service teachers in one group. Although only one leading teacher taught the lesson to one American student, all other team members had to log in at the same time to assist the role-play during the instruction. Such design caused log-in problems. Second Life blocked out some users during the instruction. For future research, using computers with a stable internet connection with high speeds is suggested.
4) Issues with the VLL: As a Region within Second Life, the VLL has its agent limit. For example, a high number of avatars on a Region can significantly reduce the Region's performance. In addition, since the VLL is specially designed to promote teaching and learning Mandarin Chinese in a virtual world, the VLL also incorporated other types of technologies that may have influenced Second Life performance. For example, instead of using Second Life built-in PowerPoint Viewer, the VLL used Moodle, an open-source virtual learning environment) to upload and download PowerPoint slides. This type of file transfer may be slower than using the PowerPoint Viewer.

8. Conclusion

This study pioneered integrating Second Life into a Chinese teacher training program. The researchers developed a collaborative training model involving a Chinese teacher training program in Taiwan, an existing Chinese language course in the United States, and a technology institution in Taiwan. The three parties collaboratively created a virtual world for pre-service Mandarin Chinese teachers to gain field experiences. This study found that this training model benefited the participating pre-service Chinese teachers in Taiwan in many aspects. Particularly, through the virtual training, the pre-service teachers developed positive attitudes toward teaching in the virtual world, and

they also improved teaching strategies for effective instruction. This training model is worth further development through implementations to other Chinese teacher training programs which have the *need* for authentic teaching. The *real practical need* for using Second Life to enhance teacher training may break through the barriers between using Second Life and its challenges in terms of technical skills and instructional strategies for teaching in a virtual world.

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Appendix

Research Survey

Demographic Information
Second Life Avatar account: _____

Part 1: Attitudes Toward the Virtual Living Lab

1. Changing avatar's appearance is very enjoyable.	5	4	3	2	1
2. Working on the gestures and actions of my avatar is easy to me.	5	4	3	2	1
3. The virtual living lab offers an intenerating environment for language communication.	5	4	3	2	1
4. I enjoy to chat with other avatars in the virtual living lab.	5	4	3	2	1
5. I still cannot get use to the virtual environment.	5	4	3	2	1
6. In terms of Mandarin learning, I believe virtual living lab offers great possibilities.	5	4	3	2	1
7. Virtual living lab is good for Mandarin learning.	5	4	3	2	1
8. The features in virtual living lab seem to be hard for me to manipulate.	5	4	3	2	1
9. Overall, I do enjoy time in this virtual living lab.	5	4	3	2	1

Part 2: Readiness for Teaching in a Virtual Environment

I believe that teaching in a VR environment is as effective as teaching in a face-to- face environment.	5	4	3	2	1
I believe it is less stressful to teach in a VR environment than in a face-to-face environment.	5	4	3	2	1
I know the objectives of this VR lesson very well.	5	4	3	2	1
I am well-prepared for the 1st / 2nd VR lesson.	5	4	3	2	1
I understand one-to-one format teaching.	5	4	3	2	1
I understand the teaching process of this lesson.	5	4	3	2	1

I believe my "teacher talk" is appropriate for my student.	5	4	3	2	1
I know how to correct my student's errors	5	4	3	2	1
I am well prepared for this class in terms of class content, questions, and examples.	5	4	3	2	1
I have prepared for the unpredictable issues in the class.	5	4	3	2	1
I believe I am qualified for this VR class.	5	4	3	2	1
I know how to evaluate my own teaching efficiency.	5	4	3	2	1

Part3: Open-ended Question:

Have you met any difficulties in terms of technical and instructional issues?

_____
_____
_____
_____
_____
_____
_____
_____

在虚拟世界进行汉语教学的工具
(Tools for teaching Chinese in the virtual world)

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摘要：虚拟世界是电脑网络发展的一个新阶段。在虚拟世界里可以进行各种商业和教育活动。语言教育也可以在虚拟世界里得到一席之地。本文广义定位虚拟世界，介绍网络上已有的虚拟世界工具，并且分享在汉语教学中使用网上工具的经验，以引起进一步的探讨。

Abstract: Virtual word is the new stage of development of computer technology. People engage in all types of activities in the virtual world such as business and education. Language education can take advantage of this new technology. This article defines the virtual world in a broader sense. Some tools that can be used for teaching in the virtual world are introduced. The author also shares his own experience of using these tools in teaching Chinese. More in-depth study and discussion are needed in the future.

关键词：虚拟世界，网上工具，汉语教学，合作学习

Keywords: Virtual world, online tools, teaching Chinese, collaborative learning

　　"当今世界殊"，虚拟世界（virtual world） 虚拟现实（virtual reality）已经进入了人们的生活，在商业、教育、通讯等领域里开始发挥巨大的作用。虚拟世界对语言教学，包括汉语教学也开始发挥影响力。本文试图说明：一、虚拟世界是什么；二、虚拟世界中有什么工具可以在汉语教学中运用；三、汉语教师如何使用这些工具。由于虚拟世界的许多软件出现的时间不长，运用的实例不多，理论研究和实证的研究都很少。此文仅以本人的实际经验对虚拟世界以及试验性的运用作一粗略介绍。

1. 虚拟世界是什么？

按照网上词典的定义，"虚拟世界"（virtual word）是一个由网际网路计算机模拟的虚拟空间，用户可以通过自己的虚拟形象（化身 avatar）栖息其中，并可以与其他虚拟形象展开互动、交往。（维基百科, http://zh.wikipedia.org/zh/虚拟世界, 2010 年 6 月 12 日查询）。虚拟现实（virtual reality，简称 VR，又译作灵境、幻真）是近年来出现的高新技术，也称灵境技术或人工环境。虚拟现实是利用电脑模拟产生一个三维空间的虚拟世界，提供使用者关于视觉、听觉、触觉等感官的模拟，让使用者如同身历其境一般，可以及时、没有限制地观察三度空间内的事物。（百度百科，http://baike.baidu.com/view/7299.htm, 2010 年 6 月 12 日查询）

这种定义实际上颇为狭窄。我们这里要探讨的不只是三维空间的虚拟世界，而是一切采用网络进行商业或教学活动的虚拟世界。这种虚拟世界是广义的"网络空间 cyberspace"，包含三维空间和非三维空间的软件，Web2.0 互动式网络工具，如虚拟教室，网络会议等。

网络上的实时 （synchronous） 与非实时 （asynchronous） 交际工具已经有很多。最先应用是商业部门，例如大公司利用网络课堂进行业务培训，航空公司利用语音识别和语音合成提供人际对话服务，可以用语音查询航班信息等。银行也提供实时的线上服务，顾客随时可以在线上找到服务人员，解决银行的业务问题。电脑公司利用实时与非实时的软件开展售后服务，甚至可以远端控制客户电脑提供技术支援。本人就曾经在线上与美洲银行 （Bank of America） 的业务员进行过线上的交谈，解决了账户出现的问题。电脑技术首先在商业活动中首先得到普遍应用毫不奇怪，因为电脑技术有提高工作效率，节约成本，方便顾客等三大优点。虚拟世界技术的出现使人际互动在网上更为方便。

这些技术在教育上的应用也随之跟进。学校在普遍建立网页的基础上向互动转化，网页不再只提供资讯，而且提供互动服务。现在已经不是在网上可以"看"什么，而是可以在网上可以"做"什么。虚拟教室，网上教学和各种网上会议（webinar） 如雨后春笋一样出现。每个星期都可以收到各种网上会议的通知。例如在中文教学领域，IQChinese 从 2008 年起就在网上开办中文教学网上会议，介绍软件的使用和网上学习的问题[1]。全世界的中文教师，无论身处何方都可以在同一时间上网分享该领域里的进展。澳大利亚 Monash University 的网上学校用三维的"第二人生"（Second Life） 建立了虚拟课堂 （Chinese Island, 2009）。又如2009 年 University of Oregon 实验性地用"第二人生"举办了暑期汉语夏令营。美国的学生与中国苏州大学的辅导员共同就环境保护议题进行汉语学习。这样的应用实践与日俱增，给汉语教学带来了新的教学方法和手段。

然而科学技术的出现并不保证教师和学生就能自动利用这些技术并且在教学实践中应用。虽然现在的学生是" 网 上 一 代"the Net Generation （Oxford，

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[1] IQChinese 免费网上中文讨论会: http://www.iqchinese.com/Promotion/onlineseminar2010.html。

2009），是"天生数位人"digital native（Bennett，2008）（与"移民数位人"digital immigrant 相对），他们成长在科技包围之中。"第二人生"一类虚拟世界对他们并不陌生。他们会花许多时间在网上与同侪聊天，玩电动游戏，然而这也不表明他们就能自动把技术和时间用到学习中去。因此研究如何在语言教学中应用虚拟世界就成为一个重要的课题。最近几年以来这方面研究已经逐渐出现，英语作为二语教学及西班牙语教学就走在前列。例如 Tanyeli 研究用虚拟世界帮助法学院学生提高英语阅读水平（Tanyeli, 2008）。同时出现的还有一些文集如《通过技术学语言》（*Learning Languages through Technology*，Hanson-Smith，2007），《网络时代的二语教学》（*Second Language Teaching and Learning in the Net Generation* Oxford，2009）等。利用用网上资料库来搜索这方面的研究可以很容易地得到相当多的资讯。

2. 中文教学中可以使用的各种工具

可以运用的网络软件非常多，大部分的软件都可以支持中文，因而可以在汉语教学中使用。下面举例性地说明有哪些软件可以使用。其中有的是免费的，有的是付费的。教师可以先使用免费的软件，试验一下实用性和可用性，然后决定是个人出资购买还是向学校申请经费购买。

2.1 Second Life

Second Life（第二人生）是一个典型的三维游戏软件，由 Linden 公司开发（http://secondlife.com/）。在这个虚拟世界里，每个人都是本尊的"化身"（avatar）。人人可以在这个虚拟世界里购地置屋，进行买卖。虽然这个软件本意是游戏，但是语言教师对此有很大的兴趣，试图在这个虚拟世界找到自己的"第二人生"。在第二人生中一个人可以更换自己的服饰，可以在虚拟空间中跑、跳、飞，做出各种姿势，跟人用打字或语音交谈。如果创建了一个教室，可以在课堂里放置各种学习资料，所学语言国家的图片，视频。如果设定时间，师生可以在这个空间上课，活动。演示片 （PPT） 和视频可以在课堂里播放。总之，这个软件模拟的是人们在真实空间中的活动，对于青年人有很大的吸引力。根据 Linden 公司的资料，到 2009 年 9 月 23 日为止玩家在这个虚拟世界中度过的总时间已经超过 10 亿个小时，或者是 115 年（第二人生）。然而由于这个软件对电脑和使用者的电脑知识技能要求较高，建立自己的"岛屿"（Island）[2]也颇费钱费时，至今为止在语言学习方面的应用始终停留在试验阶段。

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[2] 在第二人生中自己的领地称为"岛屿"（island）。

图 1：俄勒冈大学 2009 年虚拟暑期汉语夏令营学生在第二人生课堂做报告。
坐在椅子上的左一人为笔者，是学生演示报告的评判员之一。

2.2 网上会议软件

相比之下网上会议软件就发展比较快。网上会议虽然不像"第二人生"那样在色彩动画上吸引人，但是在人际交流上可以基本起到相同的作用，而且脱离了游戏的色彩，更加职业化专业化。比较常见的几个软件是：

1. Elluminate (Eluminate, Inc, http://www.elluminate.com/)
2. ConnectNow (Acrobat, https://acrobat.com/welcome.html)
3. Webex (Cisco, http://www.webex.com/)
4. JoinNet (HomeMeeign, Inc.,
   http://www.homemeeting.com/en_US/download.asp#jeditor)

这些工具也称为网上会议与合作工具 （web conferencing and collaboration）。这四个软件很相似，都提供实时的线上会议功能，如桌面共享[3]，白板[4]，线上交谈（online chat），还可以播放演示片（PPT） 或者 Youtube 视频片段。主持人或主讲人的声音和视频可以根据需要开启或关闭，听讲人需要发言可以由主持人来确认，提供话筒。这样的虚拟会议室对于讲座一类的课型很适合。一个主讲人发言，大部分参加者只是听众，不需要人人同时发言，如有问题可以通过打字进行交流。

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[3] Desktop sharing，参与者可以同时看到主讲人的电脑屏幕，也可以从远端在主讲人的电脑上操作。

