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CONCEPT-BASED FOREIGN LANGUAGE PEDAGOGY:

TEACHING THE CHINESE TEMPORAL SYSTEM

A Dissertation in

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by

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The dissertation investigates the effect of a concept-based approach to teaching the Chinese temporal system to English-speaking university learners at the elementary level. The pedagogical framework, Systematic-Theoretical Instruction (STI), adopted in this study was proposed by Piotr Gal’perin and originated from Vygotsky’s sociocultural theory (SCT) of consciousness. The foundational principle of STI is that well-organized education can promote mental development if it provides learners with appropriate mediation in the form of concrete cognitive tools and step-by-step guidance.

Given its complexity the Chinese temporal-system was chosen as the unit of instruction. The figurative meaning and grammatical functions of Chinese temporal expressions and selected aspect markers (著 zhe, 了 le, and 了…了 le…le) were presented in the form of visual schemata (SCOBAs) as a means for learners to regulate their mental actions during the learning process. The concept-based instruction not only provided learners with the meaning of the target grammatical unit, but also provided step-by-step guidance for learners to develop the target grammatical concept.

The teaching experiment spanned eight weeks. Statistical analyses of performance on written tasks (translation and essay) by three different groups of CFL
learners were conducted. The experimental group and control group 1 were at the elementary level and were taught by the researcher of the present study. Control group 2 was at the intermediate level and taught by other instructors. Analyses revealed that the experimental group outperformed control group 1 and performed no differently (no statistical difference) from the more advanced control group 2.

Qualitative analyses were also carried out on the tasks completed by the experimental group. A questionnaire was also administered to the experimental group at the end of the instructional period in order to investigate learners’ response to the innovative teaching approach and their learning progress. Qualitative analyses indicated that as the instructional program progressed, participants exhibited improvement in terms of efficiency, correctness and consistency of performance on the relevant tasks.

The findings suggest that a coherent and organized pedagogical presentation can enhance learners’ development. In addition, complicated grammatical concepts regarded more suitable for advanced learners can be taught to novice learners when the concepts are presented as meaningful units in a coherent and systematic way. This study also offers implications on current foreign language pedagogical practices, especially in the field of teaching Chinese as a foreign language, in terms of
renovation of grammar instruction, development of teaching material, curriculum design and learner development.

Keywords: sociocultural theory, concept-based approach, Systemic-Theoretical Instruction, teaching Chinese as a foreign language (TCFL), conceptual metaphor, temporal system, foreign language pedagogy
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ABBRIEVIATIONS

ASP=aspect marker

CL=classifier

GEN=genitive (-de)

Q=Question marker
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Chapter 1

Introduction

1.1 Statement of purpose

The dissertation aims to investigate the effect of a concept-based approach to teaching the temporal system of Chinese to English-speaking CFL (Chinese as a foreign language) learners of this language.

Bardovi-Harlig (1995, p.51) claimed that the temporal system (tense and aspect) is not only an integral part of foreign language curricula but also one of the indicators of language learners’ proficiency. With regard to second language acquisition, tense and aspect has been considered one of the most difficult grammatical categories for L2 learners to acquire, whether in terms of form or meaning (Bardovi-Harlig, 2000). Nevertheless, since temporal system is a complicated and difficult to acquire grammatical concept, current L2 pedagogical practices tend to break the whole concept into several categories and present them to learners at widely-spaced intervals of time. In addition, the grammatical explanations are often based on rules of thumbs that are reflective of specific contexts and therefore
are often not generalizable to other communicative circumstances. The intermittent and inconsistent pedagogical presentation of grammatical concepts unexpectedly leaves L2 learners with a substantial cognitive burden and hinders the cultivation of unified knowledge of the underlying concept.

Bardovi-Harlig (1995, p. 52) pointed out that to acquire the temporal system in English, the following linguistic devices must be mastered by learners: morphology (e.g. past –ed), the morphosyntactics of the system (e.g. the past perfect progressive had been watching), time adverbials (e.g. yesterday) and adverbs of frequency (i.e. aspectual verbs). While the four linguistic devices are found in most Indo-European languages (Bardovi-Harlig, 2000), the Chinese temporal system does not have tense markers (i.e. verbs cannot be inflected to indicate a certain tense), hence lexical expressions are one of the linguistic devices to indicate temporality. In the curricula of teaching Chinese as a foreign language (henceforth, TCFL), temporal expressions have not received much attention and the major method to teach temporal expressions is to provide learners with a list of temporal expressions that are translated word-by-word (see Chapter 5). In addition, the absence of tense markers is not taught explicitly to CFL learners. As a result, beginning CFL learners are not aware of the absence of tense markers in Chinese and do not know to use temporal expressions to establish the time frames and even intermediate CFL learners still use the perfective
aspect marker *le* to indicate past tense. With regard to aspect markers, most CFL textbooks use prescriptive grammar to explain aspect markers without providing sufficient semantic and pragmatic functions of the aspect markers.

This dissertation proposed that, in order to establish a solid foundation and obtain a profound understanding of the grammatical concepts, it is necessary for language learners to know the conceptual information and meaning that underlie linguistic forms. The present study adopted a concept-based approach that teaches the Chinese temporal system from the perspective of cognitive linguistics; the conceptual metaphorical denotation, semantic and pragmatic functions of the temporal system are presented as a holistic and coherent concept to CFL learners. In the following paragraphs, a brief introduction of conceptual metaphor theory is provided first since grammar instruction in the present study relies on analyses based on conceptual metaphor theory and the importance of applying figurative thinking in L2 instruction is illustrated later.

Starting from Lakoff & Johnson’s (1980) introduction and examination of conceptual metaphor theory, related cognitive linguistic and psycholinguistic studies have been remarkably fruitful with regard to such aspects as the structure of conceptual metaphor, metaphorical expressions in discourse, similar conceptual metaphors across languages and language-specific metaphorical patterns (e.g.
Barcelona, 2000; Kövecses, 2002, 2006; Lakoff & Johnson, 1999). Conceptual metaphor refers to the understating of an experience, idea (i.e. a conceptual domain) in terms of another conceptual domain. A classical example of conceptual metaphorical expression is “It is not worth your time”; the value of time is understood monetarily. While most conceptual metaphors involving physical orientation are similar across languages (Lakoff and Johnson, 1980), the construction and understanding of conceptual metaphor expressions may vary to different extents depending on languages and cultures (see Gibb, 2008; Kövecses, 2002, 2006).

With respect to L2 teaching and learning, the universality of conceptual metaphors may serve as a standpoint from which cultural and linguistic variation can be elaborated and explained to L2 learners so that the learners can more easily comprehend and acquire different conceptualizations. Littlemore and Low (2006) urged that figurative language can enhance communicative competence and skills. Other researchers have similar opinions that the teaching of L2 metaphors can contribute to a better understanding and acquisition of the target language as well as its culture (Danesi, 1993; Holme, 2004; Lantolf, 1999). Nevertheless, to the best of my knowledge, not many empirical studies on teaching L2 conceptual metaphors have been conducted to date. The lack of empirical studies in the teaching of L2 metaphoric expressions
might arise for several reasons. First, what conceptual metaphor can be chosen as a L2 unit of instruction requires theoretical linguistic knowledge and high cultural awareness in both the target language and the learners’ L1. In other words, language researchers and instructors have to identify and analyze the similarity and distinction between the two languages and cultures and then decide to what extent this information needs to be, and can be, taught. Second, traditional pedagogical approaches which rely heavily on drills, inconsistent explanation of grammatical patterns and rote memorization cannot inform language learners of the complexity and sophistication of any conceptual metaphor category. Third, it is difficult to decide criteria to evaluate and assess learners’ competence, understanding and even conceptual formation in L2 conceptual metaphors.

The teaching experiment reported in this study thus chose the conceptualization of the Chinese temporal system as the target grammatical unit for three main reasons. The first is that while the concept of time is conceptualized through the spatial domain across languages (Núñez & Sweetser, 2006), and Chinese does have an abundant inventory of spatial-temporal expressions, the spatial-temporal orientation is quite different from that in English. In English, the past is conceptualized behind and future is in front of the speaker (e.g. “you have a bright future ahead of you”), however, in Chinese, the future is back and the past is front.
Therefore, *qian tian* “front day” refers “the day before yesterday” and *hou tian* “back day” is “the day after tomorrow”. In addition, Chinese has a particular set of spatial-temporal expressions on the vertical plane which is not widely found in Indo-European languages. The directional prefix *shang* “up” denotes immediate past while *xia* “down” denotes immediate future. Thus, *shang libai* “up week” is “last week” and *xia libai* “down week” is “next week”. The second reason, as mentioned in earlier paragraphs, is that current CFL curricula and pedagogical practices still rely on translation and prescriptive grammatical rules. As for English–speaking CFL learners, Chinese is a relatively typologically distant language (in terms of most basic linguistic structures). Even though the concept of tense and aspect exists in Chinese, word-by-word translation and grammatical rules can neither efficiently inform the learners of the common ground shared by English and Chinese nor highlight the distinction between the two languages. It is argued in the present study that a top-down teaching method should be adopted to allow CFL learners to more readily perceive the similarities and differences between the two languages. The final reason concerns the paucity of empirical studies in teaching Chinese temporal grammar through the medium of conceptual metaphor theory. The study hopes to show that when Chinese temporal grammar is presented to learners in a coherent and systematic manner through the lens of conceptual metaphor it will result in enhanced and
efficient learning on the part of L1 English-speaking students. To achieve this goal, conceptual metaphors should first be thoroughly analyzed from a linguistic perspective and the analysis should then be presented in an easily comprehensible and accessible form to L2 learners.

The innovative approach to teaching the temporal system of Chinese is grounded in sociocultural psychology and cognitive linguistic theory. This approach is referred either as Systemic Theoretical Instruction (STI) or Concept-Based Instruction (CBI). STI refers to the pedagogical framework proposed by Piotr Gal’perin (Haenen, 1996). The principle of STI is that well-organized education can foster conceptual development, if it provides learners with cognitive tools of high quality and step-by-step guidance. CBI promotes the idea the theoretical concepts (Davvydov, 1988; Gal’perin, 1989, 1992a, 1992b) should be introduced at the onset of the instruction and then the learners can be guided to develop their own understanding of the concept. In CBI, explicit instruction of the relevant theoretical concepts is implemented not merely to enhance learners’ understanding of the concepts, but to use this understanding as a framework for guiding performance. This is concretized through a series of clearly delineated procedures that include introduction and explanation of the concept, materialization of the concept in the form of a visual schema that allows learners to comprehend the concept in a deeper way than is
normally achievable through verbal definitions alone, activities that push the learners to articulate their own understanding of the concept, practice using the concept in communicative tasks guided by the schema when necessary. The instructional procedure specified in STI is explained in detail later in the dissertation. To avoid confusion, and since STI is more comprehensive than CBI, in the remainder of the dissertation, only STI is used.

In the present study, STI introduced the figurative meaning and grammatical functions of the Chinese temporal system in a coherent and consistent way to reduce the possibility of misunderstanding or fallacious conceptualization of the theoretical concepts. The full conceptual image of temporal perspective was taught in a unified way, which allowed for deeper and systematic understanding on the part of students. Concrete meditational tools, visual schemata of the Chinese temporal system, were provided to learners to orient their thinking and performance. The study thus investigates the teaching and learning of L2 grammatical concepts by presenting the target concept through a sequence of procedures that are not only systematic but efficient and therefore avoids the reductive and piecemeal approach of traditional pedagogical approaches to Chinese instruction.
1.2 Research questions

In order to find solutions to the aforementioned difficulty of teaching L2 conceptual metaphors and inconsistency in current L2 pedagogical presentations, the following research questions guided the study:

1. How to translate the complicated grammatical concept of Chinese temporal system into accessible knowledge for CFL learners?