[4] Whiteboard，可以共同在白板上打字画图贴照片等。
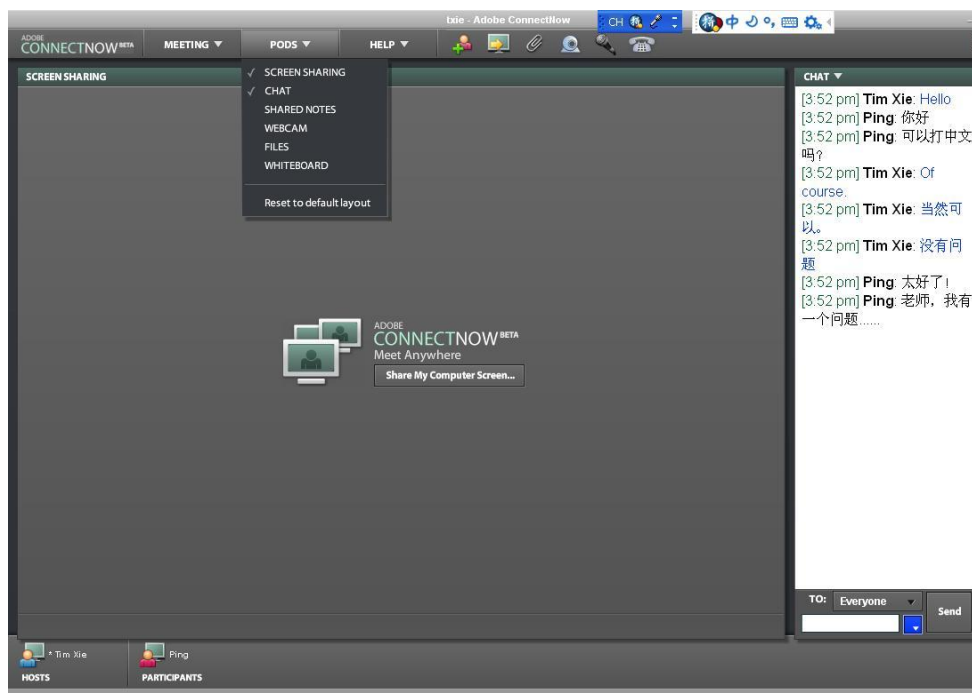
图 2：ConnectNow 虚拟课堂界面

　　中国大陆和台湾也开发类似的软件，功能都相似，但是对电脑和使用者的技术要求不同。因此在选择软件的时候要多咨询专家的意见。

2.3 两个免费的虚拟课堂软件 WizIq 和 DimDim

　　上面说的四个软件收费不菲，因此除非是由学校出资购买，汉语教师一般很难使用。本人经常使用的两个软件是 WizIq（http://www.wiziq.com）和 DimDim（http://www.dimdim.com），更多使用 WizIq，因为虽收费，但年费仅$49，且有免费的版本。DimDim 是免费的，如果需要增加服务项目，如增加参加人数就需要付费升级。WizIq 和前面所说的几个网上会议软件差不多，但是功能没有那么齐全，例如不能共同浏览同一网页。但是课堂教学需要的几个基本功能都有。DimDim 除了基本功能以外，还可以共同浏览网页。
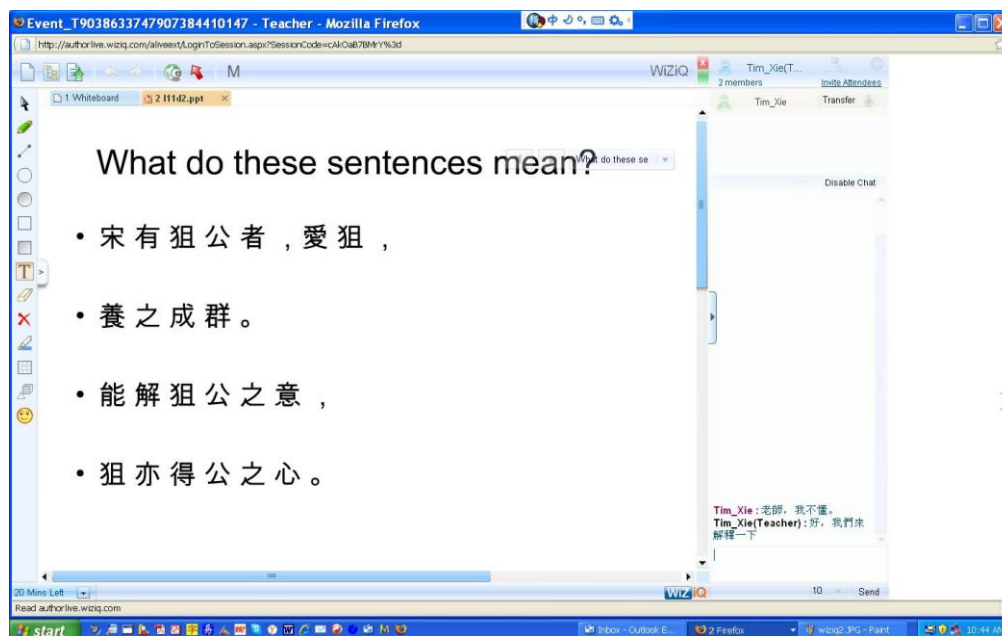
图 3：用 WizIq 进行文言文教学

除了采用上面的工具以外，也可以将免费的通讯工具变成虚拟教室。例如通讯工具 Skype （ http://www.skype.com ） 可 以 和 桌 面 共 享 软 件 Mikogo （http://www.mikogo.com）同时使用，成为一个线上课堂。Skype 有打字聊天和语音会议功能，最多可以容纳 24 个人同时上线讨论。但是 Skype 不能播放 PPT。因此，同时启动 Mikogo 就可以让教师或者主持人把自己电脑的屏幕显示给学生看，可以播放演示片，也可执行其他软件，学生可以看到教师的电脑演示的一切。如果需要，还可以把主电脑的控制权给学生，让学生进行演示或者操作同一个软件。Mikogo 是免费软件，但是只能允许 10 人同时上线。如果要增加参加者，就要注册付费使用。
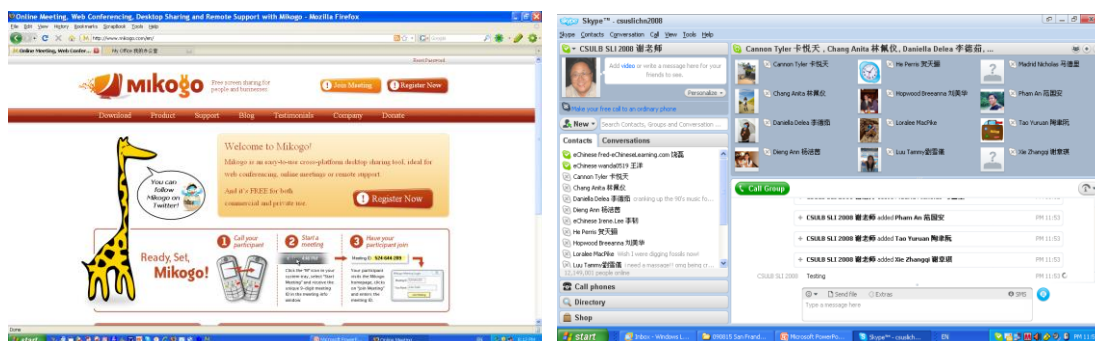
图 4：Skype+Mikogo 也可以成为虚拟课堂

2.4 其他合作学习（协同工作）软件、"写板"（**writeborad**）、"谷歌文件"（**google docs**）和"维哥"（**wiggio**）

合作学习目前已经是教育界的一个有共识的理念。学生通过合作学习来获得所需要的知识与技能。在外语教学中，教师经常将学生分成小组，让各组完成一定

的任务。在这种合作学习活动中线上的"文件共享"（document sharing）软件就可以起到事半功倍的效果。

　　"写板"（Writeboard, http://writeboard.com）是一个使用方便且免费的工具。使用者不需要注册新帐户，只要在每次建立新的任务时由第一个主持人启动一个"写板"（writeboard），先起草一个文件，然后通知其他合作人。合作人收到邀请以后，按照提供地址和密码即可进入修改文件。文件每次修改以后，旧的版本自动保留，新旧版本全部留存在这个"写板"里，随时可以调用、比较、查对。合作人确定最后版本以后可以将此版本输出，进行最后的编排。这个软件的好处是可以让数人实时或非实时共同编辑一个文件，不需要用电子邮件来回传输草稿。
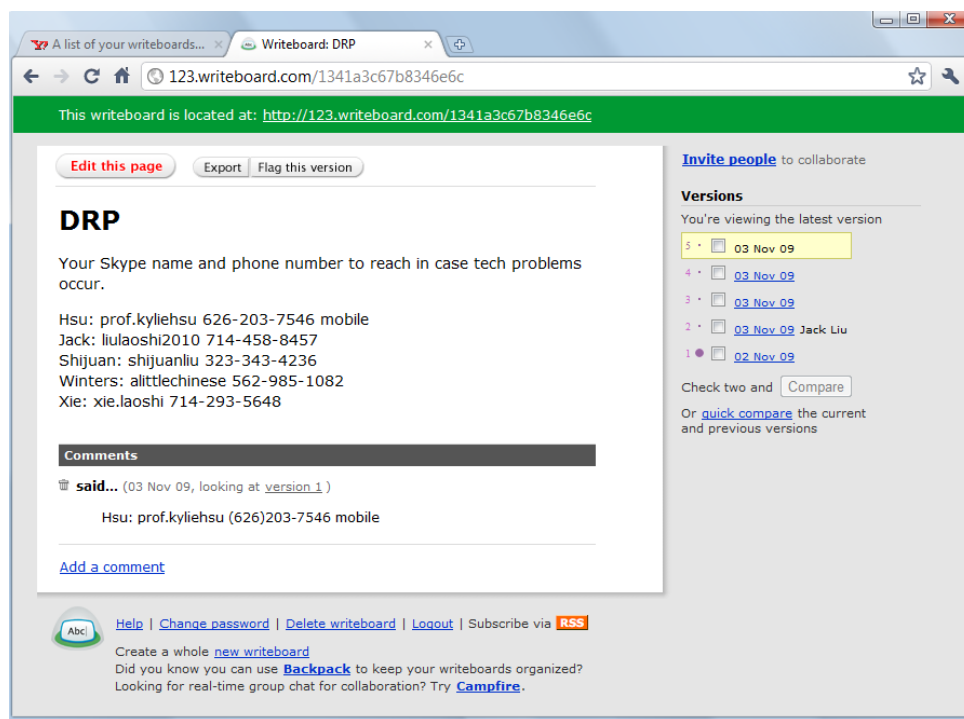
图 5："写板"截图

　　"谷歌文件"（Google docs，http://www.google.com）可以起同样的作用，而且可以处理的文件类型更多。谷歌文件可以处理 Word、Excel、PPT 和 pdf 等文件，功能比较复杂，而且需要建立个人的帐户。因此比较复杂任务可以选用谷歌文件，较简单的任务可以使用"写板"。
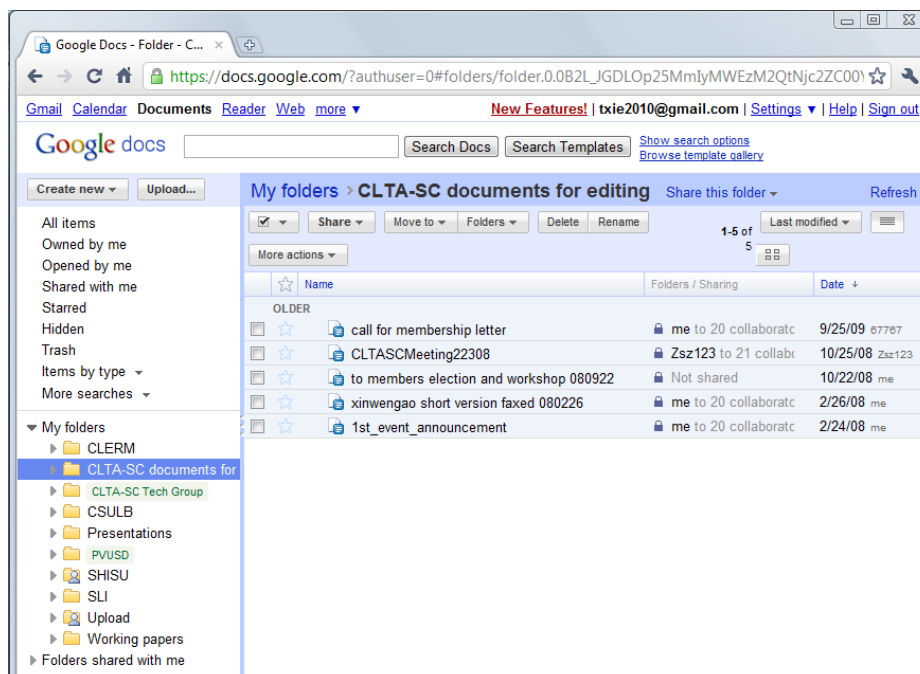
图 6："谷歌文件"截图