2. Would learners who received the concept-based teaching approach outperform learners who received traditional teaching methods?

3. How would learners’ L1 influence their L2 performance with regard to Chinese temporal system?

The first two research questions are in fact the overarching issue that the present study intends to deal with. The first question is addressed in Chapter 5 and the second question is answered by quantitative and qualitative analyses in Chapter 6 and Chapter 7. The third question relates to the participants’ linguistic backgrounds and will be addressed in Chapter 6. While all participants in this study were native speakers or near-native speakers of English, a few of them were native speakers of L1 Korean. Since the pedagogical plan was designed for L1 English CFL learners, it is suspected that for participants whose L1 is not English, their reaction and performance might appear in a different pattern than those whose L1 is English.
1.3 Objectives

The primary goal of the present study is to explore the pedagogical effects and limitations of STI in the classroom setting. The first objective is to inform foreign language pedagogy with regard to materials development, curriculum design and teaching efficiency by the findings of the study. The second objective is to investigate the effect of STI. Learners’ performance with and without STI is compared and their reactions to the innovative teaching method were examined in order to illustrate the effect. The third objective concerns possible pedagogical recommendations to current practices of TCFL. The field of TCFL has been growing rapidly in recent years, but the teaching materials and pedagogical practices do not reflect much of a change to accommodate a larger and more diverse population of CFL learners. Practioners and researchers in TCFL (e.g. Tai, 1991; Xing, 2006) have urged that the pedagogical practices and presentation in TCFL should be changed from teacher-centered to learner-centered and be more systematic, CFL learners’ linguistic background should be taken into account in the design of pedagogy as well (see discussion of TCFL in Chapter 5). It is hoped that this empirical study can shed some light on future CFL pedagogy.
1.4 Organization of the dissertation

The dissertation is organized into eight chapters. The introductory chapter outlines the present study, including its purpose statement and concerns. Chapter 2 reviews the theoretical foundation of the pedagogical framework adopted in the present study. Vygotsky’s positions on the difference and formation of everyday and scientific concepts are reviewed. Vygotsky’s view on the teaching of scientific concepts and the relationship between formal education and cognitive development are treated as well. Gal’perin’s (1967, 1989) position on the investigation of the development of higher mental functions and proposal of a stepwise instructional program which originated in Vygotsky’s educational theory are introduced. Chapter 3 is devoted to a literature review of L2 studies situated within Vygotskyian sociocultural theory (Vygotsky, 1978, 1988). SCT’s orientation to instruction and development is described first, and the theory’s implication on foreign language teaching and learning is offered. The differences between SCT’s and SLA’s positions on the teaching and learning of foreign languages are discussed as well. Gal’perin’s SCT-inspired pedagogical framework (Haenen, 1996), Systematic-Theoretical Instruction, is introduced from a practical view—the teaching phases, and components of concrete materialization as a Schema for the Orienting Basis of Action (SCOBA) are treated. Then, empirical STI-L2 studies are reviewed and how the studies relate to
the present dissertation is described.

Chapter 4 offers a comprehensive analysis on temporal system in Chinese from the view of cognitive linguistics. A general account of linguistic conceptualization of temporal system across languages is given first, followed by an analysis of the conceptualization of time in Chinese. Implications and challenges on the teaching of Chinese temporal system are addressed. In Chapter 5, research methodology of this dissertation is provided. Research questions of the present study are proposed, followed by a discussion of the current trends and concerns in teaching Chinese as a foreign language with a focus on temporal system. Teaching materials (SCOBAs) adopted for the study are introduced. Then, the context of the study and the implementation of STI are described. Lastly, the design and nature of each data set are explained as well as the data collection procedures.

Chapter 6 and Chapter 7 provide analyses and discussion of data collected for the study. Chapter 6 is devoted to quantitative analysis of STI’s effects at the same and different proficiency levels. The quantitative analysis also looks for the influence of learners’ L1 on their performance. Chapter 7 starts with the explanation of criteria for qualitative data analysis, followed by analyses of each data set. The focus is on the writing performance from the experimental group across the data sets, and participants’ development is thus traced. Moreover, to better illustrate the effect of
STI, some data from control group 1 is examined and discussed.

Chapter 8 begins with the summary of findings and contribution of the study, followed by the limitations of the study. Pedagogical values and possible directions for future research are suggested.

Notes:

1. However, recently Tyler (2012) has published a monograph that surveys and synthesizes the body of cognitive linguistic research on L2 teaching and learning.
Chapter 2

Theoretical Framework:
Vygotsky’s Theory of Developmental Education

2.1 Introduction

This chapter discusses the theoretical framework adopted in the present study. It explores the framework’s roots in Vygotsky’s theory of developmental education, with particular attention to his discussion of conceptual development and other studies that also draw on this notion. Section 2 introduces Vygotsky’s theory on how everyday and scientific concepts form and develop. Section 3 discusses the importance of teaching scientific concepts. Section 4 considers classroom activities with regard to developmental psychology. Section 5 introduces the pedagogical framework proposed by Gal’perin, which itself originated in Vygotsky’s educational theory.
2.2 Vygotsky’s theory of concepts

One of the foci of Vygotsky’s study of psychology was the investigation of higher mental functions. He explained that human behaviors consist of responses to multiple stimuli and that these responses are based on various experiences that include a person’s inherited (historical) and social experiences (Vygotsky, 1979). Inherited experiences defined as those that have been passed down through generations, whereas social experiences are acquired through the self’s interactions with others in real time. These experiences influence the individual’s behavior and consequent decision making in regard to stimuli. Vygotsky (1979) further explained that a particular response can stimulate an additional response; for example, when a child hears thunder, he feels fear at first and that fear then stimulates crying. As he becomes more aware of how his responses follow each other (his behavior), he likewise becomes capable of giving an account of his experiences. He then begins to develop concepts because he has learned to understand his responses to the world on a conscious level. Furthermore, concepts are not developed by individuals but by human collaborative activity in the world. In the following section, a review of Vygotsky’s investigation into and explanation of how concepts are developed is offered.
2.2.1 Formation of concepts from a Vygotskian perspective

Vygotsky criticized traditional psychological methods for one or both of what he perceived to be its important shortcomings: either a method regards concepts as the final products of mental development or it focuses on the developmental processes that generate concept formation. In his view neither approach provides a complete picture of how concepts are formed. The former method considers only the verbal definition provided by the subject and neglects how meaning is acquired and developed during the process of concept formation. As a result, this method fails to account for the dynamics of the developmental process and the subject’s perception of the object, considering only the reproduction of the subject’s experience and/or verbal knowledge. The latter method concentrates on the subject’s observation of different objects and his/her conclusion about the traits shared among different objects. This method overlooks the role that symbols (words) play in the process of identifying the traits that are most important in categorizing objects (Vygotsky, 1978).

In Vygotsky’s account, the process through which concepts are formed is more complicated than either of these two traditional methods assumes. For Vygotsky, concept formation involves all the basic mental functions mediated by cultural artifacts (e.g. symbols, languages). In order to investigate the complexity of concept formation, Vygotsky and his colleague Sakharov adopted the so-called “method of
double stimulation” (Vygotsky, 1978, p.74). The crucial component of this research method is that two kinds of stimuli are provided to the subject: one stimulus is the object of the activity, and the other stimulus is the signs that the subject can use to regulate the activity. The significance of this method lies in its attempts to concretize the psychological process. During the research process, the subject’s use of signs to solve a given task is observed such that not only are results achieved but a psychological process is also observed. Additionally, the experiment recognizes the decisive role that an artificial stimulus (e.g., a word or a sign) plays in the subject’s success in completing a given task. For instance, a child learning to perform a simple calculation begins by using his fingers or a set of blocks to solve the problem. He might count each finger or block and make mistakes even with the tool’s assistance, but as he becomes more adept, he no longer needs external objects to perform the task. Eventually, the child becomes able to carry out more complicated calculations (e.g., moving from two-digit addition to five-digit addition) based on the same concept without recourse to an external object to regulate his thoughts. This example illustrates how concepts are formed. When learning how to add figures, some children may at first be puzzled by the irrelevant or distracting traits of external objects (e.g., the shape and color of the blocks); however, after having practiced doing addition, they realize that the concept of addition is not about the qualities of the objects but
about a process to which they are abstractly subjected. The ability to reach a

conclusion based on trial and experience combined with the ability to think abstractly

facilitates such concept formation (cf. Vygotsky 1997).

Consciousness is also crucial to the formation of concepts. Vygotsky (1979)

viewed consciousness not as a quality with which one is born but as a product that is

aroused and acquired. For a subject to form a concept, he/she must go through the

process of perceiving, contemplating, and responding to the given task or object such

that consciousness is generated. In Vygotsky’s words, consciousness is an “interaction,

reflection and mutual excitation of different systems of reflexes” (1979, p. 20).

Concept formation thus involves complexes of reflexes and mediation offered

by cultural artifacts. It is also the result of collaboration between the subject and the

environment (i.e., historical experiences and social experiences, etc.) It should be

noted, as well, that concept formation is a dynamic process: concepts develop through

mediation between cultural artifacts, an interaction between the subject and others,

and the subject’s introspection (Vygotsky 1981).

Concepts do not form as a matter of course as human beings mature; instead, they form as the result of a synergy of experiences, conscious planning, complex thinking, and mediation. The experiments conducted by Vygotsky and his colleagues suggest that words play a decisive role in the development of concepts, that, in fact,
concepts cannot exist without words. Or, more precisely, it is through the mediation of words that a concept is understood and constructed in relation to other concepts. Therefore, Vygotsky emphasized the necessity of pedagogy to the formation of concepts, especially in regard to scientific concepts. Accounts of spontaneous concepts and scientific concepts are given in the following section, after which the teaching of scientific concepts is discussed.

2.2.2 Spontaneous concepts vs. scientific concepts

Spontaneous concepts are also called everyday concepts by some researchers because children acquire concepts through their own experiences and/or observations in their daily lives, whereas scientific (nonscientific) concepts refer to the concepts acquired through formal schooling and/or systematic learning. Vygotsky (1986, 1987a) pointed out that studies of concept formation in childhood mostly focus on everyday (spontaneous) concepts and tend to neglect scientific concepts. Researchers studying spontaneous concepts have assumed that findings based on spontaneous concepts are also applicable to nonscientific concepts.

Piaget argued that it is important to separate scientific concepts from spontaneous concepts and to study the former on their own terms. In his view, each
kind of concept develops independently and gradually with scientific reasoning becoming dominant over time; i.e., children’s thinking, which relies on spontaneous concepts, is largely replaced by adult reasoning. Nevertheless, as Vygotsky pointed out (1988, p. 206-7) with regard to Piaget’s theory as it was formulated prior to Vygotsky’s death, Piaget failed to explain how the structural change of thoughts took place since Piaget did not relate development to instruction. Although Vygotsky (1987a) accepted Piaget’s point that scientific concepts should be studied as a unique phenomenon, he argued that the boundary between the two kinds of concepts is not definitive and that each influences the development of the other. Spontaneous concepts and scientific concepts emerge at different times on children’s developmental path, but they are not mutually exclusive as Piaget supposed. Instead, the development of the two kinds of concepts is intertwined. In the following paragraphs, the characteristics of spontaneous and scientific concepts in terms of formation, acquisition, and developmental paths are discussed.

First, children construct spontaneous concepts in reference to objects which they encounter. Spontaneous concepts are based on their personal experiences with and perceptions of the objects. For example, they may be able to say who their brother is, but they cannot elucidate the concept of siblings or explain the word “brother.” Their knowledge is limited to the visible referent and the world immediately
surrounding them. As spontaneous concepts are built in a bottom-up manner and are based on limited experiences and observations, spontaneous concepts often fail to provide a profound and systematic explanation of a given subject matter. In contrast, scientific concepts are theoretical generalizations of phenomena. The concepts are constructed on confirmed findings through numerous studies and experiments and thus establish a principle that can define the subject matter in question. Children learn a scientific concept first, based on which they can build connections between this concept and its referent and the subject matter can be explained by the principle. In other words, scientific concepts are applied from top to bottom.

A good example to illustrate the consequences of these two different kinds of conceptualization is how a person might classify whales. A person who has never learned the biological definitions of fish and mammals is very likely to put whales in the class of fish. Based on an assessment of surface characteristics, he may reach the incorrect conclusion that all creatures with fins that live in water are fish. However, if he were to study the biological definitions of fish and mammals, he would consider a whale a mammal because of its biological definitions. Without a systematic and theoretical foundation, therefore, spontaneous concepts can be incorrect, or at least incomplete.

The second difference concerns acquisition: mostly related to concrete
experience, spontaneous concepts first emerge in children’s thinking as they form a
united abstraction from entities (Bakhurst, 2007), whereas scientific concepts are
graped through some kind of instructional intervention. In considering the
acquisition of spontaneous concepts, it is necessary to note that children do not invent
or discover spontaneous concepts all by themselves; they acquire them through daily
life experiences, through interacting with the environment. That is why Vygotsky
referred to spontaneous concepts as everyday concepts (Van de veer & Valsiner, 1991,
p. 270). Spontaneous concepts are formed as children mature and accumulate
experiences of given objects; therefore, children usually have considerable knowledge
with which to execute the concepts. In other words, though children may understand a
phenomenon or subject, they may not be able to provide a verbal (and correct)
definition of it. For instance, children learn how to speak a language before having a
formal grasp of its grammar. They acquire the basics of a language and use it without
conscious awareness. It is not until they go to school and study grammar, writing, etc.,
that they begin to see the structure of language. It should be noted that children’s
command of a language cannot be translated into their true understanding of a
language. Before receiving explicit instruction, children may be able to produce
comprehensible sentences, but they are unlikely to be able to explain why a given
sentence is or is not grammatical.
The formation of scientific concepts is achieved through a quite dissimilar process. Unlike the acquisition of spontaneous concepts, which are mainly based on children’s experiences of immediate and tangible entities, scientific concepts offer systematic abstraction and generalization of entities and/or phenomena that are beyond children’s capacity to understand without assistance; thus, the concepts are imparted through systematic and logical teaching. Children acquire scientific concepts first by learning the verbal definition of the concept in the context of formal education, and the definition then descends to individual concrete objects that fall into this conceptual category (Vygotsky, 1987a). Wells (1994) emphasized that conscious awareness and voluntary control are two of the main features associated with the acquisition of scientific concepts. Organized instruction designed to fulfill specific purposes arouses children’s conscious awareness by presenting the theoretical reasoning inhering in concepts. An ideal educational setting that allows children to learn scientific concepts will provide organized instruction and opportunities for children to practice applying the concepts with awareness and intention until they become adept at employing the concepts. For example, the teaching of grammar and writing reconstructs their understanding of the language they use every day, thus making them aware of the structure of language. Moreover, children not only acquire knowledge through instruction, but they also learn to use this knowledge to analyze
and use language. In order to communicate correctly, they find it necessary to
determine whether the language they produce is grammatical according to formal
rules. This activity requires conscious awareness and voluntary control—neither of
which are characteristic of their speech before schooling.

Although spontaneous concepts and scientific concepts differ in the ways they
are formed and acquired, their development is interdependent. As Vygotsky (1987a)
pointed out, “the development of scientific concepts will depend directly on a
particular level of maturation of spontaneous concepts” (p. 177), such that children
must first acquire a crucial set of spontaneous concepts that they can use to
communicate and collaborate with others when receiving instruction. The relationship
between spontaneous concepts and scientific concepts can be related to the example
of learning a second language. When learning a second language, a person draws on
his first language to help him understand the new language. The already formed
concepts (i.e., first language) serve as tools to help the learner understand and acquire
the new concepts (i.e., the second language). In learning the second language, the
learner’s knowledge of both the native language and the foreign language are
developed. In other words, the spontaneous concepts formed in everyday
communicative activity facilitate the acquisition of scientific concepts in school
(Vygotsky, 1987a). The learning of the foreign language is influenced by and
understood thoroughly the native language, and when the learner has attained sufficient
knowledge of the foreign language, the latter exerts an influence on the learner’s
ability in the native language. It can be inferred, therefore, that spontaneous concepts
are the foundation for scientific concepts that are acquired and developed later.

Vygotsky reported an experiment that focused on students’ performance on
Students in the second and fourth grades were asked to use one of the two conjunction
words—because and although—to complete sentences embedded in paragraphs. One
paragraph was taken from a text in their social science course, and the other was from
a description of an everyday situation. The students were asked to decide whether the
causal (because) or adversative relation word (although) was suitable for finishing
each sentence. Although they used these words with some frequency, the task required
conscious awareness and voluntary control, neither of which was characteristic of
their daily speech. The data presented in Table 2-1 show that both groups performed
better on the scientific concepts than the spontaneous concepts and that both groups
performed better with the word because than although.
Table 2-1. Correct completions of sentence fragments (Vygotsky, 1988, p. 147)

<table>
<thead>
<tr>
<th>Fragments ending in <em>because</em></th>
<th>Second Grade (%)</th>
<th>Fourth Grade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific concepts</td>
<td>79.7</td>
<td>81.8</td>
</tr>
<tr>
<td>Spontaneous concepts</td>
<td>59.0</td>
<td>81.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fragments ending in <em>although</em></th>
<th>Second Grade (%)</th>
<th>Fourth Grade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific concepts</td>
<td>21.3</td>
<td>79.5</td>
</tr>
<tr>
<td>Spontaneous concepts</td>
<td>16.2</td>
<td>65.5</td>
</tr>
</tbody>
</table>

Vygotsky (1987a) explained that the groups’ performance on the causal word was because the concept (word) of causal relations appeared earlier than adversative relations in children’s thinking. He argued that when children are younger, although they may have a clear idea of a given concept, they do not have enough conscious awareness of how to use it successfully themselves. Such a situation resulted in the lower success rate of the students in regard to the spontaneous concepts. In addition, the teaching of scientific concepts enabled the students to use the scientific concept with relatively few mistakes. The causal relationship was comparatively apparent in the social science discourse, as the pupils had received instruction on the social science materials and worked on the materials with peers and teachers. The fourth-graders performed similarly on spontaneous and scientific concepts with the already familiar word, *because*, and with the less familiar word, *although*, their use of this word in scientific discourse was still better than in everyday situations.
These results indicated two things: first, the two kinds of concepts develop at different paces but eventually children’s ability to use them correctly converge.

Second, the teaching of scientific concepts facilitates its own development as well as the development of spontaneous concepts. Figure 2-1 presents a general outline of the development of spontaneous and scientific concepts.

![Figure 2-1. Development of spontaneous concepts and scientific concepts](image)

At the beginning of the learning process, the performance of spontaneous concepts falls behind that of scientific concepts. The differences at the outset are associated with the different ways in which the two kinds of concepts are acquired—as discussed earlier in this section, spontaneous concepts are mostly built on children’s own generalizations and concentrate on more elementary features, whereas scientific concepts are acquired through systematic teaching and focus on more complex characteristics. The two kinds of concepts, therefore, develop along opposite paths: spontaneous concepts develop in an upward sense (from concrete to
abstract), whereas scientific concepts develop in a downward sense (from abstract to concrete). Although the two kinds of concepts develop in opposite directions, each is influenced by the developmental process of the other. For example, when children learn the verbal definition of “sibling,” they learn more than its verbal definition. They draw on their everyday concepts to help them concretize scientific concepts. They may have brothers or sisters and/or their group of friends may include siblings, such that the concept of sibling applies to the real people in their lives. At the same time, the everyday concept is restructured by the scientific concept such that the individuals in their lives can now be categorized under a unified concept. Vygotsky (1987a) stated that the strength of a scientific concept is conscious awareness and the volition and the strength of a spontaneous concept is concrete experiences. The strength of one kind of concept is exactly the weakness of the other (p. 220). The development of each kind of concept is influenced by and benefits from the strength of the other. The development of scientific concepts does not repeat the developmental path of spontaneous concepts; instead, a certain level of development of spontaneous concepts paves the way for scientific concepts. On the other hand, scientific concepts facilitate the development of spontaneous concepts; from the experiment and Figure 2-1, it can be seen that the development of the presence of scientific concepts facilitates the development of spontaneous concepts.
Another important finding concerns the teaching of scientific concepts. The instruction of scientific concepts allowed the pupils to perform beyond their capacity to that point and created room for the further development of spontaneous concepts. The experiment showed that after a period of time, the pupils achieved a similar level in regard to both kinds of concepts. In addition, through instruction and collaboration, children gradually learn to solve tasks independently (Vygotsky, 1987a). Moreover, everyday concepts were restructured by scientific concepts, and the introduction of scientific concepts raised conscious awareness and restructured the original generalization from everyday concepts.

In the following section, the importance of teaching scientific concepts is discussed.

2.3 Scientific concepts in teaching

From the previous discussion of conceptual development and the intertwined relationship between spontaneous concepts and scientific concepts, it can be inferred that the key factor influencing the children’s mental development and the main difference between the development of the two kinds of concepts inheres in instruction. Vygotsky argued that teaching and development should not be viewed as
one and the same process though they are interdependent. He emphasized, too, that organized teaching can effectively lead to conceptual development (Kozulin, 1998; Van de veer & Valsiner, 1991). On the one hand, formal instruction raises children’s developmental level and enables them to know and perform a few steps beyond their cognitive capacity up to that point. On the other hand, instruction restructures children’s thinking as it was cultivated through their previous learning and experiences.

Scientific concepts are taught through organized education, which aims at cognitive development. Organized instruction is mostly situated in a formal setting, and more importantly, organized instruction involves a thoughtful teaching plan, teaching material that is carefully analyzed and created for the learners, and an anticipated outcome. In the following sections and chapters, the content of organized instruction is discussed further. Discussion in this section focuses on the influence of organized teaching on conceptual development and the importance of the teaching of scientific concepts.

2.3.1 The processes of teaching and learning scientific concepts

Since scientific concepts are systematic abstractions and theoretical
generalizations of human experiences (Karpov, 2003), organized instruction is crucial to the successful teaching of scientific concepts. Vygotsky (1978, p. 90) commented that organized instruction facilitates a series of developmental processes and that contributes to the development of higher mental functions.