　　"维久"（Wiggio, http://www.wiggio.com）也是免费工具，但跟前面两个工具稍有不同。Wiggio 的意思是 work in group （小组工作），因此对团队工作（team work）很有用处。利用这个工具可以建议不同的项目组，每个组有行事日历、网上会议室、文件夹、留言板、通讯区（电子邮件、语音留言、打字交流等）。小组成员可以共同处理的文件类型有 word, excel 和 ppt。pdf 文件也可以存在文件夹里，但不能直接处理修改。文件可以在网上直接修改也可以下载修改以后重新上传。这个工具是教师合作备课，编写教材，制定文件的有效工具。UCLA 孔子学院主持制定美国中小学汉语教学标准时就采用了"维久"。
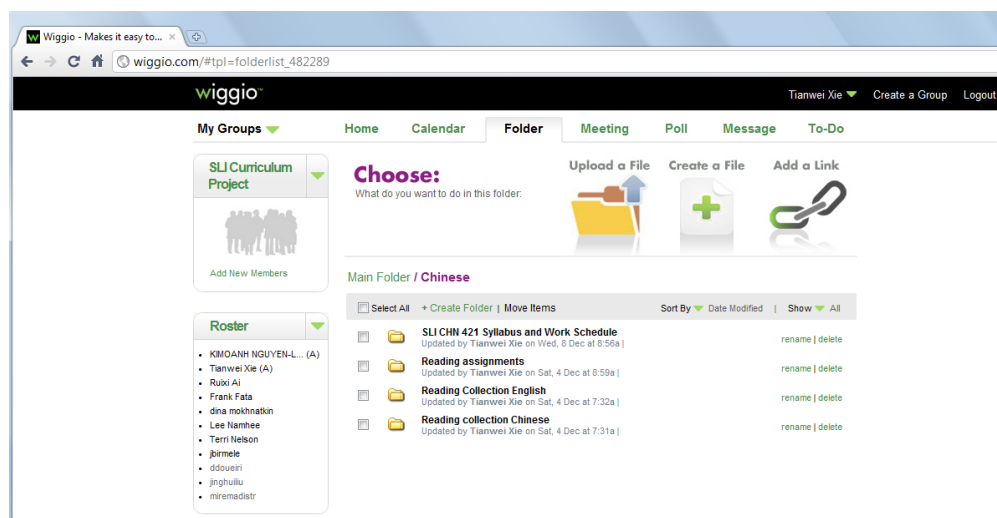

图 7："维久"截图

3. 如何运用网络工具

前面已经说到"天生数位人"也不见得会自动用网上工具来学习，因此作为"移民数位人"的教师更要进行研究、学习和实践，探索如何在汉语教学中利用这些工具。事实上如果利用得法，可以有事半功倍的效果。但有时候盲目的跟从也会使人迷茫，跌入五里雾中，白白浪费宝贵的时间。因此有一些建议或许可以考虑。

3.1 根据实际需要选择软件

面对那么多的网上软件如何选择就是首要的任务。要考虑的因素有：功用，价格，使用方便程度。例如在选择网上教室的时候就要考虑是否的确需要进行网上远程教学。在美国很多城市，大中小学都有中文课，学生希望来到课堂与教师面对面的学习。在这种情况下就不需要用网上教室。不过有一两次的网上实时讨论也可以提高学生的兴趣。本人就曾经利用打字交谈在电脑室里跟学生打字交流。然而如果偏远的地区缺乏汉语师资，远程网上的虚拟课堂就成为一个很好选择。分散在各地的学生要学习汉语也只能采用虚拟教室来上课。笔者的长堤加州州立大学有一个暑期中文项目，学生来自南加州各个学校。第一个暑期去中国以后回到美国继续学习汉语。此时学生已经分散到各地，我们采用 WizIq 和 Skype 进行网上学习，取得较好的效果，有效地维持了学生在暑假学到的语言能力。

价格方面要考虑教师学生是否能够承受。学校一般购买的是通用软件，不可能专门为汉语教学购买所需要的网上工具。汉语教学所需要的网上工具需要教师自己申请经费，或者自我消化。还有现在有一些网上学校（收费）可以提供辅导。如果教师要求学生参加网上辅导，就要考虑学生承受的能力。今年春季长堤州大与网上学校 SpeakChinese.com 进行了一个实验性的网上辅导项目。SpeakChinese 每周向长堤州大学习汉语的学生提供一个小时的免费网上辅导，得到学生的欢迎。在最后的评估中有这样一个问题：如果收费你是否会继续参加网上辅导？收费多少能够接受。学生的反馈表明他们对收费可以理解，但参加意愿大为减低。一般来说一个月收费不超$20 尚可接受。

最后是工具使用的方便程度。一个软件功能虽强，使用不方便也不宜采用。有的软件需要安装，注册新的帐号，有的按装指示过于复杂，让人望而止步。最适宜的是不需安装，可直接可以在网上运行的软件。目前电脑科技发展迅速，云计算技术（cloud computing）可以让用户直接在自己的电脑上运行云端软件，把资料存储在远端的服务器上。

3.2 根据教学目的和任务选择软件

选择工具的第二个建议是跟据教学的目的和任务选择软件。WizIq 一类的虚拟网上教室对讲座性的课比较适合，因为这个软件在理论上可以接受上百个听众，但是显而易见这上百个听众不能同时进行语音交流。语言课一般都是小班，需要经常的语音交流，多人能否同时进行语言交流就是一个重要的选择功能。例如 Skype

可以同时允许 24 人进行语音会议，对于口语课就非常合适。网上一对一的辅导完全可以采用 Skype。因为 Skype 在语音对话的同时，可以用打字进行交流，传送文件。当然一对一的辅导也可以用其他网上教室，但"杀鸡何须用牛刀"。在一般的辅导中并不需要用演示片或者视频，只要双方可以对话，可以打字就行。今年秋季，长堤州大试图与上海外国语大学合作，请中国的对外汉语专业的学生担任美国学生的辅导员，免费提供一周一个小时的网上辅导，采用的软件就是 Skype。小规模的实验已经结束。评估表明学生和网上辅导员比较满意，都表示可以继续进行。此类活动在虚拟世界中跨越了时空的限制，使语言学习更为有效。

学生的合作学习就需要"写板"类的合作工具。我们曾在二年级汉语课和高年级的文言文课分别采用"写板"来进行学习活动。在二年级要求学生两人组成一组，合作就一个题目写出一段对话，并且通过 Skype 进行口头练习。这样学生不须坐在一起，只要利用晚上的时间在家里共同准备练习会话。在文言文课，将学生分成三至四人的小组，将一篇文言文翻译成英语。一人先起草，然后由小组成员不断修改，直到达成一个大家都满意的版本。

在虚拟中文夏令营中，学习任务比较复杂，因此要采用"第二人生"这样的软件。因为在夏令营中学习任务包括了实地调查、文章阅读、集体报告准备和课堂演讲演示。因此一种软件并不能满足多项任务的需要。学生必须在虚拟的环境中对"实地"进行环境污染状况调查，通过电子邮件和 Skype 进行讨论和沟通，然后利用其他软件准备报告，最后到虚拟课堂进行报告和演示。总之，活动需要哪一种方便的软件就可以使用那一种软件。

3.3 虚拟办公和备课活动

上面所说的都是学生和教师的课堂和课外活动。此外，教师还需要备课和接待学生 （office hours）。教师共同备课或者建立共享资料库采用"维久"比较方便。因为各种教学资料可以分门别类存入"维久"的文件夹。教师随时可以提取修改，或者将自己新建的资料贡献出来存入共享库。

虚拟办公室（virtual office 或称行动办公室 mobile office）也是虚拟世界中一种可以使用的技术。台湾太御科技采用用 JoinNet 的行动办公室 http://weboffice.joinnet.tw/enus.php 就是一个商用的例子，公司职员可以在任何地方任何时间进入行动办公室处理公司的事务。教师需要的行动办公室没有那么复杂，所需要的功能不多。最常用的是教师资讯、课程信息、行事日历，电子邮件，预约系统，如果需要也可以加入课程入门链接，使学生可以方便地进入课程。此类行动办公室只要网页就可以满足需要[5]，如果奢侈一点，在"第二人生"建立一个虚拟的办公室也是不错的。

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[5] 请参考本人建立的虚拟办公室网页：http://xietianwei.net。

4. 结语与展望

前面介绍了虚拟世界和在语言教学中的应用。综合起来可以说，电脑技术的飞速发展不断给教育提供先进的手段。语言教学中采用什么样的软件取决与实际的需要和教学活动和任务的性质。教师应该不断地学习，探索和研究，在实践中找到最适合自己的工具。

教育技术的潮流向着两个方面发展：云计算（cloud computing, 港台称云端运算）与移动（mobile）技术。所谓云计算就是电脑程序和资料都可以存储在远端的大服务器上，如同高高在上的云端，个人电脑通过网络接入远端服务器就可以处理资料。例如教师在学校办公室接入远端服务器处理资料，不需要在自己办公室电脑或 U 盘上储存。回到家里或者别的地方可以通过网络接入远端电脑，调出资料进行再处理。云计算技术为虚拟世界活动提供技术上的保证。

移动技术使虚拟世界更为自由方便。手机和平板电脑一类移动设备让虚拟世界更是如虎添翼。现在在 iPhone 和 iPad 一类的平台已经出现了不少软件帮助学习汉语。本人已经收集了几十个免费的学中文软件。虽然这些软件还不够成熟，但是已经显示出生命力。例如供手机和 iPhone 的使用的汉语词典已经出现不少。有的免费，有的收费。其中最引人注目的是 Pleco[6]中文词典"鱼"。因为这个词典不需要输入任何中文字词，只要将 iPhone 或者 iPod Touch 的摄像头对准文字，词典就会利用 OCR 转换成代码，立即显示出英文解释和读音。如果学生有这样的工具，无论在哪里阅读中文都不必用键盘输入，只要把手机对准文字就可以。这种词典显然是我们梦寐以求的。我们梦寐以求的不仅是"即照即译"词典，还有语音会话，自动翻译等技术。

虚拟世界很精彩，但需要我们共同努力。教师有很多的"梦"，希望电脑工程师和软件开发者来听听教师的声音，让这个梦实现。

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[6] 在 AppStore 用 Pleco 搜索就可以下载。

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Second Life 及其在中文教学中的应用
(Second Life and its application in Chinese teaching and learning)

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摘要：本文共分五部分。文章首先介绍了什么是 Second Life，包括其缘起、发展历史和近几年在教育、商业、健康卫生等领域的影响。同时比较了它和 3D 大型多人在线角色扮演游戏的异同，阐述了它和互联网第二代技术的关系。此外，还介绍了与之同属一类的其他 3D 虚拟世界。文章第二部分简单概括了 Second Life 在语言教学中的运用情况、相关学术会议和网上讨论小组等。文章第三部分重点介绍了三个利用 Second Life 进行中文教学的实际案例。接着，文章总结了将 Second Life 运用于中文教学的五大优点和五大缺点及相关问题。文章最后为有意将 Second Life 或其他类似 3D 虚拟世界运用于中文教学与研究的教师和研究人员提了几点建议。

关键词：第二人生，Second Life，三维 （3D），虚拟世界，语言教学，中文教学

Abstract: This article first introduces what Second Life is, including its origin, similarities and differences with Massively Multiplayer Online Role-Playing Games (e.g., World of Warcraft), and its influences in such areas as business, health, and education. The first section also discusses the relations between Second Life and other social Web 2.0 tools (e.g., Wikis), and points out that Second Life is not the only 3D virtual worlds. There are other similar 3D virtual worlds such as Active Words, Twinity, and HIPIHI (a Chinese virtual world developed by a Chinese company at Beijing) as well as new emerging ones (e.g., Opensim, and Open Cobalt). Next, the article briefly describes the history of applying Second Life in language education, such as when and who started to use Second Life in language teaching and learning, and listed some examples of using Second Life in teaching different languages (e.g., Spanish and Italian). This section also introduces the existing wikis and listserv on the use of Second Life in education, as well as the related annual conferences (e.g., SLanguages) and proceedings.

In the third section, the article introduces real cases of using Second Life in Chinese teaching and learning, such as the online Chinese language courses taught at the Confucius Institute of Michigan State University. This section describes three cases in more detail. One is the courses taught by Professor Scott Grant at the Chinese Programs of Monash University, Melbourne, Australia. The second case is the MyChina Village project, a virtual summer camp held in Second Life in August 2009, led by The Center for Applied Second Language Studies at the University of Oregon. The third case is a collaborative project between a class on multimedia and Chinese pedagogy offered to preservice teachers of Mandarin Chinese from the Chung Yuan Christian University, Taiwan, and an intermediate Chinese class offered to Chinese language students at Embry-Riddle Aeronautical University – Prescott. The three cases all used Second Life in improving Chinese teaching and learning, and all built their virtual facilities in Second Life.