Instruction starts with memorization and meaningful imitation with the primary goal of stimulating children to execute the operations on their own and to equip them to deal independently with various situations. Transitions occur several times during this process. In the first instance, children learn the definition of a concept and imitate the adult’s operation. At this point, the learner is subject to the influence of others. He/she observes and imitates the teacher’s act. Imitation is meaningful in the context of education because two important factors are involved: conscious awareness and volition. Every step the children take is pre-contemplated and pre-planned; they are aware of the actions they are taking and the actions they are going to take, and they also need attention and volition to control and monitor their behaviors. A series of developmental segments are undergone during this process. At first, children may need assistance from the outside; the assistance can be advice from teachers, collaboration with peers, and/or mediation provided by teaching materials. Later on, they may not need the physical presence of assistance, but when they successfully complete the task they still need to recall the definition of the concept
and imitate the adult’s operation. However, the children still receive assistance—though invisible—as they complete the task. When children become more experienced at the operation, they no longer need the physical assistance of the other. The influence gradually shifts from the other to the learner himself. Eventually, the children should be able to conduct the task entirely independently and become able to predict likely outcomes of their actions such that they become capable of dealing with various situations. Up to this point, they have gained control of the concept. However, another transition takes place in the children’s thinking. Their thinking is still under the influence of the previous teaching and other already established concepts (spontaneous and scientific concepts), yet their original thinking undergoes a process of restructuring; that is, they build connections between the most recently learned concept and older concepts, and other new concepts are generated. On the basis of the newly acquired concept (and its network), therefore, they continue to learn more concepts.

The example of learning foreign language discussed earlier nicely illustrates the consequences of formal instruction for concept development. Learning a new language changes the speaker’s view of his/her native language, and at the same time, the learning is influenced and assisted by knowledge of the native language. When the learner has achieved a certain level of proficiency in the foreign language, the foreign
language influences the native language inversely. Thus, the two languages influence each other, and advanced learning of the foreign language relies on both the native language and the already obtained proficiency of the foreign language. Through formal instruction, not only are scientific concepts efficiently acquired and developed but spontaneous concepts are also further developed.

2.3.2 Influence of teaching scientific concepts

Although dynamic and potentially endless, the developmental process has the ultimate goal of teaching children how to establish a system for developing a more complex logical structure. The goal of teaching scientific concepts is not simply to teach a new concept to the learner; instead, it is to enable children to relate concepts to the real world (physical and mental). Vygotsky (1988) stated that “the formal discipline of scientific concepts gradually transforms the structure of the child’s spontaneous concepts and helps organize them into a system: this furthers the child’s ascent to higher developmental levels” (p. 206). The original structure of children’s thinking is changed by the teaching and learning of scientific concepts (Panofsky, John-Steiner, & Blackwell, 1990). The structure is re-created in order to render the child capable of facing more complex teaching and learning in the future. Vygotsky
held that effective teaching not only helps children develop the ability to complete the current task but that it also strengthens their capacity to complete tasks in the future (Van de veer & Valsiner, 1993). When a child successfully completes a task after schooling, it is assumed that he/she can also apply this ability to other relevant activities and make progress in terms of cognitive development.

The main conclusion of Vygotksy’s investigation into and discussion of education and development is that the teaching and learning of scientific concepts furthers cognitive development (Vygotsky, 1987a). Education develops higher mental functions and prepares learners for future education (Kozulin, 2004).

In the next section, applications of Vygotsky’s theory of education in the classroom setting are discussed.

2.4 Application of Vygotsky’s theory in the classroom

Vygotsky (1987a) argued that instruction should be given a few steps before children have reached the developmental level of the instructional content. He held that properly organized instruction can lead the development. His theoretical position influenced pedagogical practices and studies in various disciplines were conducted based on his theory.
In this section, a review of Vygotsky’s theory’s pedagogical implication and application is offered. Special attention is given here to the educational practice of Vygotsky’s theory in the classroom setting, as the experiments reported in this dissertation were conducted in a classroom setting.

2.4.1 Psychological tool and organized instruction

In previous sections, how education raises learners’ potential to a higher level and enables them to execute higher mental functions were discussed. A factor that is central to the movement from lower mental functions to higher mental functions is psychological tools. According to Vygotsky (1987b), psychological tools are “artificial devices for mastering his [a man’s] own mental processes” (p. 85). The function of psychological tools is like the function of other material tools applied in daily life inasmuch as they are used to facilitate the process of work, to change the form of an operation. Vygotsky (1987b) claimed that a tool not only performs its own specific work, it also reduces unnecessary work. Because of the characteristics of the tool, the nature of the original mental process changes. Accordingly, Vygotsky (1987b) commented that:

It (the tool) recreates, reconstructs the whole structure of behavior…. Mental
processes, taken as a whole, form a complex structural and functional unity. They are directed toward the solution of a problem posed by the object, and the tool dictates their coordination and course. They form a new whole—the instrumental act.

(Vygotsky, 1987b, p. 87)

In Kozulin’s (1998) account of Vygotsky’s position, material tools, psychological tools, and other human beings can function as mediators. Psychological tools, however, are unique in that they can direct psychological processes (Kozulin, 1998). For Vygotsky (1987b), psychological tools are cultural products and the application of them presents the culture and history from previous generations to the present. The use of psychological tools makes the culture’s socio-cultural accumulation available to people. And, through the use of these tools, people can mediate their own mental functions and interact on the basis of cultural knowledge with the environment.

Vygotsky (1987a) proposed that “all higher mental functions are mediated processes” (p. 126), and it is the use of the sign (e.g. symbol, language) that influences and directs the process. Kozulin (1998) explained that psychological tools can be any symbolic artifacts that help learners to master higher mental functions. Diagrams, symbols, and words are all psychological tools that help learners to connect cognitively with cultural, historical knowledge. The tools thus help learners to
memorize definitions, understand concepts, and/or follow procedures. For example, blocks help children to perform simple sums, and flowcharts represent the procedures of an operation. It is noteworthy that a psychological tool is not just an object; it is an instrument that through its use, a person’s mental functions are influenced, directed, and realized. A distinct difference between a material tool and a psychological tool is that the influence of the former is external but the influence of the latter is internally oriented (Vygotsky 1978, 1987b).

As the work of psychological tools is to direct and mediate the psychological process, schooling is considered a kind of psychological tool. Vygotsky took the position that organized instruction constitutes a psychological tool that helps students to acquire the essential knowledge of a field (Karpov, 1995, p. 132). Hedegaard, Chaklin, and Pedraza (2001, p. 122) also suggested that a child can use knowledge “as a tool for analyzing and reflecting about his everyday activities.” Kozulin (2003) pointed out that to exert the mediating function of psychological tools, they must be acquired under the condition that their assistance in cognitive development is emphasized. He suggested that the acquisition of psychological tools needs a special learning plan, one that is compatible with the features of a symbolic tool such that it is systematic and cognitively meaningful. Therefore, organized instruction is essential to the acquisition and application of psychological tools: the instruction relies initially
on careful analysis of theoretical knowledge, which it teaches through organized activities that leads the learners’ development.

In the following section, the pedagogical practice of Vygotsky’s theory as reported by Karpov (1995, 1998, 2003) and other related studies is reviewed and discussed.

2.4.2 Theoretical learning

Traditional school education that focuses on rote and drills usually fails to transfer verbal definitions of scientific concepts into an ability to deal with concrete problems. On the other hand, empirical learning (Karpov & Bransford 1995), which focuses on comparing different objects, has its own central shortcoming whereby it does not always succeed in helping students realize a theoretical explanation of the problem such that they may make errors in the conclusions they reach. The solution to previous problems is that, instead of memorizing the verbal definition or discovering the rules from observing the surface characteristics of objects, children should learn the definition and gain the ability to deal with problems at the same time during the process of teaching and learning. Children should receive education that enables them to acquire systematic knowledge as a psychological tool to equip them to address
problems. Moreover, the instruction should itself be regarded as a resource, a goal, and a tool for children.

Hedegård (1990) made a distinction between empirical knowledge and theoretical knowledge. She noted that empirical knowledge deals with “differences and similarities among phenomena” whereas theoretical knowledge “deals with a connected system of phenomena” (p. 353). Theoretical knowledge is systematic, cognition-mediated, and dynamic. The teaching of theoretical knowledge is a process of discovering, connecting individual phenomena to find the solution to a central problem. The ultimate goal of teaching theoretical knowledge is to allow students to use the knowledge as a psychological tool.

In her consideration of the characteristics of theoretical knowledge, Hedegård (1990) argued that instruction using cognitive methods is needed for the teaching of theoretical knowledge and that theoretical knowledge must be acquired through a combination of verbal definition and exploratory activities. Hedegård (1990) proposed also that to characterize theoretical knowledge as a psychological tool, models that encompass the rules and relations of the theoretical concept can serve the purpose of employing theoretical knowledge as a psychological tool. In addition, carefully designed teaching activities and well-planned teaching procedures that allow students to relate abstract concepts to physical reality are necessary. She argued that
under conditions of guided learning, students succeed in developing an understanding of scientific concepts (Hedegaard, 1990).

Hedegaard’s opinions on the teaching of theoretical knowledge correspond with Karpov’s and other researchers’ notions of theoretical learning (Karpov, 1995; Karpov & Bransford, 1995; Karpo & Haywood 1998). For example, Karpov and Bransford (1995) indicated that “theoretical learning is based on supplying students with psychological tools: general and optimal methods for dealing with certain classes of problems that direct the student toward the essential characteristics of the problems of each class (p. 63).” Karpov and Haywood (1998) also pointed out that theoretical learning aims to teach students to analyze the essential characteristics of objects or events, and that these characteristics are presented “in the form of symbolic and graphic models” (p. 31). According to Karpov and Haywood (1998), by clearly presenting the scientific analysis of a concept using forms and models, and providing meaningful activities that lead cognitive development, knowledge acquired through theoretical learning is of “a high level of mastery and maintenance, broad transfer and intentional use by students” (p. 32).

Karpov reported some teaching experiments that demonstrate the strength of theoretical learning. For example, Pantina’s (1957) study (as reported in Karpov & Bransford, 1995; Karpov & Haywood, 1998) with 6-year-old children learning to
write the Russian alphabet showed that when the model of a letter (e.g., the contour of a letter) was clearly depicted and steps of practices were revealed in advance; the learning time was shortened and the concept (the construction of alphabets) was successfully transferred to the activity of learning to write other alphabets.

Experiments using a theoretical learning approach that obtained similar results are reported by Talyzina (1973): learners following a step-by-step teaching plan demonstrated great ability to transfer the knowledge they acquired to other related activities.

Karpov and Bransford (1995) concluded that theoretical learning is exactly the type of instruction that Vygotsky regarded as efficient and truly capable of leading development. Karpov and Haywood (1998) indicated that “the theoretical learning approach is very effective for classroom teaching and for facilitating students’ cognitive development” (p. 31). When the essence of knowledge is professionally analyzed and clearly presented, students can more easily acquire a given concept and transfer the knowledge to negotiating problems in the same subject domain. The guided learning activities also correspond to Vygotsky’s (1987a) argument that adult’s participation and collaboration contribute significantly to schooling and that instruction should be both organized and in a formal setting.

In the next section, Gal’perin’s pedagogical framework, which is based on
Vygotsky’s theory of education and development and incorporates models and procedural teaching plan, is discussed.

2.5 Galperin’s pedagogical framework

As a follower of Vygotsky’s theory of instruction and cognitive development, Gal’perin (1967) argued for the importance of studying how external forms influence mental actions; that is, in his view investigating the psychological process of transferring non-mental actions to mental actions was central to the learning of concepts. He reported that in Vygotsky’s view “a genuine genetic analysis of the process would be a systematic reproduction, a teaching experiment” (Gal’perin, 1967, p. 29). Based on Vygotsky’s notion of internalization and mediation, Gal’perin developed an instructional program that contributed significantly to the application of cognitive tools in pedagogical practices. Gal’perin’s instructional program has two foci that elaborated Vygotsky’s idea of the relationship between instruction and development: the first is to control the “concrete content” of cultural tools that learners need to transmit knowledge in the course of teaching and learning (Stetsenko, 1999), and the second is to integrate the investigation of psychological processes with teaching–learning processes. Therefore, the instructional program was constructed
based on two primary considerations: on the one hand, efficient instruction means to teach a high quality of scientific knowledge that can lead cognitive development, and on the other hand, the teaching–learning process should enable learners to develop higher mental functions. Furthermore, the process itself should be carefully designed in advance.

In the following sections, the two essential parts of Gal’perin’s pedagogical framework are discussed. First is the quality of cognitive tool and then the teaching process. Challenges to and doubts regarding Gal’perin’s instructional approach are presented after the discussion of the framework.

2.5.1 The quality of the cognitive tool

In Gal’perin’s view, the quality of cognitive tools for mediating learners’ ability to perform the task is crucial to the instructional program. Traditional education lacks a profound presentation of scientific concepts, and knowledge is often taught piecemeal and through verbal definition. This kind of instruction cannot help learners to recognize the essential characteristics of a subject domain, and learners may not have adequate tools to manipulate mental operations.

Arievitch and Stetsenko (2000) claimed that cognitive development depends
to a great extent on the quality of the cognitive tools provided. Therefore, the instruction has to be based on theoretical concepts and provides a complete presentation of the concepts. Under the circumstances that learners are not provided with adequate cognitive tools, students are obliged to figure out a solution on their own that may result in their making mistakes.

To achieve the instructional goals set in terms of cognitive development such that students are able to internalize the concepts, Gal’perin argued that the knowledge being taught must be professionally analyzed based on theoretical rather than empirical concepts. He proposed that the essential characteristics of a given subject domain must be singled out in the first place, and the characteristics have to be generalized theoretically (not necessarily by the instructor) and presented in a way that makes them accessible to the students. Theoretical concepts presented in the form of semiotic tools (e.g., charts, schema, models) are employed by students as means to orient their mental actions. (Arievitch & Stetsenko, 2000). The essence and strength of this instructional method is that students will acquire a fundamental understanding of the core concept in the subject domain at the beginning of the teaching–learning process because theoretical concepts are covered in a comprehensive and systematic way. The concepts in the subject domain are revealed to the students in a holistic presentation that is analyzed and prepared by professionals in the field. Students find
that the subject matter is thereby elucidated and thus their chances of making mistakes are reduced.

The strength of Gal’perin’s instructional program is even more salient when it is compared to traditional instruction. Traditional instruction depends to a great extent on the individual teacher’s explanation and lacks a systematic method to present the theoretical concepts. Moreover, the explanations are usually contingent on the tasks or problems at hand. The rules taught do not have a clear and immediate application and connection to the tasks or problems, and the outcome is that every task or problem is solved by a respective explanation. Students cannot truly employ the concepts in order to complete the tasks and also fail to develop the ability to transfer the knowledge to various tasks in the same domain. It is worth noting that, in addition to emphasizing the quality of cognitive tool in instruction, Gal’perin suggested that the instructor should also have a full understanding of the subject he/she is teaching and be responsive at every stage of the teaching–learning process.

2.5.2 Mental formation in the teaching–learning process

Gal’perin (1989) argued that investigations into the influence of education on mental development in the past only probed the already-formed mental action or the
static status of the mental action at a particular time. The dynamics and transformation of mental functions at each stage of the teaching–learning process have been overlooked. He argued that to study the formation of mental concepts during the process, it is necessary to implement organized instruction through which the learning process is guided step by step.

Gal’perin (1992a) claimed that only by studying the stage-by-stage mental formation along the developmental path can the complex of psychological process be revealed. He proposed three components in sequence as crucial to the process: the orientation basis, the cultivation of mental actions, and the internalization of concepts (Galperin, 1992a, p. 61). The entire process must be planned beforehand. At the beginning of the process, a unit of instruction is chosen (e.g., tense in foreign-language teaching). The orienting basis is constructed on the theoretical concept of the unit of instruction and is presented as a schema (e.g., diagrams, pictures) that connects the conceptual image and the action. The schema presents “the subject matter as a meaningful whole” (Haenen, 2001, p. 167), and it is the psychological tool that learners can employ during the learning process. Planned practices using the schema are guided by the instructor. Teaching and learning activities are organized step by step, such that when the learners pass through each stage, the schema’s influence is gradually raised from material level to mental level.
The stepwise instructional program begins with the learners’ physically employing the schema to orient and regulate their behaviors, and with the increase of practices and progress of guided learning activities, the learners’ mental functions are gradually influenced by their material actions. The learners reduce their dependence on the schema and become more familiar with the practices; in other words, the quality of their actions change. The learners, thus, develop a concept of their own. The final stage of the teaching–learning process is that the learners gain the capacity to predict the outcomes of their actions and internalize the concept; that is, they become able to transfer the knowledge to future tasks and learning.

Gal’perin (1992a) claimed that through the construction of the step-by-step teaching–learning process, the influence of learning on mental development can be studied. This approach both allows people to observe the interrelated process of education and concept development and to realize the theoretical concept in practice. Gal’perin’s “stage-by-stage formation of mental actions and concepts” works as a pedagogical method (Gal’perin, 1992a, p. 60). Elaboration of his method, which is known as “systematic-theoretical instruction” is discussed in more details in Chapter 3.
2.5.3 Criticism of Gal’perin’s approach

Galperin’s ideas of setting the necessary criteria for successful performance and designing an adequate cognitive tool according to the criteria have been subject to some criticism. According to Van der Veer (2000), the main criticism of Gal’perin’s approach is twofold: the first is the limited application of his instructional program, and the second is its emphasis on “materialism” (i.e., mental actions are mediated by materials). The first criticism considers Gal’perin’s approach as limited in applicability to certain disciplines that have a clear “problem-solving” aspect, for example, algorithms in mathematics. In fact, Gal’perin’s approach has been applied in fields such as history, second language studies…as well. (For discussion of the application of Gal’perin’s program in L2 field, see Chapter 3) The criticism may be due to a misunderstanding of how Gal’perin’s instructional program is designed to be executed. Though the planned and guided learning activities are essential to Gal’perin’s approach, the purpose of the activities is to prepare the learners become independent creators and thinkers. It is through the instructor’s guidance and collaboration and the learner’s participation that the concept is developed. Activities in traditional instruction are more like drills, but in Gal’perin’s program, the activities are oriented by the theoretical concepts. Therefore, the instructional program is centered on theoretical concepts and further applies the theoretical concepts to
practical tasks, not on formulating simple solutions to a problem; this statement also answers the doubt that Gal’perin’s approach is only suitable for particular disciplines. Though it should be acknowledged that every discipline is unique, the idea is that the essential characteristics of instruction are universal. Van der Veer (2000) argued that commentators may disagree regarding about what constitute the essential characteristics of a given subject domain. However, in my opinion, Gal’perin’s emphasis on ensuring that knowledge should be carefully analyzed by the professionals and understood by the instructor may answer Van der Veer’s question. While researchers may have very different opinions on nature of the subject matter, at least in some fields, when considering an instructional program (not only limited to Gal’perin’s program), a consensus regarding what is the most crucial knowledge in that the subject domain should be reached before the curriculum is designed. The point is to allow learners to understand and acquire the theoretical concepts in discussion; therefore, other issues that are beyond the present pedagogical concerns can be put aside for the time being. In fact, several studies have used Gal’perin’s approach in various areas and demonstrated the broad application of his approach, for example, Haenen, Schrijnemakers, and Stufkens’s (2003) studies in history, and Negureula’s (2003) in foreign language pedagogy.

The second challenge relates to Gal’perin’s reliance on concrete material
asserts that instruction can be constructed by other means like story-telling and imitation and that it should not be limited to any one scheme. First, Gal’perin’s stage-by-stage formation does not rely on schema. The goal of his approach is to use schema such that mental actions will go through a qualitative change and the relevant concepts, will therefore, develop. Second, the approach focuses on offering learners an orienting basis, and the basis is presented in the form of scheme. The scheme is only a cognitive tool that the learners employ at the beginning of the learning process, but during the whole process, learning activities of any kind can be executed; the point is to have learners understand the concept as a meaningful whole and the form is just the method not the central part of the teaching program. Vygotsky stated that “the difficulty with scientific concepts lies in their verbalism” (1988, p. 148). It is not easy for learners to articulate and separate the abstractness of scientific concepts in initial stages of their learning journey. While Vygotsky recognized the importance of instruction and clear verbal definitions to scientific concepts, he did not propose a concrete pedagogical approach to present scientific concepts. Based on Vygotsky’s observation and analysis, Gal’perin’s instructional program provides a theoretical approach to teaching that aims at mastery of scientific knowledge. In the program, scientific concepts are denoted first in precise verbal definitions which are systematic generalizations and are applied to explain individual phenomena. The concepts are
later realized in a series of organized activities, and psychological tools are provided for learners to regulate and execute their tasks during the process. Through these activities, learners can marry the concepts with practices, and learners’ mental actions are gradually reformed by the activities. The step-by-step instructional program helps learners to successfully understand and transfer scientific knowledge.

2.6 Conclusion

In this chapter, the theoretical framework employed in this dissertation was presented. The framework is based on Vygotsky’s theory of developmental education. Vygotsky’s (1987a) position was that good education leads conceptual development. For his followers, formulating an adequate instructional program is needless to say an important issue. Gal’perin envisioned the process of conceptual development (the movement from lower mental functions to higher mental functions) as interrelated with the teaching–learning process. A well-planned and guided teaching–learning process can, in his account, at least, facilitate mental development.

The application of Vygotsky’s theory to foreign-language teaching and learning and more discussion of Gal’perin’s instructional program are presented in Chapter 3.
Chapter 3

Systematic Theoretical Instruction: A Review of the Literature

3.1 Introduction

The chapter reviews the application of Vygotsky’s sociocultural theory
(henceforth, SCT) in second language studies with regard to studies that are based on
Systematic Theoretical Instruction. A general literature review on SCT within the field
of foreign language teaching and learning is provided first and Gal’perin’s
SCT-inspired pedagogical framework “Systematic-Theoretical Instruction” is
discussed in terms of the procedures of implementation. Studies in foreign language
learning and teaching adopting Gal’perin’s framework are reviewed in the final
section.
3.2 Sociocultural theory and foreign language learning and teaching

Vygotsky’s sociocultural theory (SCT) proposes that human mind is mediated by cultural artifacts. Human thinking is, on one hand, a cultural-historic process that is created and passed down from previous generations and is shared by a group of people in the present, and on the other hand, it is a conglomeration of people’s recreation of the use of materials and interaction within the current environment. Therefore, thinking is shaped by the past and the present and is gradually reformed to meet current and even future needs; the mediated process is dynamic and mediation is crucial to the development of higher mental functions.