In the fourth section, the article discusses the advantages and disadvantages in using Second Life in Chinese language teaching and learning. The first advantage is reflected in teaching and learning online. For example, Second Life can help make online teaching and learning more engaging as well as provide a way to organize learning resources in multiple dimensions. In addition, it can help strengthen connections among online students and make synchronous group discussions more effective. This section also discusses the other four important advantages. For instance, using Second Life helps create a realistic situated context for role play and authentic communication. It also becomes easier in Second Life to act out the language and use the Total Physical Response strategies. Additionally, students can experience studying abroad in the virtual worlds while staying home. Another benefit is that it is easier to find topics and less awkward to start a conversation with a stranger in the virtual worlds. On the other hand, the major disadvantages of using Second Life include: the technical barriers such as the high requirements of the users' computers; the high learning curves that demand time and energy in mastering the use of this tool; the monetary cost for purchasing the virtual space and building the virtual facilities; the need for technical and teaching support; and the potential unexpected disturbing behaviors because of the open nature of the virtual environments.

The last section provides suggestions for instructors and researchers interested in using Second Life in Chinese language teaching and learning, such as knowing the tool well before using it; weighing the investment and outcomes in using the tool; Finally, the author encourages interested researchers to conduct a review of the studies on the use of Second Life in teaching different languages, and encourages interested instructors and researchers to explore the use of HIPIHI, the Chinese 3D virtual worlds, in Chinese language teaching and learning.

1. 什么是 Second Life

图片 1： Second Life 网站上的图片

Second Life （中文译作"第二人生"）是由林登实验室（Linden Lab）建立的互联网上的三维（3 dimensional-3D）虚拟世界（Virtual worlds）。虽然其看起来与大型多人在线角色扮演游戏（ Massively Multiplayer Online Role-Playing Games）有些类似，但却有很多不同。具体来说，其类似之处在于两者都可以选择虚拟的自我化身（Avatar），角色之间可以互动，参与者还可以用文本或语音进行实时交流等。 而其最大的不同之处在于，在那些游戏里（比如有名的 World of Warcraft）有预先设置的目标、任务、情景、角色及游戏规则，而在 Second Life 的 3D 虚拟世界空间内，却无此类限制。如其创办人菲利普 罗斯德尔 （Philip Rosedale） （2006） 在介绍 Second Life 缘起的时候所说，Second Life 最大特点就是为用户提供一个平台和工具让人们在这里尽情发挥自己的创造力[1]。

Second Life 的用户又叫居民 （Resident）。居民可以选择自己的性别、肤色、身高、胖瘦及其他所有外形特征 ，还可以购买虚拟土地并在其上面自由设计构建任何城市（如莫斯科、香港），任何设施（如飞机场、火车站、图书馆），任何景物（如高山、大海、湖泊）等等。居民们可走，可坐，可乘坐其他用户提供的交通工具（如自行车、汽车、轮船），还可像童话中一样自己飞行，并可利用 Second Life 提供的 Teleport[2] 功能在瞬间抵达该世界中的任何指定地点。此外，像现实人生一样，Second Life 的居民还可以转让自己的虚拟土地，销售自己的产品包括虚拟的服饰。

Second Life 的测试版于 2003 年 5 月发布[3]，经各大主流媒体报道后，在 2006 年与 2007 年间风靡一时。其注册用户人数成倍增长。在 2006 年 10 月 18 日其注册帐户达到 1 百万个，而至 2006 年 12 月 14 日，不到两个月注册帐户达 2 百万 （Terdiman, 2006）。到 2007 年 2 月则又迅速达到 4 百万[4]。很多有名的大公司也纷纷紧跟潮流在 Second Life 占领一席之地，比如微软 （Microsoft），IBM，可口可乐（Coca-Cola），丰田（Toyota）等，以保持在用户心中常变常新的形象及向 Second Life 的居民进一步推广其产品。各组织机构包括世界一些国家领导人也在

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[1] http://www.youtube.com/watch?v=0t1XR-LrgyM：The Origin of Second Life and its Relation to Real Life。

[2] 有人将 Teleport 译成"闪电移动"、"瞬间移动"或"远程传送"等。

[3] http://wiki.secondlife.com/wiki/History_of_Second_Life：History of Second Life。

[4] http://zh.wikipedia.org/zh/%E7%AC%AC%E4%BA%8C%E4%BA%BA%E7%94%9F。

Second Life 注册，比如菲律宾总统阿罗约与其科技部部长 2007 年也成了 Second Life 的居民，以响应其倡导的民族创新战略[5]。新闻、影视、医药卫生、航天、军事、建筑设计、旅游等其他各行业也都加入这一虚拟世界浪潮中，比如路透社还在 Second Life 设立了分社。美国政府疾病控制与预防中心也用 Second Life 提供的平台宣传提高公众对公共卫生的意识（Boulos, Hetherington, &Wheeler, 2007）。

　　很多学校与教育机构也在 Second Life 设置虚拟校园、图书馆、教室、招生处等以扩大其影响，同时也为其教师学生探索新教学途径方法提供场所。如俄亥俄大学（Ohio University）在 2007 年购买了 7 个岛屿打造其虚拟校园[6]；斯坦福大学（Stafford University）在 Second Life 建立了虚拟图书馆[7]；南加州大学（University of South California）商学院在 Second Life 里提供场地让其学生经营管理虚拟资产[8]。据 Second Life 的教育宣传册介绍，至 2010 年已有来自世界各地超过 700 多个学校及教育机构入住 Second Life（Liden Lab, 2010）。

　　在一定程度上说，以 Second Life 为代表的 3D 虚拟世界可划入 Web 2.0（互联网第二代技术） 的范畴。其共性之一是用户既是参与者或消费者（Consumer），同时也是生产者（Producer）。同 Youtube，Wiki 等为代表的互联网技术一样，Second Life 提供的只是一个平台。除了作为消费者可以欣赏使用或购买别人创造分享的东西外，在这里用户也可以自己作为创造者、生产者，内容提供者，让别人使用自己创造的事物。 基于 3D 虚拟世界的巨大潜力，有人提倡把 Second Life 划为互联网第三代 Web 3.0，认为其代表将来互联网发展的方向 （Driscoll，2007）。

图片 2：HIPIHI 网站上的图片

这里需要指出的是 Second Life 并不是唯一的 3D 虚拟世界。其他类似的 3D 世界还有 ActiveWorld[9], There[10] ，Twinity[11]等。Second Life 只是迄今最有影响的一个，其市场运营策略也较为成功。中国自 2005 年开始建造自己的 3D 虚拟世界。2007 年 3 月中国 HIPIHI[12]公司推出 HIPIHI3D 世界有限试测版， 2008

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[5] http://club.classic023.com/?action-viewthread-tid-95785 (菲总统也玩《第二人生》 推进民族创新战略）。

[6] Ohio University Second Life Campus History：
http://vital.cs.ohiou.edu/mediawiki2/index.php/Ohio_University_Second_Life_Campus_History。

[7] http://secondlife.com/destination/600: Stafford University's virtual library。

[8] http://secondlife.com/destination/679: USC School of Business in Second Life。

[9] http://www.activeworlds.com/。

[10] There 公司于 2010 年 3 月 9 日因资金问题关闭（http://www.there.com/info/announcement ）。
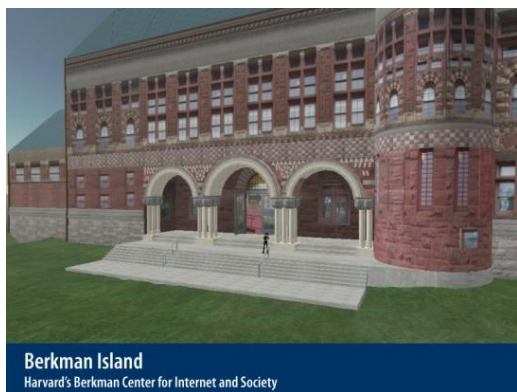
[11] http://www.Twinity.com。

[12] http://www.hipihi.com/。

年 4 月进入公测期对大众用户开放。 另外，基于各 3D 虚拟世界之间不兼容各自为政的情况，有人提倡平台共享，并开发了相应软件如 Opensim[13]。一些教育机构认识到将数据内容放在一个商业公司服务器上对该公司产生的依附性，从而提倡开发面向教育机构且可把数据内容存在自己机构服务器的 3D 虚拟世界平台（Young，2010）。 在美国国家自然科学基金及其他基金赞助下，杜克大学（Duke University）目前正在研发的 Open Cobalt[14] 就是针对这种需要的产品。

2. Second Life 在语言教学中的应用

图片 3：Second Life 中的哈佛大学 Beckman 中心

自 2006 年开始陆续有教育工作者在 Second Life 进行教学实践。比如哈佛大学（Harvard University）法学院[15] Charles Nesson 教授和他女儿 Rebecca Nesson 在 2006 年秋季在 Second Life 教了一门叫作 Cyber One: Law in the Court of Public Opinion 的课（Lamb，2006）。 丹佛大学（Denver University）物理系的教授在 Second Life 创建虚拟核反应实验室以帮助人们提高对核能的理解（Inside HigerEd，2007）。 加拿大 Loyalist College 的教授们通过在 Second Life 中的模拟边防海关审查培训来提高学生毕业后实际在海关工作的技能（Hudson & Degast-Kennedy，2009）。2006 年 8 月与 2007 年 8 月，一些对 Second Life 在教育中的应用感兴趣的教育工作者及研究者就这一领域召开研讨会，并出版了论文集。此外，为了支持用户对这方面的兴趣，林登实验室（Linden Lab）还建立了一个专门的维基（Wiki）[16] 和一个简称 SLED（Second Life in Education）的邮件列表（Mailing list）[17]。

利用 Second Life 进行语言教学方面的讨论也在 2006 年兴起。2006 年 11 月，在西班牙巴塞罗那（Barcelona，Spain）英国文化协会青少年学习活动中心（Young Learners Centre of the British Council）工作的 Graham Stanley 在 SLED 上发布一个信息[18]，欢迎大家参加他在 Yahoo 上建立的讨论用 Second Life 进行语言教学的用户小组[19]。2007 年 1 月英语教学网上电子村（TESOL Electronic Village Online）举办了"数字游戏和语言学习"（Digital Gaming and Language Learning）网上培训[20]，其

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[13] http://opensimulator.org。

[14] http://www.opencobalt.org/。

[15] http://secondlife.com/destination/597。

[16] http://wiki.secondlife.com/wiki/Second_Life_Education。

[17] SL Educators (The SLED List): https://lists.secondlife.com/cgi-bin/mailman/listinfo/educators。

[18] https://lists.secondlife.com/pipermail/educators/2006-December/004118.html。

[19] http://groups.yahoo.com/group/secondlifelanguages/messages/1?l=1。

[20] http://evo07sessions.pbwiki.com/digitalgamingELT。
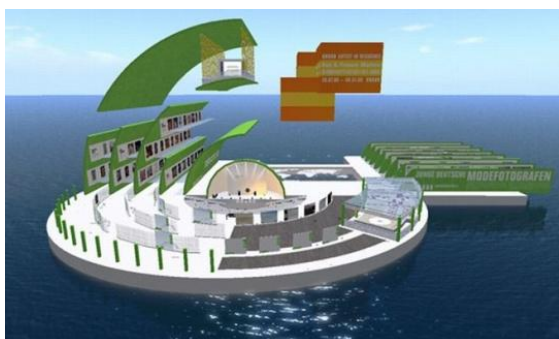
中Second Life是其重点培训内容，有很多英语教师参加。2007年6月 由位于西班牙巴塞罗那的Consultants-E公司发起赞助在Second Life里举办了第一届讨论Second Life 用于语言教学（SLanguages）的网上3D会议[21]。该会议至2010年已举行了4届，最近一次于2010年10月15-16日召开[22]。

最早尝试使用Second Life进行语言教学的多为语言（特别是英语）培训机构，比如除了上面提到的位于西班牙的Consultants-E公司，还有Avatar Languages[23]和 Languagelab.com [24]，以及一所位于意大利的意大利语语言培训学校[25]。

各种正规教育机构从事语言教学与研究的教师与研究人员也相继开始关注并

图片 4：Second Life 中的歌德学院

尝试将Second Life运用到不同语言的教学中。比如德国的歌德学院 在Second Life[26]提供免费德语课程[27]。印第安纳州Ball State University 的 Lisa Kuriscak 和 Christopher Luke 教授在2007-2008学年尝试利用 Second Life 教西班牙语。从2008年开始在CALICO [28] 的年会上探讨利用Second Life进行语言教学的报告也越来越多。此外，北伊利诺伊大学的教授利用Second Life 培训未来的语言教师。来自挪威、瑞典和意大利的研究者Deutschmann，Panichi，& Molka-danielsen（2009）研究如何利用Second Life提高母语为非英语的博士生的英语口语能力。