The concept that the human mind is mediated and symbolic tools like charts, pictures, and language are utilized as psychological tools to mediate people’s behaviors and thinking during the learning process has inspired many theoretical and empirical studies in the field of second/foreign language teaching and learning. (e.g. Lantolf, 2000, 2006; Lantolf & Thorne, 2006, 2007; Lantolf & Poehner, 2008).

In the following sections, a discussion of SCT’s pedagogical implication for language instruction is presented. The review is limited to the main constructs of the theory that are directly relevant for the present study, namely, mediation, (self- and other-) regulation, internalization, and the zone of proximal development.
3.2.1 Sociocultural theory: its pedagogical implication

Vygotsky (as cited in Wertsch, 1981, p.146) stated that “all higher mental functions are internalized social relationships”. Examples of higher mental functions are planning, decision making, problem-solving, and intentional imitation, among others. Vygotsky (1981) asserted that interpersonal relationships knowledge is acquired through social interaction. Society and artificial tools mediate our relationship to and understanding of the world. The forms of mediation themselves are eventually internalized resulting in a uniquely human way of thinking and acting.

The process is described by Vygotsky (1978) as follows:

Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals. (p. 57).

Consider college students who are learning the concept of economic equilibrium of price and quantity for example, the learning outcome is that they should be able to analyze the relationship of price and quantity and predict whether equilibrium will be achieved. In the beginning, the students learn the definition of price and quantity and are instructed to draw a supply and demand model to
understand the relationship between price and quantity. An example of the model is given in Figure 3-1 below:

![Figure 3-1. The supply and demand model](image)

The students have to examine the determinants (e.g. the amount of supplied and demanded quantity, how much the customers are willing to pay) that decide the equilibrium and utilize the model to simulate the possible outcome under an instructor’s guidance. The model is a meditational tool that assists in analyzing the market’s response to all the determinants; by moving the demand and supply curves based on the change of variants, a possible point of equilibrium will be located in the model. In principle, the students have to comprehend the concept of equilibrium (the quantity demanded equals the quantity supplied) and use the model as a tool to find the point of equilibrium.
One of the common mistakes that beginning learners often make when working with the model is that they divert their attention from the data and the concept itself to the model, that is, they try to manipulate the model (tool) to figure out the possible outcome instead of contemplating the concept and using the model to regulate their thinking. However, when they are more experienced at utilizing the model to manage data, they come to understand that the model is a tool to mediate their behavior during the process so that they can analyze whether equilibrium will be obtained under a given circumstance, and in this way they eventually come to internalize the concept of supply and demand. Therefore, the learning process begins with the study and memorization of the laws of the concept, followed by mastery of the usage of the supply-and-demand model to regulate their thinking and concludes with independent solution to different tasks through utilization of the model.

During the process, the students’ behavior changes from object- or other-regulated to self-regulated as they gain control of the concept. Mediation from cultural artifacts and other people gradually change the structure of psychological activity; a series of developmental processes are undergone when the mediation switches from external-oriented to internal-oriented. The instruction and guidance the learners received earlier in the learning process, the mediation tool (the model) and the learner’s own efforts are materialized in the final execution of tasks. The synergy
created by the collaborative work reveals that learning is not only receiving instructions but also evolves active participation, interaction and mediation in the process.

The fact that mediation assists people in accomplishing activities (mental or concrete) that they may not be able to accomplish alone introduces the concept of the zone of development (henceforth, ZPD). ZPD refers to the difference (a space in terms of psychology) between what a person can do independently and what he can achieve when assisted by others. Moreover, the assistance must be appropriated in a way that allows the individual to recontextualize any ability to different, though related, activities in the future. Vygotsky (1978) attributed the existence of ZPD to the fact that development follows instruction (p. 90). He defined ZPD 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.” (Vygotsky, 1978, p. 86) The concept of ZPD redirects people’s attention from assessing learners’ current ability to learners’ potential and the importance of mediation. Daniels (2001, p. 61) concluded that the ZPD offers two important pedagogical implications. The first concerns the teaching and assessment of learner’s potential and the second is that
instruction should give rise to development. From an SCT perspective, developmental progress cannot be dissected into various parts. For example, teaching and learning, education and development, and the acquisition and operation of a concept are integral to the entire process. Development is not merely a result of learning or maturity but originates from the person’s interaction with cultural affordances and participation in cultural activities (e.g. game, formal education, work…). Given that development is supported by collaborative work, institutional education may be an optimal venue for assessing the capacity of the theory.

Davydov (1998, p. 14-15) stated that “each time a certain level of development is reached, this further facilitates teaching and the learning process”; education practices on one hand facilitate the internalization of theoretical concepts through mediation and social interaction and on the other hand assist learners in developing their potential. Teaching and development constitute a mutually beneficial cycle. It should be noted that not all teaching can be considered mediation as not all teaching leads development. Teaching that boosts development must take account of the quality of theoretical knowledge presented to students, the expected learning outcome, accessible psychological tools for mediation, methods for assessment, and opportunities for learners’ participation.
3.2.2 SCT and the teaching of foreign languages

Lantolf (2007) pointed out the major distinction between SLA and SCT is that the former regards the acquisition of a new language as a result of a natural process in which the individual is the central factor, while SCT views language learning as collaborative work between the individual, others and cultural artifacts. Some influential SLA theories (e.g. Pienemann (1998)’s Processability Theory or Krashen (1982)’s i+1 theory), which are to some degree at least based on Chomsky’s theory believe that individuals have innate mental knowledge that (dis)allows them to acquire certain grammatical structures. These theories pose that the human mind is restrained by rules and language is processed in a computational fashion. Individual differences can be overlooked since the language-processing mechanism is innate, rule-governed, and the same for everyone. For instance, Krashen’s i+1 theory (1982, p.21) proposes that learners can only acquire a new language structure when they receive comprehensible input which contains language that they understand now and contains new language structure that are slightly beyond their current level of competence. Hence, the theory claims that direct instruction is peripheral to language acquisition since it often fails to provide comprehensible input (vanPatten & Williams, 2007). Krashen (1982) promotes acquisition more than learning and he believes that the goal of pedagogy is to encourage acquisition, other SLA theories that follow
Chomsky’s theory hold similar positions and therefore ascribe the discrepancy between what has been taught and what has been acquired to the inefficiency of direct explicit instruction.

The input-output metaphor of second language learning is not compatible with SCT since SCT maintains that learning concerns interaction between the individual and the environment and mediation from others. All the factors involved in the process cannot be dissected into definite categories like learning and acquisition, and every factor has its effect on the learning outcome. From an SCT perspective, learning (in formal setting) is artificial development that requires assiduous planning of instruction, thorough consideration of the knowledge to be taught, and suitable mediation so that mental development can be cultivated (Negueruela, 2008).

The grounds for extending SCT to foreign language pedagogy is that foreign language learning is one of the higher mental functions that is processed and developed through (self- and other-) regulation and mediation. Whether learners acquire foreign languages in formal or informal settings, the existence of L1 makes the developmental path of learning foreign languages different from that of the first language. As Vygotsky (1988, p. 159) pointed out, “the acquisition of a foreign language differs from the acquisition of the native one precisely because it used the semantics of the native language as its foundation”, foreign language learners’ L1 may
serve as a mediational tool while they learn an L2. The foundation of SCT-based L2 pedagogy is based on meditational tools that regulate the learning process and organized instruction that provides well-analyzed theoretical knowledge, accompanied by appropriate learning activities that promote use of the knowledge in communicative (spoken and written) circumstances. Leont’ev (1998) discussed the acquisition of foreign languages in young children and concluded that language teaching is a matter of development. Developmental teaching has to consider individual learners’ characteristics and integrate these into the instructional process. He also noted that children’s first language helps them in communicating in a foreign language and the teaching should effectively combine the native language and foreign language in pedagogical activities. Although Leont’ev mainly discussed the acquisition and teaching of foreign languages in preschoolers and young children, the suggestions he made can be applied to adult learners as well.

Empirical studies on foreign language learning and teaching dated from the 90s had already shown that appropriate assistance from experts that co-constructs ZPD with novice learners can help the learners gradually obtain the ability to self-regulate and learning is thus promoted. (e.g. Adair-Hauck & Donato, 1994; Aljaafreh & Lantolf, 1994; Anton, 2009) Traditional classroom teaching tends to provide feedback that is not contingent on learners’ reaction and randomly given
feedback cannot be considered mediation. Mediation that is sensitive to students’ needs and reactions is necessary, and more importantly is that the mediation must be able to assist students in moving along within their ZPD. For example, in Aljaafreh & Lantolf’s (1994) study, as the learner moved along, the mediation provided by the tutor became increasingly implicit so that the responsibility and control were gradually shifted from the tutor to the learners. In the studies mentioned earlier in this paragraph, although the strategies adopted varied and L2 teaching and learning were examined from different angles, the mediation provided by experts, whether through negotiation or feedback, all helped learners to perform better at their current level of ability and to move on to the next level. The studies showed that when learners receive suitable mediation and are given opportunities to participate in the learning process, their development is boosted by the collaborative work.

More recent studies indicated that not only mediation provided by experts but self-explanation also assists learners in appropriating grammatical concepts in the target languages. Swain & Lapkin’s (2008) and Negueruela’s (2008) studies on college students whose first language is English learning French and Spanish respectively both indicate that self-speech (“languaging” in Swain’s terms) in L1 helped learners in comprehending the target grammatical concept. Through verbalization activities (students explaining the concepts to themselves), learners’
self-speech help them to analyze the relevant grammatical concepts and further gain better understanding of the concepts. Swain et al. (2009) further suggested that class activities should integrate language practices to help learners understand the concept and regulate their thinking.

The SCT-L2 studies reported above may have different approaches to assess and investigate the teaching and learning process, but they all share SCT’s fundamental principle that the human mind is mediated and mediation is crucial to cognitive development. The SCT-L2 studies reviewed in this section provide some pedagogical implications that are also features of Gal’perin’s pedagogical framework, STI, which will be discussed in the next section.

First, although the forms of mediation vary, mediation cannot be provided randomly. Mediation is a tool that “intervenes” in the learning process in a positive sense, thus the quality and design of the mediation should enable learners to orient their actions and thinking toward the goal of internalizing the theoretical knowledge. Second, pedagogy should be planned and organized. Efficient instruction should not only teach students the knowledge to solve the task-at-hand but it should also help students obtain the ability to solve more complicated tasks in the future. Teaching plans should consider learner’s current ability and envisage the learning outcome. To
achieve this goal, pedagogical practices must elucidate the anticipated goal for learners and organize the instruction accordingly. Third, the developmental process consists of a series of changes in mental functions; activities and practices that arise in people’s consciousness of a scientific concept and that facilitate their internalization.

3.3 Implementation of Sytematic-Theoretical Instruction

Theoretical foundation and consideration of Gal’perin’s systematic-Theoretical Instruction (henceforth, STI) were discussed in Chapter 2. The specific teaching sequences and the content, execution of each sequence are introduced in the next section, followed by the introduction of components and an example of SCOBA in L2 teaching.

3.3.1 The stepwise teaching sequences

Gal’perin (1989) pointed out that the challenge of school education is to match the action with the concepts successfully. He contended that three conditions can ensure the formation of actions and concepts. There are:

(1) conditions for the formation of the correct structure of actions and concepts;
(2) conditions for cultivating (“refining through practice”) their desired properties;

(3) conditions for the transfer of actions to the mental plane

(Galperin, 1989, p.66-67)

The conditions posed by Gal’perin correspond to SCT’s fundamental principle that the human mind is mediated, and education is artificial development, which needs to be planned and cultivated through meaningful activities. Hence, efficient and systemic education should outline the theoretical knowledge clearly and incorporate appropriate practices in the learning process so the mental actions can be restructured and internalized on the individual mental plane. Gal’perin (1989) emphasized that all three conditions must be satisfied in the instructional process and the method to present the theoretical knowledge and accompanying communicative activities (interpersonal and intrapersonal) are crucial to the instruction. To realize his ideas in pedagogical practices, Gal’perin proposed a stepwise teaching model, which is known as “Systematic-Theoretical Instruction” (henceforth, STI), to form a full-fledged mental action. The sequences of STI are as follows:

(1) Motivational stage: preliminary introduction to the learner of the action and mobilization of the learning motive;
(2) Orienting stage: construction of the orienting basis of the action;

(3) Material(ized) stage: mastering the action using material or materialized objects;

(4) Stage of overt speech: mastering the action at the level of overt speech;

(5) Stage of covert speech: mastering the action at the level of "speaking to oneself"

(6) Mental stage: transferring the action to the mental level.

(Haenen, 1996, p. 133)

The first stage is to explain the theoretical knowledge and introduce the outline of the whole teaching process to learners. In the very beginning, the learning materials must be presented as "a meaningful whole" to the learners and the learners must be made aware of the teaching sequences and components in the instruction program, including its expected outcome, mediation tool, and the subject matter of study (Arievitch & Haenen, 2005, p. 160). The introduction and explanation will acquaint learners with the teaching-learning process and increase their motivation. The second stage is to materialize the theoretical knowledge to be learned. (Haenen, 1996; Gal’perin, 1989) The essence of theoretical concepts is presented in an accessible and comprehensible scheme to the learners and the scheme serves as an orienting basis to regulate learners’
actions. The scheme is called “Scheme of a Complete Orienting Basis of an Action” (SCOBA, hereafter). The materialization and function of SCOBA will be treated in section 3.3.2 in more detail. At the orienting stage, the main goal is to articulate the concepts clearly to the learners and a SCOBA is provided as a mediational tool to orient learners’ actions. The third stage is to instruct learners to employ external forms to regulate and familiarize their actions. Graphs, diagrams or blocks, physical objects that can help learners connect their actions with the essence of the theoretical knowledge and execute the actions accordingly are utilized at this stage. The fourth and fifth stages concern the learners’ own dictation of the concept. The fourth stage is critical because it is a transition stage at which the learners move from a material-oriented phase to a more mental-oriented one. Learners learn not to rely on the external objects to orient their actions but on their overt speech to direct their actions. Without the presence of physical objects learners have to reflect on the concept and articulate their thoughts. The following stage is to abbreviate the overt explanation and change its form to covert speech; that is, the learners will not talk out aloud but will whisper to themselves. With increasing familiarity and understanding of the execution of actions by verbal dictation, the learner may only need a minimal verbal reminder, and a conceptual image is thus constructed at this stage as less and less verbal dictation is needed. At the final stage, the learners are able to execute the
action at the mental level meaning that the concept is internalized by the learners and they do not need an object or speech to regulate their actions. Although it does not mean that no more mediation is needed, at this stage the execution is almost automatic and without error.

3.3.2 SCOBA

SCOBA represents the essence of the scientific concepts in an accessible and usable form for learners (e.g. graph, flow chart, tables…). The purpose of a SCOBA is to provide learners with a concrete tool that can regulate their physical and mental actions when they execute tasks. Gal’perin (1989, p. 69) stated that a SCOBA includes five components. The five components are later refined by Haenen (1996, P. 135) and summarized by me as follows: (1) the expected outcome of an action; (2) the pattern of the action is clearly described and instructed by an expert; (3) the tools or means of the action; (4) the material of the action and (5) the outline of the action that indicates the action and its sequence of operation.

During the step-by-step teaching-learning process, learners first appropriate the SCOBA as an external form that assists them to perform the actions required by their tasks or instructors. Accompanying learning activities should create opportunities for learners to use the SCOBA to orient their mental actions and
gradually build their own conceptualization of the theoretical knowledge. The expected outcome is that by employing a SCOBA to execute actions, the learners’ mental actions are restructured at the same time and the outward influence will gradually shift inwards and eventually the learners will no longer need the SCOBA as they will have constructed a conceptual image to orient their thoughts and guide their material actions.

Below is a model, SCOBA, that Swain et al. (2009) employed to instruct language learners on the grammatical concept of voice in French. The diagram prescribes the process of turning a sentence in active voice to passive voice.

Figure 3-2. SCOBA to teach the concepts in French voice from Swain, M. et al. (2009, p. 26)
3.4 STI on L2 teaching and learning

Gal’perin’s STI has been discussed and employed by studies in the field of foreign language teaching and learning for couple of decades (e.g. Kabanova, 1985; Lantolf, 2011; Lantolf & Poehner, 2008; Talyzina, 1973). Studies reviewed in the following sections illustrate the implementation of STI with regard to the teaching of various features of second and foreign languages. While these studies have a centralizing theme, their foci varied. Studies reviewed in the first subsection, in addition to introducing and analyzing STI, emphasize the immediate effects of STI on language learning. They are brief experimental studies using pre- and posttests administered immediately before and immediately after a short period of instruction. Studies reviewed in the last subsection are longer-term pedagogical projects where STI was implemented either in a full-semester course or for several weeks rather than a few hours.

3.4.1 Experimental studies of L2 STI

Kabanova (1985) conducted a study adopting Gal’perin’s pedagogical framework to teach Russian students fundamental German syntactic structure. She criticized approaches to foreign language that relies on rote memorization rather than
true understanding of the target language. Kabanova provided a detailed rationale of
the importance and necessity of the step-by-step teaching approach to instruction and
emphasized that only this type of method can insure the quality of teaching material,
the correct formation of concepts, and learner’s ability to recontextualize. Her
argument was supported by the results of her study, which guided students to
understand, explore and reconstruct the basic structure of German sentences. The
entire training session including analysis of deep structure of sentences,
materialization of SCOBAs, and speaking-aloud activities (i.e. students articulated the
rule and depicted the syntactic structure at the same time and used the structure to
translate German into their native language) lasted approximately 16-17 hours.

Normally, instruction in German sentence structure was intermittently spread over a
one- to two-year time period.

Kabanova provided evidence that the students were not only able to display
understanding of German sentence structure following instruction, they also had
developed understanding of general principles of sentence structure that they could
then generalize to other languages. She compared the performance of students
receiving STI with students exposed to traditional instructional methods on a
translation task (translation from English, German or French to Russian). Participants
in the experimental group only studied English and did not have prior knowledge of
German and French, while the control group had studied one of the languages for at least two courses (Kabanova did not specify the number of hours involved). The result indicated that the quality of the translations produced by the experimental group was no worse, and in several cases, was better than the control group.

Carpay (1974) reported a study adopting Gal’perin’s approach to teaching Dutch-speaking participants to select the appropriate verbal aspect in Russian. The concept of aspect was first explained to the participants and then a visual model, which was a branching algorithm, was presented. The algorithm helped learners identify the nature of the event (non-iterative action vs. iterative action) they wanted to describe as the first step and then led the learners to choose the most appropriate aspectual form of the verb. The result showed that 10 out of 12 participants obtained the 80% accuracy on a post-treatment test, the criterion set by Carpay. Landa (1972) (as reported in Carpay, 1974, p. 185) emphasized that the construction of the algorithm should be done by people who specialize in psychological activity as well as in linguistics. This statement is in line with Gal’perin’s argument that mediational tools of high quality are essential to cognitive development.

While the teaching sequences are important to STI, they may be adjusted to different extents (some sequences are skipped or combined, for example) to foster conceptual development and enhance performance more efficiently. Lantolf (2011)
noted that in the first instructional phase, in addition to explanation of the target grammatical concept, comparison with the L1 may be provided if possible. The comparison is more necessary and feasible when language learners and teachers are from the same L1.

Negueruela (2003) conducted a pedagogical project that employed STI as the teaching approach to instructing English-speaking college students at intermediate level in Spanish aspect and modality in a classroom setting. The experiment period spanned sixteen weeks. He developed a didactic model (a flow chart) as a SCOBA, which students used as a meditational tool to help them decide on which verbal aspect (preterit or imperfect) to use when speaking or writing in Spanish. The SCOBAs reminded the students of the properties of the grammatical concept. By using the chart to mediate their mental and physical actions, the students were able to connect their verbal actions to their theoretical knowledge.

Negueruela also required students to explain the concepts to themselves in L1 or L2. The verbalization activities allowed learners to use language as a mediational tool to help them regulate their thinking and reasoning for their choices of aspectual forms. The activities were to help language learners foster their own conceptualization and facilitate internalization.
Negueruela collected various types of data, including changes in student understanding of the language concepts, self-explanations of their own performance relative to the concepts in oral and written modalities, learner reflections and responses to questionnaires that addressed their attitudes toward the new instructional approach. Data analysis showed that although language learners had different developmental path and pace, most participants’ performance was improved and conceptual development fostered. For example, one of the participants showed remarkable improvement in both written performance and the understanding of the subjunctive mood in oral data (Negueruela, 2008). In the participant’s earliest self-evaluation, she did not have sufficient confidence in speaking and using Spanish and she did not exhibit coherent understanding of the grammatical categories such as aspect and mood (p.214). Comparing her compositions in week 1 and week 16, the student exhibited increasing consistency in using the appropriate Spanish subjunctive morphology. In week 1, she exhibited inconsistency in her choice of morphology. In week 16, while the problem of inconsistency still existed, the mistakes decreased significantly (from four out of seven examples to two out of seven) and the nature of mistakes changed. One example from week 16’s data indicated that she chose the appropriate subjunctive morphology, had the verb she was using been a regular verb, but since the verb was an irregular, requiring a unique inflectional pattern, she
produced the correct form. Nevertheless, compared to her performance in week 1, it was clear that the student had developed a systematic conceptual understanding of subjunctive morphology and the mood differences signaled by indicative and subjunctive in this language.

With regard to verbalization data, as the course progressed, the student switched gradually from using perceptual criteria to semantic criteria to decide the appropriate mood. In the reflection data, the same student pointed out that the verbalization activities forced her to “truly think” about the grammar. (p. 217-219)

The participant’s performance across data sets revealed that as she improved in her performance on language tasks she also gained a deeper understanding of the grammatical concept.

Negueruela’s (2003) study illustrated the procedures of implementing STI and learners’ performance and conceptual development by adopting a theoretical pedagogical framework in a classroom setting. The merits of the study are that it exhibited the possibility and achievement to implement an educational theory in L2 pedagogical practices and offered a comprehensive investigation on a STI-based pedagogy project. Similar results of Negueruela’s study were also obtained by other L2 studies that adopted and adapted STI. For example, Serrano-Lopez and Poehner (2008) reported a study that was conducted by Serrano-Lopez on teaching L1 English
speakers the grammatical category of Spanish locative prepositions. Serrano-Lopez asked students to use 3-D clay modeling to represent their understanding of the locative prepositions. The study included two experimental groups and one control group. Both experimental groups received STI but only one of them was requested to do clay modeling. Tests and a delayed post-test were conducted. The results indicated that groups that received STI outperformed the control group, and on the delayed post-test, the group that had done clay modeling outperformed the other two groups. The results suggested the impact of an imagistic model and the combination of mental activity and physical action.