3. Second Life 在中文教学中的几个实例

图片 5：Second Life 中的密西根州立大学孔子学院办公楼

从事有关中文教学的一些教师和研究者从 2007 年开始尝试将 Second Life 运用到中文教学中。比如密西根州立大学孔子学院在 Second Life 修建了虚拟孔子学院，教学楼，饭馆等，并于 2008 年秋天在 Second Life 开设中文 101 和

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[21] The 1st Slanguages Conference, 2007:
http://www.theconsultantse.com/edunation/SLanguages2007.pdf。

[22] The 4th Slanguages Conference, 2010 : http://www.slanguages.net/archive2010.php。

[23] http://www.avatarlanguages.com。

[24] Language Lab: http://www.languagelab.com; http://secondlife.com/destination/647。

[25] http://secondlife.scuolaleonardo.com/。

[26] http://secondlife.com/destination/954。

[27] http://www.goethe.de/lrn/duw/sdl/enindex.htm。

[28] Computer-Assisted Language Instruction Consortium (CALICO): https://www.calico.org/。

102 课程。注册的学生可得到 Saint Clair County Community College 的学分[29]。

　　下面就三个利用 Second Life 进行中文教学的实际案例做些较为详细的介绍。

案例一：

　　澳大利亚蒙纳士大学中国研究系 （Chinese Studies Program at Monash University，Melbourne，Australia）的 Scott Grant 老师自 2008 年以来一直在利用 Second Life 进行中文辅助教学。据 Grant 老师的网站 [30] 介绍，为了研究 Second Life 在教学中的应用，蒙纳士大学于 2007 年在 Second Life 购买了一个虚拟岛屿（Virtual Island）。中国研究系于 2007 年下半年在学校的虚拟岛屿上建造了具有中国文化特色的书院，比如其门口贴有中国民间传统的门神图案。另外，还建造了茶馆、医务室，旅游社，商业街、蔬菜市场等虚拟设施供情景教学使用。2009 中国研究系又建立了一个专门为中国语言文化学习方面的活动使用的岛屿。该岛称作"中国岛"（Chinese Island）。在该岛上相继又建立了 3D 飞机场，火车站，房地产中介公司等虚拟设施。
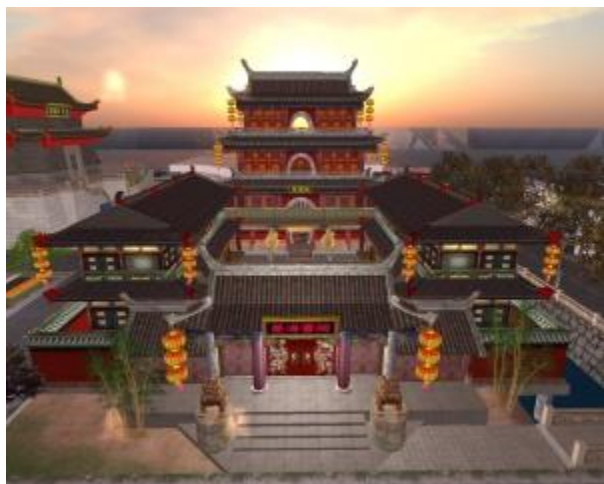
图片 6：澳洲蒙纳士大学中国研究系在 Second Life 中的中文学习场所

　　据该网站介绍，自 2008 年开始使用 Second Life 教学以来，中国研究系已有超过 400 多个本科生使用过该虚拟空间学习中国语言文化。Grant 老师进行了多种富有创意的教学尝试。

　　他的尝试大致可分为三类：第一是针对一、二年级初级或中级水平的语言课而设计的活动。 Grant 老师利用"中国岛"提供的接近真实的中国情景让学生复习，练习并拓展在课本及面对面课堂上学的词汇、句子及文化知识。比如，在学习与交通有关的话题时，他让学生在"中国岛"的 3D 虚拟火车站、飞机场练习买票、上车/登机、并给在中国的朋友发电子邮件通知自己所乘车次/航班及到达时间。在学习有关身体健康看病等话题时，在精心设计的 3D 虚拟医务室，学生们可以复习（读和听）课本上学的词汇句型，并根据自己水平和实际需要选择学习该 3D 空间提供的课本以外的有关词汇及句子。此外还可模拟如何用中文看病的全过程，包括填写病历卡，向医生描述身体不舒服的症状等，从而为在现实生活中真的需要看中国医生做准备。

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[29] http://confucius.msu.edu/secondlife/enrollment.html。

[30] http://www.virtualhanyu.com/。

第二是针对三年级中高级程度的"中文媒体课"（Chinese Media Studies）[31] 进行的尝试。在这门课上，Grant 老师让学生做了以下一些任务：其中一个任务是让学生们在 Second Life 采访来自中国、美国、新加坡说中文的人。采访首先在被采访人所在的虚拟地点进行，然后请被采访人来到蒙纳士大学中国岛专为该课建立的电视采访室接受较为正式的访谈。之后，学生们还要把采访的内容写成书面新闻报道，在虚拟的电视台播出并录下来。

第三是设立可适用于任何年级的课外聊天室。从 2009 年 7 月底到 10 月底每周日到周三晚上 8 点到 9 点（当地墨尔本 Melbourne，Australia 时间），都会有一个高年级的学生在"中国岛"的聊天室和学生们通过声音或文本聊天，包括帮初级班的学生练习与课本有关的内容。

Grant 老师把自己使用 Second Life 教学情况作成了多媒体视频，在其网站 http://www.virtualhanyu.com 上可以看到。

案例二：

美国俄勒冈大学（The University of Oregon）第二语言应用研究中心（The Center for Applied Second Language Studies）[32] 在美国国家安全教育项目（National Security Education Program）的资助下，于 2009 年夏天在 Second Life 举办了"我的中国村（MyChina Village）"虚拟中文夏令营（Summer camp）[33]。该夏令营的目标是帮助具有中级水平的学习者进一步提高其中文水平。该项目的合作伙伴有 Centric 公司及 Avant Assessment 公司。Centric 公司负责在 Second Life 建立适合活动需要的虚拟的"我的中国村"。Avant Assessment 公司负责学生的标准语言水平测试。

夏令营的负责人是第二语言应用研究中心的助理主任 Sachiko Kamioka 女士，她的助手是一个来自中国在俄勒冈大学就读的博士生，担任夏令营顾问。参加该夏令营的中文学习者来自美国各地， 是通过网上召集到的。申请者一般要经过两个步骤的测试以确定其中文水平。第一个是电话测试。第二个是使用 Avant Assessment 公司网上的标准化语言测试。夏令营的志愿者是苏州大学对外汉语专业的本科生。这些志愿者帮助夏令营的中文学习者学习中文。所有活动都在网上进行，对参与者免费。共有 7 个来自美国不同州的中文学习者，16 个来自苏州大学的志愿者参加。

夏令营从 2009 年 8 月 3 日到 28 日，每天在网上活动两个小时（美国太平洋时间下午 5 点到 7 点）。该夏令营以环保为活动主题。第一个星期的题目是关于水危机。参加夏令营的成员首先互相自我介绍，然后志愿者为学习者介绍苏州、附近太

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[31] 据 Scott Grant 介绍，" 中文媒体课"以学习媒体语言为主，并不是对中国媒体的研究或分析。这门课相当于过去的报刊课，只是多增加了网上媒体这一新内容。

[32] http://casls.uoregon.edu/。

[33] http://mychinavillage.uoregon.edu/。

湖的水危机及全球的水危机情况。成员们一起做关于水危机方面的游戏。比如在虚拟中国村的大屏幕上列出 15 个关于水危机的问题及答案，让学习者选择，答对后得分。

图片 7：夏令营成员在 Second Life 做游戏

在第二个星期里，苏州大学的志愿者制作了一个小品，模拟采访苏州市的一个官员和市民关于太湖水问题的看法。学习者可以提问。之后夏令营的参加者根据他们的理解做一个有关的小品，并在 Second Life 里参观两个帮助人们了解生态生活和可持续性发展的场所。

在第三个星期，参加者分成小组，每个小组就如何将"我的中国村"变成可持续发展的城市发表看法。参加者要求从六个题目中选择四个，比如交通，废物利用，水和土地的利用，减低二氧化碳排放量等。组织者还请了富有中文教学经验的教师志愿者作为评委为小组的演讲打分，每位参加者也可以为他们喜欢的小组投票。活动之后小组提出的好的想法（比如用风力发电，提供免费自行车等）可以在虚拟的"我的中国村"付诸实施。第四个星期活动的重点是进一步培养夏令营的参加者对"我的中国村"的主人翁感，引导他们设计夏令营结束后的一些自主学习活动，从而使 "我的中国村"这一项目可以自己持续下去。

关于该夏令营的详细介绍及研究发现可参考 Sachiko Kamioka 女士在 2009 年全美外语协会上作的报告：MyChina: Summer Chinese Immersion Camp in Second Life [34]。

案例三：

台湾中原大学应用华语文学系郑琇仁老师与美国安柏瑞德航空航天大学—普雷斯科特分校 （Embry-Riddle Aeronautical University – Prescott）战红老师合作，在 2009 年秋季利用 Second Life 来培训中文教师和教授中文。郑琇仁老师的学生母语是中文，需要实际教学经验，以便毕业后作中文教师。战红老师的学生是母语不是中文的美国大学生。两位教授通过

图片 8：实习老师在 Second Life 上课的情景

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[34] Sachiko Kamioka (2009), *MyChina: Summer Chinese Immersion Camp in Second Life*. Presentation given at ACTFL 2009 Annual Convention and World Languages Expo. Available: http://mychinavillage.uoregon.edu/learn.php?section=presentations。

Second Life 平台，让中文为母语的台湾学生老师教美国学生中文，从而使得隔着太平洋的双方学生各取所需，分别得到实际教学和应用语言的机会。为了满足教学需求，两位教授与台湾资讯工业促进会（简称资策会）[35] 合作，成立研究小组共同在 Second Life 建造了属于自己的 3D 虚拟教学设施"虚拟生活实验室"（Virtual Living Lab），包括虚拟的飞机场、宾馆、商店等。

郑老师教的是为本科生高年级开设的"多媒体与华语文教学"课。班上有 63 个学生。战老师教的是中文二年级的学生，共 13 个。为了使郑老师班上的 63 个学生都有在 Second Life 实习教中文学习者的机会，这些学生被分成 13 组，每组有 4-5 个人。作为课程要求的一部分，双方学生都需要参加 Second Life 的活动。在 Second Life 的实际教学时间为期两周，每周一次，每次 30 分钟。考虑到检测双方设备（如麦克风等）和了解中文学习者的具体水平的所用时间，每次实际安排 1 个小时。教学的内容是帮助郑老师的学生练习和复习他们在面对面课上学习的内容。两次教学的内容完全相同。在双方学生在 Second Life 教学时，两位教授都会在旁边观看以确保教学顺利进行。在每次实习教学时间结束后，两位教授会及时给予学生反馈，并提出改进建议。一名助教负责协助教学过程的录影。

关于这一项目的具体情况及研究发现可参考她们写的文章，如"华语师资培训之教学个案研究─以虚拟实境 Second Life 为例"[36]。为分享教学经验和提供 Second Life 教学培训资料，她们的学生还在两位老师的指导下，制作了记录其当时在 Second Life 教学情景的影片，放在 Youtube 上[37]。另外，资策会和两位教授合作建立了一个网站，名为"第二课堂"（Second Classroom）[38]，以分享研究成果和推广运用 Second Life 的经验，并提供培训。此外，他们还在社交网站（Facebook）成立了 Second Life 的网上空间来进行这方面的讨论[39]。

图片 9：密西根州立大学孔子学院在 Second Life 的教室

除了以上介绍的几个案例外，美国西东大学（Seton Hall University）的陈东东老师也尝试在其中文课中使用了 Second Life。陈老师试用的班级是她教的两个初级中文班，共 30 个学生。其学生除了 4 个学生有一些中文背景外，其他都为零起点的学生。在一个学期的 16 个星期内，学生们需要完成 8 个任务。每两星期一个任务。这些任务包括练习发音，寻找

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[35] http://www.iii.org.tw。

[36] 郑琇仁，战红，陈庆萱 （2010）华语师资培训之教学个案研究 ─以虚拟实境 Second Life 为例。中原华语文学报, (5), 页 157-178： http://cycuir.lib.cycu.edu.tw/handle/310900400/45901。

[37] http://www.youtube.com/watch?v=Ou4Xei0DMQY&feature=related （庆祝朋友生日）； http://www.youtube.com/watch?v=2gQznOtKPpA&feature=related （介绍新房子）。

[38] 其网址为 http://www.chineseplaza.com/。

[39] 其网址是 http://www.facebook.com/second。

汉字及其字根，练习做自我介绍，问对方爱好等。这些任务占学生总成绩的16%。 陈老师用的是前文提到的密歇根大学孔子学院的虚拟场所和所建设施。其具体情况和研究发现可参考她在 2010 年 TCLT6[40] 论文集中发表的论文。

4. 利用 Second Life 进行中文教学的优缺点及相关问题

Second Life在教育包括语言教学中应用的优缺点已有人评述（如Stevens，2006； Erard ， 2007 ； Cooke-Plagwitz ， 2008 ； Nesson & Nesson ， 2008 ；Hundsberger，2009；郑琇仁，战红，陈庆萱，2010）。下面，笔者根据自己从2007年开始对有关文献的阅读包括对一些应用Second Life的教学案例的观察以及自己在日常使用Second Life的体会， 就其在中文教学运用中的优缺点及相关问题谈一下认识。

4.1 利用Second Life进行中文教学的优点

研究一新技术的优点可首先看该技术与其他相关技术比有哪些独特之处，即其他技术不能实现或不如该新技术有效的地方。以Second Life为代表的3D虚拟世界在教育应用方面最大的优点体现在远程（互联网） 教育[41]方面 （Liu，2008；Nesson & Nesson，2008）。而远程（互联网）教育与传统的面对面（Face to Face） 教育相比存在的必要性体现在诸多方面，比如网络教育可为由于种种原因不便面对面（Face to face） 上课的学生提供学习机会；可以使学生接触到由于地域限制等因素不能在传统课堂中接触到的同学或老师；老师也能通过互联网接触到来自更大范围的学生（如Kim，Liu & Bonk，2005；Liu等，2007）。具体到中文教学，远程教育可为在周围找不到合适老师的学生找到合适的中文老师，为学生人数不够的老师招到更多的学生。通过互联网教学还有其他益处，比如在以上提到的台湾中原大学郑琇仁老师和美国战红老师的合作教学的案例中，郑老师的学生在台湾学校当地不容易找到学中文的学生来实习中文教学；战老师的美国学生在美国学校当地不容易找到说中文的人来练习中文。通过远程互联网他们的学生可以互取所需。

与其他用于远程互联网教学的技术比，Second Life在远程教育方面有如下几个优势：（1）可以使网上学习更有趣。由于没有和老师及同学面对面接触的机会，并且网络课程中文本形式较多，学生学起来容易感到枯燥 （Shih & Yang，2008）。而在3D虚拟世界里，学生和老师都有自己的3D虚拟化身，可坐可走可飞，还可以在虚拟的教室、图书馆学习（Nesson & Nesson，2008）。（2）Second Life可以帮助加强学生们之间的联系。一些研究发现远程教育课程中的学生在学习时常会有孤独感（如 Palloff & Pratt，2007）。有时虽然两个学生同时在浏览一个

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[40] http://nealrc.osu.edu/tclt6。
[41] 在此文中， "远程教育"（Distance Education） 和"网络教育"， "互联网教育"（Online Education） 所指相同。

课程网页，但他们并不知道两人同时在线。虽然可以用 Skype 等基于电脑间的网络电话来显示对方是否在线，但不如在Second Life 的虚拟教室或图书馆内看到对方更直接（Nesson & Nesson，2008）。Second Life可将在分布在世界各地的学生通过虚拟空间聚在一起。他们可以像现实世界中一样可以和同学们在校园里散步，一起喝咖啡，坐在一起讨论问题等。（3）利用Second Life可以帮助远程教育课更直接方便有效地组织小组活动如分组讨论，小组分角色辩论等。笔者曾上过网上课程，在这些课上体验过利用Adobe Connect 这一网络实时会议工具进行小组讨论。来自美国不同地区的学生在家里通过互联网上课。举行会议的地址就是一个网址，这一网址相当于一个房间。学生登录进去后，看到的界面如以下图片10 所示。在组织小组讨论时，老师给每个小组一个不同的网址，进入后会看到类似的界面。只不过在会议参与者显示框里只显示登录进来的该小组成员。而在Second Life里由于是3D，学生和老师可以更加直接的看到彼此的位置、在线状态，从而在开会，进行讨论时也更有真实感。（4）Second Life可以在3D空间内以立体方式更有效的组合各种与课程有关的资料。比如，在讲与饮食有关的话题时，可将各种菜用3D虚拟体现出来，学生可听到该菜的中文名称，看到该词的汉字和拼音写法。另外，在虚拟的中国饭馆里，还可以听到以中国音乐做背景的音乐，墙上的虚拟电视机里还可播放着中国电视节目。
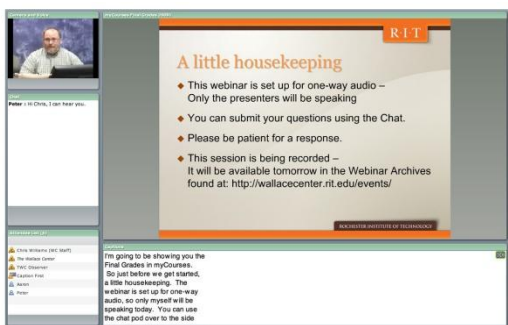
图片 10：利用 Adobe Connect 上课/开会/讨论的情景

图片 11：在 Second Life 上课/开会/讨论的情景

图片 12：密西根州立大学孔子学院在 Second Life 的饭馆

其次， Second Life 与其他用于教育的技术相比，其在运用于语言教学包括中文教学方面的优越性还体现在可用于情景教学与角色扮演上（Shih & Yang，2008）。比如，在学与就餐话题有关的课程时，可让学生来到 Second Life 里建的中国餐馆里练习对话。从而让学生学起来更有情景感，更容易进入角色。

第三，在 Second Life 里，学生可以更容易按照语言给的指令做出相应动作，从而加深对语言的理解，同时教师也可以更准确的了解学生的理解掌握程度。比如在讲到方向和问路有关的话题时，告诉学生"往前走，向左转"。 虽然在面对面的教学中，也可以让学生用动作的方式来做，但做起来不太方便，特别是教室空间有限,学生人数较多时。而在 Second Life 里却很容易来做，并且还可让很多学生同时来做。另外一些在实际教室里不容易实现的动作，比如"上车"，"骑马"等可在 Second Life 很方便的实现。笔者一直觉得 ASHER 教授提出的"全身反应法"（Total Physical Response[42]） 应用在成人外语学习的一个局限是：与儿童相比，成年人的自我意识比较强，在他人面前做动作时有时会不好意思。对那些性格内向怕羞的人来说，更是如此。而在 Second Life 由于控制的只是虚拟化身，学习者做动作时会更自然,更少焦虑感（Hundsberger，2009）。

第四，在 Second Life 里，由于其仿真性，可使学生足不出户、不用花钱也可到"中国城"（China town）进行语言实习（Field Trip）或到中国旅行（Grant，2009），尽管这些地方都是虚拟的。比如在 Second Life 里学习者可在蒙纳士大学建的体现中国特点的火车站、飞机场体验买火车票、飞机票，还可在 Second Life 里的虚拟中国医院里模仿看病，为以后在现实中看中国医生做准备。这些在虚拟世界里的语言实践，除了费用低、方便灵活外，老师还可通过计算机及时给学生反馈和指导 （Liu, 2008；郑琇仁，战红，陈庆萱，2010）。比如学生忘记一个单词怎么说或者老师希望该学生与对话者的对话 还可更深入些时，老师可以通过 Second Life 的文本对话窗口，或另打开 Skype，在不打断学生的对话的同时提出建议。

第五，在虚拟世界里人们更容易找到对话话题。如 Nesson 和 Nesson （2008）所说，在 Second Life 里除了其他很多话题外，人们还可以谈论对方选的虚拟化身。由于谈话没有现实生活中的诸多顾忌，与陌生人开口讲话也更加容易。比如如果不喜欢对方，可以连再见也不用说马上飞走，因为下次见了面双方的虚拟化身已经变了。另外对方也不会像在现实中一样觉得跟你说话你飞走不礼貌，可能会觉得你只是个新手，操作失误， 或你用的计算机出了问题而已。

图片 13：郑老师学生做的影片中的截图

利用 Second Life 还有其他一些好处，比如由于学生在 Second Life 有较高的掌控权和较高的学习主动性、自觉性， 学生对学习中文的自我效能感（Self-efficacy beliefs）也会有较大提高（Henderson 等，2009）。另外，与一些网上实时会议软件（比如 Adobe Connect）功能类似，在 Second Life 里，可以很方便的将谈话过程记录下来，除了文本外，还可记录下动作过程，从而让学生事后观看，以提高自己的表现，比如

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[42] http://www.tpr-world.com/。

上面提到的郑琇仁老师的学生制作的影片。最后，文献中（如 Kuriscak & Luke，2009；郑琇仁，战红，陈庆萱，2010）中还提到了利用 Second Life 还可以和母语是目标语的人谈话，除了语言外，还可了解所学语言的文化。对于这一点笔者认为值得指出的是，除非是事先有所安排（比如像郑老师和战老师所教班级间的合作），不然在 Second Life 里随便找个时间，即使在那些虚拟中文学校和中国人建立的虚拟场所也并不能保证每次都能碰到一个会说中文的人。

4.2 利用 Second Life 进行中文教学的缺点及相关问题

同其他工具一样， Second Life 也有一些不足。在其应用于教学的过程中也会出现诸多问题。在谈及 Second Life 不足的文献中，共同提到较多的是技术本身的问题。比如（1）该平台对用户计算机硬件配置有较高要求。 使用该平台，首先需要将该平台作为软件下载到用户的计算机上运行。为了使在 3D 世界里的事物图像很好显示出来，同时使用户的虚拟化身在虚拟世界里动作显得流畅，用户使用的计算机要有较快的运行速度和比较高级的图像显示和处理卡。另外，用户使用的互联网速度要快。（2）在使用过程中，有时会出现从 Second Life 被挤出，特别是当在同一空间的参与者较多时（郑琇仁，战红，陈庆萱，2010）。这种情况下，就需要再次打开运行该软件，重新登录。另外，由于各种技术原因，还会出现麦克风不工作，语音传送滞后，实现上传的文档打不开等问题。这些都会干扰教学，占用真正教学时间。

其次，同其他技术相比，特别是同第二代互联网技术相比，学习并熟练掌握 Second Life 需要花大量时间和精力 。比如会用一般文档 软件（如 Microsoft Word）写作的人很容易就能使用 Google Site 来制作漂亮的网页，不需要像以前那样，需要学习专业的网页制作软件。而 Second Life 使用的是 3D 虚拟技术，对于较少玩 3D 电子游戏的人来说，界面与功能全是新的。并且和日常使用用互联网浏览器访问网站，搜索站点也不同，需要学习很多新东西。教语言的老师大多是文科背景，计算机基础较弱，另外，其教学工作繁忙，很多老师可能找不到足够的时间和精力来学习这门新技术，更谈不上解决使用中出现的种种技术问题。对于一般学生来说，特别是中文只为选修课的学生，他们用来学习中文的时间有限。如果他们的专业离计算机科学较远，如历史，而他们自己对计算机技术又不很热衷，在课余时间又很少玩 3D 电子游戏，那么用 Second Life 来教这些学生中文是否合理或有必要？另外，学习中文需要花很多时间在学习汉字上。尽管也可在 3D 虚拟世界里设计一些学习汉字的活动，但却远非其长项。而花时间学习 Second Life 的时间，设计自己虚拟化身的长相，为自己的虚拟形象设计衣服的时间，这些时间显然与中文学习无关。如果学生学习的中文课不是全部采用网上授课的话，笔者觉得将这些时间与其花在 Second Life 的使用上，不如花在对中文的直接学习上更有效。

第三是费用问题。到目前为止，只有基本会员是免费的。作为基本会员，可在 Second Life 参观任何对外开放的地方[43]，可以使用其他用户免费分享的产品。如果要在 Second Life 拥有一块虚拟空间的话，需要购买[44]。而只有购买了空间，才可以在上面修建自己想造的风景或设施。这些虚拟空间根据大小收费不同，购买后与现实生活中的地产税一样，每月还要交从 5 美元到 295 美元不等的维护费[45]。虽然教育和非赢利机构会享受到一些折价，但据公司 2010 年 10 宣布的最新政策[46]，从 2011 年 1 月开始，这些价格优惠将取消。而设计创建这些虚拟设施需要较高的计算机技术。虽然有些开放的源代码可以用，但设计者还有一定的编程能力。并且，设计者还需要有美术功底和较高的审美能力。否则设计出来的建筑不具美感。像上面提到的俄勒冈大学的"我的中国村"由专门的公司设计，而郑老师和战老师项目使用的"虚拟实验室"也是由专门机构设计。

　　第四，与费用有关的还有教学过程的人力支持问题（Cooke-Plagwitz，2008）。在郑老师的台湾学生教战老师美国学生的过程中，负责提供技术的合作单位会有人在线帮助解决技术上可能出现的问题。在俄勒冈大学的网上夏令营项目中，也有技术支持。另外，陈东东老师所在的学校有语言学习技术中心和教师教学咨询服务中心。她的学生都有学校配置的较高性能的手提电脑。 如果在使用过程中出了技术问题，可随时找这些中心帮助。

　　值得注意的是，郑老师的班上有 63 个学生，分成 13 个组，每组有 4-5 个人 。这 4-5 个实习老师在 30 分钟内同时教一个美国学生。在网上夏令营项目中，有 7 个学习者，而中文是母语的来自苏州大学的志愿者则有 16 个。这意味着 1 个学中文的学生能同时和 2 个以上母语是中文的人练习。毋庸置疑，这两个项目的设计就其目的来说是合理的。项目是成功的，尤其在使用 Second Life 过程中的取得的经验及发现的问题是十分宝贵和难得的。然而，在日常正常的中文教学中却很难能这么"奢侈"。在相当多的美国公立大学里，一个中文班里一个老师要教至少 15 个学生，很多情况下还要教 25 到 30 个，甚至更多。并且没有任何助教。如果出现技术问题，如果没有专项资金资助或有关部门支持的话，意味着这些问题都要自己解决。

　　第五，如其他基于互联网的工具一样，由于 Second Life 的开放性，在 Second Life 中可能会出现一些意料不到的事情，或看到一些不当的行为。Second Life 公司对"居民"的行为规范有具体规定[47]，比如不可以骚扰、攻击其他居民，对信仰、性别、种族等方面的歧视采取零容忍态度；禁止在主要活动区出现使用和成人色情有关的行为事物。尽管如此，像使用其他开放网络工具（如网上论坛等）一样，有时会出现一些防不胜防的情况（Bugeja，2007）。在这里教学的老师，特别是在使

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[43] 与现实生活一样，在"第二人生"也设有只有成人才可进去的虚拟地区。对于成人与否的判断，在　网上只能靠自觉，因为用户的生日年龄都是自己填写的，无需证明。

[44] http://secondlife.com/corporate/pricing.php。

[45] http://secondlife.com/corporate/pricing.php。

[46] Two Important Updates on 2011 Land Pricing，　Nelson Linden on Oct 4, 2010 。

[47] http://secondlife.com/corporate/cs.php：　Community Standards。

用他人建造而自己没有控制权的虚拟设施时，要做好应急准备（Cooke-Plagwitz，2008）。

此外，与其他一些与社交网络（Social Networking）有关的技术（如 Facebook）一样，Second Life 还有用户所存放数据、所创建的事物的控制权、拥有权、知识权等问题（Young，2010）。最后，尽管与其他公司相比，Second Life 对于其在教育方面的应用很重视。比如设置专人负责与教育有关的事务，赞助有关会议，设置供教育工作者研究者交流用的网上讨论组；并在教育机构购买虚拟空间时给予优惠（至 2010 年 12 月止[48]）等等，但如 Nesson 和 Nesson （2008） 所言，Second Life 终究是一个以营利为目的的商业公司。公司在决策的时候，不会把教师教学的需要放在首位。比如，很多老师提出像其他一些网络会议一样，当"居民"在 Second Life 谈话时，可以提供一张帮助大家交流的"白板"（Whiteboard），但这一要求不一定在决策者的优先考虑之列。另外，如一些观察者指出，像其他以营利为目的的网络公司一样，Second Life 还可能存在继续提高收费标准的可能，也不能排除被其他大公司收购的情况 （张晶，2010）。在决定是否利用 Second Life，是否在其中购买打造自己的虚拟空间时，这些因素都应当给予适当考虑。

5. 建议及结语

本文首先介绍了什么是 Second Life，介绍了其发展历史和在近几年的影响，并列出了它的几个竞争者和新兴的几个 3D 虚拟世界；然后简单介绍了 Second Life 在教育包括语言教育方面的运用情况。此后较为详尽的介绍了三个利用 Second Life 在中文教学中的实际案例。接着，基于对有关文献的阅读和笔者的体会，总结了将 Second Life 运用于中文教学的优点和缺点及有关问题。在结束文章正文之前，笔者想对有意将 Second Life 或其他类似 3D 虚拟世界运用于中文教学和研究的同仁最后提些拙见，并分享具有使用 Second Life 进行中文教学的丰富经验的 Scott Grant 老师应邀给予同仁的一些真知灼见[49]。

首先，决定使用一个新技术前，要对该技术有尽可能详细的了解，特别是要了解与其他相关技术比它有哪些优势和不足。如 Grant 老师（2010）所说，对技术的了解不够往往会导致对该技术不能充分利用，并会影响应用该技术的教学效果。帮助读者对以 Second Life 为代表的 3D 虚拟世界有个较为全面的了解，也正是本文写作的根本目的。另外本文附录中还列了一些笔者收集的与 Second Life 有关的资料供大家参考。

在使用一种技术用于教学时，首先要明确的是教学目的。提高学生学习效果应该是所有使技术的目标中的关键。 然后围绕具体目标设计教学活动。另外，选

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[48] Two Important Updates on 2011 Land Pricing, Nelson Linden on Oct 4, 2010。
[49] Scott Grant 老师的建议原文在附录 1 中。

择使用技术时，要考虑到功效，投入和产出的比例，争取做到事半功倍，而不是事倍功半。如前文所说，与其他相关技术相比，以 Second Life 为代表的 3D 虚拟世界学起来比较费时费力，打算使用这一技术的教师更要认真考虑其功效比。笔者窃以为，除非教师自己有较高的计算机水平和足够的时间与精力，不然使用该技术一定要争取得到自己所在单位有关技术人员的支持，或找到相应的合作伙伴。

关于针对以 Second Life 为代表的 3D 虚拟世界的研究，如 Grant 老师（2010）所说，关于这一领域的研究才刚开始。由于这一技术与以前其他互联网技术有很大不同（除了与之有关的 3D 网络游戏），探索这一技术在教学中的应用还有很大空间。本人觉得一个比较有意义可以写的题目是总结分析一下迄今所有研究 Second Life 或其他 3D 虚拟世界的用于语言教学包括中文教学的文章。所用方法可以参考 Hew 和 Cheung （2010） 文章的写法。

图片 14：HIPIHI 网站上庆祝中国春节的一张照片

最后，笔者想建议有兴趣和有条件的同仁关注并探索利用 HIPIHI，这一由中国本土开发的 3D 虚拟世界,进行中文教学 。笔者自 2007 年底在网上发现 HIPIHI 公司以来，一直认为虽然 HIPIHI 的成立理念与 Second Life 类似，但与之相比，至少在中文教学方面有着得天独厚的优势。到目前为止，Second Life 还没有中文版本。在其上面建造的为学中文用的风景及设施，虽然有中国特色，但其运营的 Second Life 的界面工具栏菜单仍然是英文的。另外，Second Life 中只有极少部分是由中国人建立的与中国有关的景物，所以在一定意义上说，在 Second Life 学中文严格意义上来讲，不能称作全部浸入式中文教学。而 HIPIHI 完全由中国人创造设计，里面的虚拟景物设施绝大都是由中国人特别是年轻人建造的。在里面活动的居民很多是在校的大学生。与 Second Life 相比，在 HIPIHI 里更容易找到和中国人对话交流的机会。另外，HIPIHI 平台的界面工具栏也完全是中文的。即便使用 HIPIHI 的中文教学设计不完全成功，学生们也至少可以多认识接触些生词句子，欣赏由中国人建造的直接或间接体现中国文化特色的虚拟设施，如四合院、桃花源等。

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附录 1

Suggestions given by Scott Grant (2010) on the use of Second Life (SL)

"If possible, could you please so generous to write one or two paragraphs to briefly summarize your experience of using SL, especially the challenges you encountered and give suggestions to fellow Chinese instructors who are interested?"

"This is a big question, not easily (or advisedly) summarized. A lot of educators in a wide range of different disciplines are using virtual worlds (VWs) like SL and OpenSim (and other platforms) to conduct a wide range of teaching and research. VWs like any other technology used in teaching and learning have their advantages and disadvantages. Assuming that we are all interested in incorporating some form of technology into our teaching practices (otherwise there is no point in talking about VWs at all), it is important to look at a range of technologies and find which one best suits your pedagogical goals. VWs like SL suit some pedagogical goals and not others. It is still early days and there is still a lot of experimenting and research that needs to be done to establish just exactly what VWs are good for pedagogically (if anything at all), but my strong belief is that they make a good compliment to formal classroom-based F2F curriculum (providing opportunities for experiential and task-based learning that may not be as easily achieved in a real classroom and where travelling to the L2 country is not easily done), and have the potential to add an important interpersonal dimension to distance education learning.

So, my advice is for educators to think about what it is they want to achieve by using a VW in their teaching, and then go ahead and give it a try. Having solidly grounded pedagogy is the absolute key, but also having a virtual environment appropriate to the goals set and that is of a good standard of quality (not necessarily complex, but for tertiary learners not cartoon or child-like or 'half-baked') is important. Understanding the platform/technology/environment thoroughly is also extremely important. Even with things like conventional LMSs (Blackboard, Moodle, etc), many educators only have a superficial understanding of how they work or their full potential, and thus have a lukewarm attitude to their use in teaching and learning, which at the end of the day results in poor use of the technological platform. Reading up on available research on the use of technology in general and of VWs specifically is also critical so that you can learn from others, avoid pitfalls and creating unrealistic expectations, and can be inspired by the potential others have found." – Scott Grant (12/20/2010), Personal communication.

附录 **2**

Resources for Using Second Life in (Chinese) Language Teaching and Learning

General introduction about Second Life
- http://www.youtube.com/watch?v=0t1XR-LrgyM : The Origin of Second Life and its Relation to Real Life, an interview with the founder Philip Rosedale
- http://wiki.secondlife.com/wiki/History_of_Second_Life : History of Second Life
- http://www.youtube.com/watch?v=FZAj8Cg4bLo : A video clip about the introduction to Second Life
- http://www.slideshare.net/eduservfoundation/second-life-in-3600-seconds/ : A nice PPT on Second Life）

Discussion Groups and Listservs
- http://groups.yahoo.com/group/secondlifelanguages/messages/1?l=1: Yahoo discussion group: Second Life & Languages （since Nov.6, 2006）
- https://lists.secondlife.com/cgi-bin/mailman/listinfo/educators: Second Life in Education [SLED] Listserve:
- http://www.facebook.com/second ; The Facebook group for Second Classroom, discussing the use of Second Life in Chinese

Workshops and Consultation
- http://evo07sessions.pbwiki.com/digitalgamingELT: TESOL Electronic Village Online offered a session on "Digital Gaming and Language Learning" featuring Second Life, January 2007
- http://www.chineseplaza.com/ : Consultation and training service provided by Second Classroom

Conferences and Proceedings
- http://www.slanguages.net/ : The website for the annual SLanguages （Second Life in Languages） conference
- http://www.theconsultants-e.com/edunation/SLanguages2007.pdf : The first SLanguages Colloquium, June 23, 2007
- www.simteach.com/SLCC06/slcc2006-proceedings.pdf : Proceedings of the 1st Second Life in Education Workshop, San Francisco, CA, August 18-20, 2006
- http://www.simteach.com/slccedu07proceedings.pdf : Proceedings of the Second Life in Education workshop, August, 2007

Comprehensive Collections
- http://www.simteach.com**:** SimTeach: Information and Community for Educators using MUVEs, maintained by Jeremy Kemp
- http://web.ics.purdue.edu/~mpepper/slbib#pedagogy: Bibliography of using Second Life in education, collected by Mark Pepper

- http://www.dokimos.org/secondlife/education/index.html: A collection on educational use of Second Life by Theodore Wright
- http://www.healthcybermap.org/sl.htm : A collection on Second Life by Maged Kamel Boulos

Websites on Using Second Life in Chinese
- http://mychinavillage.uoregon.edu/: MyChina Village, a project led by The University of Oregon's Center for Applied Second Language Studies
- http://www.virtualhanyu.com : about the use of Second Life at Monash University's Chinese Studies Program, Melbourne, Australia
- http://confucius.msu.edu/secondlife/enrollment.html: Use of Second Life at Michigan State University's Confucius Institute
- http://www.chineseplaza.com/events/201008/2nd_classroom/about_us.html: Use of Second Life in Chinese by Second Classroom

《Introduction to Chinese Natural Language Processing
（中文自然语言处理导论）》书评
(Review of *Introduction to Chinese Natural Language Processing*)

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　　《Introduction to Chinese Natural Language Processing（中文自然语言处理导论）》是由 Morgan & Claypool Publishers 出版的"人类语言技术综合讲座"（Synthesis Lectures on Human Language Technologies）系列中的一部。这套英文系列丛书立足于自然语言处理、计算语言学、信息检索、自然语言人机接口等与人类语言技术相关的学科，以综合讲座的形式介绍各个学科领域的发展概貌、着重突出各学科最新出现的重要的技术和方法及其在相关研究中的实际应用。人类自然语言计算机处理作为一个学科已有几十年的发展历史。随着计算机和互联网技术的成熟和普及，人类语言活动中各种语言材料的搜集、加工、存储和提取正变得更加迅捷与便利，进而带动了自然语言计算机处理学科的飞跃性发展。但从自然语言处理的整个学科的发展来看，这一领域的主要研究成果大都是在以英语为主的西方语言的基础上取得的。相比之下，中文的自然语言处理研究起步较晚，基础薄弱，且由于汉语与英语在类型学上的显著差异，面临着许多特殊的挑战。随着汉语地位在全球范围内的提升，特别是汉语在国际互联网和商业软件开发上使用比例的飞速增加，商业信息提取、企业与客户关系管理、机器翻译、自动文摘、汉语语音识别、语言学研究、辅助汉语教学系统的开发等领域越来越需要从汉语出发的自然语言处理技术的支持与跟进。在这样的背景下，《中文自然语言处理导论》一书的出版正是适应了日益增长的对汉语语言处理技术的需求，从汉语类型学的角度深化和扩展了普通自然语言处理的研究，为丰富和完善自然语言处理学科的理论与实践做出了一份重要贡献。

　　全书主体内容共分八章，另外包括一个列举与中文自然语言处理相关的语言学资源的附录、一个参考文献以及一份作者简介。全书八章主体内容大致可分为三个部分：基本概念（第一、第二章）、自动识别（第四、第五章）和汉语语词的语义特征（第六、第七、第八章）。

　　作为全书的导引，第一章首先在人类自然语言、普通语言学、计算语言学的大背景下，把自然语言处理定位为一门将语言理论转化为实际应用的技术，并将这一技术在语言处理过程中的实施平台定位在词法、句法和语义三个层面上。作者以汉语形态分析为基础，通过一系列具体的实例，列举出汉语的形态特征给汉语语言处理造成的困难和挑战：如汉语词的切分、词类标注、句法与语义歧义等。基于汉英两种语言在词语层面上的形态区别，以及由此决定的对两种语言处理的不同的技术要求，作者确立了汉语的形态分析在本书中的核心主导地位。

　　第二章从普通语言学的角度，介绍汉语的字、语素和词的概念，汉语词的形成过程以及汉语词的基本特征。作者首先提供了汉语的字、语素和词三个核心形态单位的语言学定义，并详尽论述了三者之间的区别与联系。作者指出字为汉语的书写单位，呈线性等距排列，不具备代表独立语素的功能。语素为最小的语义单位，通常为单音节，以单一汉字的形式出现，可经过语素组合形成词。词是介于语素与词组之间的语言单位，受到分布调控与词汇整体性的制约。在本章接下来的篇幅中，作者详细描写了汉语合成词的构词方式。作者首先根据词的音节数量，按双音节、三音节、四音节三类分别描写，然后讨论带有词缀（包括前缀、后缀以及动词后缀）和由重叠构成的合成词的构词特点，最后讨论了离合词的特征。通过以上详尽的分析，作者指出，汉语复杂多样的构词方式是造成分词困难的重要原因，是汉语自然语言处理中无法回避的关键所在。这一章为全书提供了一个必要的语言学基础，明确了汉语语言处理所面对的关键问题。

　　作为第二章的深化和延续，第三章在自然语言处理框架下具体勾勒出直接造成技术处理困难的汉语语词的语言学个性与文本特征。作者将这一章所涉及到的影响汉语机器分析的汉语特征归纳为汉字、文本和语言学特征三类。与汉字有关的影响技术处理的特征包括：汉字总量的不确定性、繁简转化、异体字、方言用字、汉字编码的多样化。与文本有关的特征包括：排印格式和标点符号。与语言学特征相关的包括：缺乏语法和词性的形态标记、同音异义词与同形异义词、歧义以及以缩略语、专用人名地名、音译词、地域变体以及风格变体为代表的未登录词。第二和第三章对困扰机器处理的汉语语言与文本特征的分析为以后各章有关技术性处理对策的讨论作好了准备。

　　第四章集中探讨汉语的分词问题。分词被认为是汉语语言处理的第一步，分词的精确度直接关系到分析结果的优劣。作者首先通过对比英汉两种语言在分词上的差异，指出汉语句子无标记的线性字符排列决定了汉语分词必须解决确认字词顺序、加注词的分界的问题，并以此为出发点，为汉语分词归纳出一个技术性的定义。作者随后利用具体实例，说明汉语分词过程中存在的两大挑战：对歧义和未登录词的处理。针对这两大挑战，作者将现有的汉语分词方法归纳为两大类：以字为

基础的方法和以词为基础的方法，详细比较、讨论了这两类方法在计算上的差别以及各自的优缺点，并着重介绍了能有效解决分词中歧义问题的两种计算方法：词典法与统计法。此外，作者还在这一章中，介绍了现有的三个大型语料库所采用的汉语分词的评估标准。这三个语料库分别为：北京大学中文系现代汉语语料库、台湾中研院现代汉语平衡语料库和宾夕法南亚大学汉语树形结构语料库。最后，作者对一些免费的汉语分词工具进行了简要的介绍。

第五章讨论的是未登录词的识别问题。作者认为在汉语分词过程中出现的未登录词的识别问题主要是由于所需处理的未登录词尚未加入到作为分词依据的分词词典中，导致分词程序无法找到针对未登录词的分词依据，因而无法作出有效的分词判断。汉语新词的不断出现也是造成未登录词问题的一方面的原因。汉语新词的产生主要是以语素合成和词缀附加的方式实现的。未登录词主要是指那些指代人名、地名以及机构等的专用名词、特定范畴内的技术性名词以及缩略语等。作者在这一章中讨论了识别各类未登录词的计算方法，并着重介绍了对人名、组织机构名称和地名的识别方法。识别未登录词的形式依据主要包括：常用名称的内部结构、名称中的常用字以及文本信息等。

在接下来的第六至第八章，作者将讨论的重心从汉语语词的结构层面转移到语义层面。对于缺乏形态标记的汉语来说，比起形式结构，语义在语言理解过程中所起的作用似乎更为关键。正因为如此，不少语言学家将汉语归为语义型语言。不考虑语义的因素，许多汉语机器处理的任务都不可能获得满意的结果。第六章开篇介绍了与词汇语义学相关的基本概念，如：义元、多义、同义、反义、上位、下位、整体、部分、专指等，并对接下几章将涉及到的语义框架、连用语、动词配价（施事、受事、工具等）进行了说明。这一章的主要篇幅集中对三种有代表性的汉语分类辞典进行介绍和评价。这三种辞典是：《同义词词林》、知网（HowNet）和《中英文概念词典》。《同义词词林》是中国第一部纸质现代汉语义类词典，它以三层等级树形结构模式勾画出所收常用词的语义关系，由多所大学输入汉语电脑词库后，被广泛应用在写作、翻译和自然语言处理上。知网是一个以汉语和英语的词语所代表的概念为描述对象，揭示概念与概念之间以及概念所具有的属性之间的关系为内容的常识知识库。作者通过与英文 WordNet 的对比，总结出知网的独到之处：以义元为分析单位、以图形结构描写语义关系、以英汉词汇概念的对比为分析基础。《中英文概念词典》是由北京大学计算语言所开发的英汉双语词汇概念知识库。它采用 WordNet 的结构布局，在保证与 WordNet 兼容的同时，对算法和功能进行了改进。这些改进包括更细化的名词分类、更精密的关系描写、真实语料库的支持以及具有统计学意义的量化处理等。

第七章主要论述了与汉语连用语（collocation）相关的基本概念，包括定义、特征、类别以及语料来源。针对自然语言研究领域对于连用语同现搭配这一概念的不同理解和争议，作者首先列举了一系列以英语为基础的连用语的不同定义，指出这些不同的定义源于定义者对连用语不同特点的关注。通过比对，作者进一步总结出汉语连用语与英语连用语在宏观层面上的显著不同：即汉字串的连续性、汉语字

词使用的灵活性和以实词为主要对象的连用语提取特点，并据此给出了一个针对汉语的，较为严密的定义：连用语是一个由两个或两个以上词语组合而成的，具有句法和语义关联，能够重复出现并符合使用习惯的表达结构（p. 98）。以这一定义为出发点，在接下来的篇幅中，作者从定性、定量、类别 (成语、结合度等) 以及语料来源等方面详细论述了汉语连用语的具体特性，为下一章讨论汉语连用语的自动提取方法和运算规则奠定了基础。

第八章重点介绍汉语连用语的自动提取方法。作者首先在本章导言部分指出汉语连用语的自动提取过程实际上是连用语提取技术在汉语自动分词和词类标记上的具体应用。根据主要的区别特征和目标搜寻策略的不同，作者将当今通行的自动提取技术划分为以下三种：统计提取、句法提取和语义提取。统计提取以目标关键词为切入点，将在关键词周边限定范围内出现的字词列为候选连用语，进而依据关键词与其周边字词组合的统计显著性确定连用语。句法提取利用关键词与连用语的组合必须合乎句法规范这一要求，根据预先设定的句法规则，通过句法剖析程序（parser）对目标关键词与同现词的组合进行过滤，然后再依照统计显著性确定连用语。语义提取利用语义限定测试来确定连用语。语义限定测试主要包括同义词测试和翻译测试两种。同义词测试利用同义词替换的有限性，以排除的方式提取。如果在语料库中某一关键词的同义组合出现频率超过一定的限度，其连用语的合法性将会被质疑并可据此予以排除。翻译测试利用候选连用语的非组合性特点进行提取。如果一个词语的组合不能逐字翻译成另一种语言，与其搭配的字词则被认为不具有组合性，因而可据此确立该组合的连用词地位。针对汉语连用语的语法特性，作者又特别介绍了一种综合性的提取方法：类别提取。这一方法主要是针对不同类型的连用语而设计的。它综合了以上三种基本的提取方式，包含六种不同的运算程序。提取过程中，首先由程序确定被检测的搭配的类型，而后根据检测结果，选取匹配的运算方式进行连用语提取。作者指出，跟前面三种单一的基本提取方法相比，类别提取更适合汉语的特点，更能获得理想的提取结果。

作为一部汉语自然语言处理导论性质的专著，本书从汉语的实际出发，选取汉语的形态分析作为全书的切入点，针对汉语自然语言处理中存在的难题，按照字词切分、词类标记、未登录词识别、语义分析和连用语自动提取编排章节，展开论述，对现有的处理方案进行了详尽的归纳、总结和评估，既反映了当前汉语处理技术的概貌，又突出了学科的重点成就。

本书结构完整、条理清晰、论述缜密、循序渐进。特别是作者利用汉语描写词汇学和语义学的研究成果，通过与英语的对比，突出汉语中制约技术处理的语言特征，为讨论技术性处理方案作出铺垫的行文方式，将汉语语言学与汉语计算处理自然地联系起来，增加了本书的目的性和可读性。

作为英文系列丛书中的一部，本书的出版有着十分特殊的意义。它将汉语自然语言研究的成果以专著的形式介绍给英语世界，为整个人类语言技术领域提供了一个汉语案例，也为英语世界的同行了解汉语自然语言处理的现状和成果打开了一个窗口、为进一步的技术交流奠定了基础。

　　本书设定的阅读对象为已经具备初级语言处理知识的读者，因此对从事自然语言处理、计算语言学、信息检索、机器翻译、网络文字处理等工作的专业人员有着重要的参考价值。不仅如此，作为一部论述清晰、内容翔实的学科导论，本书对于自然语言处理、计算机与应用、汉语应用语言学、作为第二语言的汉语教学等专业的学生来说也可以作为理想的入门教科书来使用。此外，本书对有志于或正在从事计算机辅助汉语教学研究的汉语教育工作者也具有一定的指导意义。计算机辅助教材编写、现行课本的分析研究、汉语水平等级大纲的制定、汉语教学词频统计、汉语中介语语料库的建立等，都离不开汉语自然语言处理技术的支持。对于不具备专业的语言处理知识的大多数汉语教育工作者来说，本书不仅能为他们提供一个了解相关技术知识的途径，而且能够使他们从计算分析的角度获得对汉语特征的新认识，提高教学应用程序的开发与评估能力，因而值得在此推介。然而，对于对外汉语教育者来说，如果本书能在介绍和评价一些汉语处理工具的同时，适当增加有关具体操作的说明，将更能满足他们的需求。另外，本书个别地方在排印和文字拼写上还存在一些疏漏，有待再版时校正。