The strength of Serrano-Lopez study, in my view, is that the performance by the group that did clay modeling is resonant with the underlying construct of STI—the formation of concepts is cultivated through the combination of theory and activity. The effect of a SCOBA is evidenced and a longer lasting effect is exhibited by incorporating the theoretical knowledge in activities that required learners’ active participation.

Yanez-Prieto (2008) conducted a project to teach L1 English speakers literature through language. By appropriating linguistic concepts as the meditational tool, students had to rewrite and reconstruct given literary discourses. Her data consisted of students’ portfolios, compositions and interviews. Students’ language
proficiency, attitudes toward language learning and literature were examined. The interview data indicated that the concept-based teaching approach reconstructed students’ conceptualization of the target grammatical concept which was originally constrained or even misled by rules of thumb. The significance of her findings is that, although the students might have felt their past experiences of the language were contradicted or called into question by the newly presented conceptual knowledge, as the course progressed, their feedback and written production indicated that they gained more ability in creating written texts without being constrained by the empirical rules of thumb they had studied in their previous courses. In essence, developing conceptual knowledge of the language freed the learners to express their own meanings through the language rather than to be constrained by the specifics of the concrete exemplars and rules they had been exposed to in their earlier language study. This is precisely the type of development Vygotsky (1987a) argued for with regard to scientific concepts.

Negueruela’s study has also informed other L2-STI-based studies to different extents and in various aspects. For example, Swain and colleagues had several studies adopted the STI approach to investigate the effect of verbalization activities in teaching L1 English speakers voice in French (e.g. Swain & Lapkin, 2008; Swain, Lapkin, Knouzi, Suzuki & Brooks, 2009). Nevertheless, her studies focused on the
effect of verbalization activities. While her findings indicated that the quality and quantity of verbalization (*languaging*) led to better performance, her studies mainly concerned the use of self-speech to orient thinking and did not involve much guidance or assistance from experts or peers.

More recent L2-STI studies have investigated the teaching of tense-aspect marking in English by appropriating verbalization as the mediation tool (Gánem-Gutiérrez & Harun, 2011), gender and number agreements in Spanish by asking students to construct their own conceptual schemata of the grammatical concept (Escandon & Sans, 2011) and sociopragmatic usage of second-person pronouns in French (van Compernolle, 2011).

Gánem-Gutiérrez & Harun’s (2011) study is similar to those of Swain and colleagues in that focused on the effect of verbalization activities. The researchers asked six L2 advanced English learners with different L1s to complete individual (think-aloud) and pair activities. The pre- and post-tests, which were identical, inquired into the participants’ understanding of tense and aspect in English and requested that they explain sentences using different tense and aspect (e.g. “Have you watched the movie?” vs. “Did you watch the movie?:) (p. 104). They used diagrams and animation on Power Point slides to explain tense and aspect from a semantic perspective. The pre and post-tests were completed individually while the
verbalization activities were completed individually or in pairs. Whether the
verbalization activities are done by individual or in pairs was decided randomly, but
the researchers did not explain clearly why they had this design; although perhaps it
was to take account of individual verbalization used in Negueruela’s (2003) research
with collaborative verbalization used in Swain’s projects (2008, 2009).

The results showed that after the participants were presented with the
SCOBAs, they demonstrated more sophisticated reflection on the grammatical
concepts on the post-test. Most of the participants included the conceptual essence of
tense-aspect in their answers on the post-test, which was not found on their pre-test.
Excerpts from the verbalization data demonstrated that understanding of the
grammatical concept was reinforced by either explaining to self or exchanging
opinions with a partner. Although the authors noted that participants who worked in
pairs exhibited cooperation and scaffolding in their interactions, there were no
differences in understanding between the solo or collaborative participants.

The study followed the procedure in Swain’s research whereby, unlike in
Negueruela and Yanez-Preito, the only means of providing an explanation of the
grammatical concept was provided by Power Point SCOBAs rather than a classroom
instructor. Nevertheless, the study still indicated a coherent and clear presentation of
the grammatical concept and accompanying activities that allowed the participants to think and use the concept are beneficial to foreign language learning.

Escandon & Sans (2011) compared two groups of L1 Japanese speakers’ performance on adjective and subject-predicate agreement in Spanish. Both groups were at intermediate level. The experimental group received a “bottom-up” instruction followed the basic procedures of STI, while the control group received traditional “top-down” teaching that provided instruction on the grammatical concepts through pattern repetition. A list of lexical items grouped by parts of speech was provided to the participants in the experimental group, and the participants had to analyze the lexical items and draw a schema to indicate the relationship between each group. The participants were encouraged to use their L1 to discuss the construction of their schemata. The learning task lasted 90 minutes. Both groups took two oral tests, the first was held three weeks after the experiment and the second, four months after the treatment. On the oral tests, the participants were asked to describe three dissimilar couples of lexical items for 10 minutes.

The statistical results showed that for the first test, the experimental group’s mean score was higher than, and was significantly different from, that of the control group. However, on the second test, while the mean score of the experimental group was still higher than that of the control group, no significance was found. The authors
explained the narrowing of difference between two groups may due to the adjustment made by the control group. The control group might have learned to self-correct through trial-and-error and in the meanwhile the experimental group was exposed to “other ways of conceptual development” (p. 356). The authors did not elaborate on their explanation. Nevertheless, the fact that the effect of treatment subsided may be related to my earlier critique on Swain et al.’s studies. The time periods of these studies were not very long and the participants did not have enough opportunities to use the SCOBAs to orient their thinking and actions. The study design cannot detect if recontextualization of concepts took place; consequently there was no evidence indicating that the learners gained the ability to deal with other language tasks (an indicator of the ability to recontextualize). Although the study by Escandon & Sans (2011) demonstrated the benefits of a meaningful and coherent presentation of the grammatical concept, the result of the second oral test in their study may also suggest that to cultivate a scientific concept, organized instruction, appropriate guidance and mediation along with accompanying learning activities are crucial parts of the teaching-learning process, as is forcefully proposed by Negueruela (2008).

In another STI-L2 study, van Compernolle (2011) traced the development of a L1 English learner’s sociopragmatic knowledge of second-person pronouns in French. The participants received an one-hour tutorial of STI from an expert tutor. Depending
on the context and the interlocutors’ social status or age, French has two forms of second-person pronouns. Explanations of the grammatical concept and diagrams illustrating the context and social relationships for the two second-person pronouns were displayed on cards. A pre-tutorial sessions probed the participant’s understanding of the concept and provided the participants with different situations to allow her to decide which form would be appropriate for each situation. The following tutorial included a verbalization activity that the participant was instructed to read the explanations on cards and explain to herself. At the post-tutorial stage, the participant had to judge which form was more appropriate for a given situation. The participant was allowed to ask the tutor for assistance or to use the cards as reminders. The analysis revealed that the participant’s explanations changed from experience-based, rule-based to concept-based. The verbalization data indicated that her conceptualization of the address forms was changed by explaining and appropriating the grammatical concepts presented on the cards.

The STI-based studies discussed in this section demonstrated the effect of a stepwise instruction that provides accessible and comprehensible meditation tool on the cultivation of concepts. Under STI, the unit of instruction can be any linguistic or pragmatic topic, as long as the theoretical knowledge is well analyzed and considered for a pedagogical presentation aiming to orient learners’ action and foster conceptual
development. With regard to conceptual development, coherent activities that allow learners to use the concept to direct, construct their thinking and orient their actions are necessary. A close examination of the quality of learners’ output (e.g Neguereula’s (2003; 2008) analysis of participants’ mistakes in written or spoken performance) and data collected from sources such as interviews, personal reflection and/or verbalization can help to investigate the formation of mental activity.

3.4.2 Implications for the present study

Of the previous studies, the one which maximally informed the present study was Neguereula’s (2003) dissertation project. Based on his study design, the present study constructed a practical and feasible way to implement STI in a classroom setting for an eight-week period. The teaching phases and activities adopted in Neguereula’s study are (see Chapter 5 for a full description) adapted in this study with the same goal of fostering learners’ conceptual development. The data collected for the present dissertation are divided into performance and development data and analyzed quantitatively and qualitatively in order document as fully as possible learners’ progress in understanding and using Chinese aspect and tense. The finding from Kabanova’s (1985) study that learners receiving STI who had no prior
knowledge of the target languages may perform no worse or even better than those who received traditional teaching methods and had prior knowledge of the languages can also be related to the present study. Since STI is more efficient than traditional teaching methods in terms of teaching time and learners’ performance, according to Kabanova, this study compared STI’s effect on learners at the same proficiency level as well as at different levels (see Chapters 5 and 6).

Notes:

1 The authors termed their instructional method as “bottom-up” to indicate that (1) the concepts that the students acquired before were spontaneous ones and the instruction enabled them to move from spontaneous to scientific concepts and (2) the students constructed their own schemata in a bottom-up fashion (they had to understand the relationship between each group of lexical items and then construct a holistic picture to describe the relationship).
Chapter 4

Temporal System in Chinese

4.1. Introduction

In this chapter, studies of the conceptualization of time in cognitive linguistics and analyses of Chinese temporal system are discussed from the cognitive linguistics perspective. Conclusions are offered about particular features of the Chinese temporal system. Implications for the teaching of Chinese temporal system based on linguistic studies are provided.

4.2 The concept of time in cognitive linguistics

In order to explain Chinese temporal expressions, analyses of the concept of time carried out by Lakoff (1993) and Evans (2004) from a more Western-centric perspective, respectively, are given in section 4.2 first; the ways in which their
analyses explain Chinese temporal expressions are discussed in section 4.3.

4.2.1 Metaphor for time

The essential idea of the conceptual metaphor is to understand one conceptual domain in terms of another conceptual domain. For example, thoughts or ideas are conceptualized as commodities in the sentence, “I cannot buy his words”. The abstractness of one’s thought is realized via comparison to a limited resource “commodity”. This type of conceptual mapping is based on our life experiences; two seemingly unrelated conceptual domains (e.g., thought and commodity) are in fact connected by what members of a community perceive as their similarities (i.e., thoughts and commodity are tradable). Moreover, the conceptual mapping allows us to construe something that is abstract in terms of a concrete object.

The conceptual metaphor for time is based on this type of analogy. Lakoff and Johnson (1999, p.137) claim that “all of our understandings of time are relative to other concepts such as motion, space and event”. The concept of time is difficult to explain in its own right but can be construed by our experience of events. Lakoff and Johnson (1980) list several metaphorical conceptualizations of time that are based on our physical experiences, such as “space-time metaphor”, “the moving time metaphor”
and “the moving observer metaphor.” For example, when someone says, “Christmas is approaching”, the speaker actually perceives time as a moving object that travels toward his position. In this expression, conceptualized time is described in terms of a moving object (“The moving time metaphor”). Conceptual mapping that concerns space and time is considered universal across languages, although variations are acknowledged among individual languages since our physical experience certainly includes our sensory experience of space and time. The following sections review the major categories of the conceptual metaphor for time in terms of space proposed by Lakoff (1993) and Lakoff and Johnson (1999).

4.2.1.1 The time orientation metaphor

Núñez and Sweetser (2006) claim that almost all documented languages share the time orientation metaphor model in which time is conceptualized in the spatial domain and the reference point for current time is where the observer (i.e., the speaker) is, and the direction the observer is facing is the future. While it is doubtful that all documented languages share the metaphor model of mapping future events in front of the ego, their statement reflects the conclusion of most studies that the speaker faces the future and the time metaphor model is future-oriented.
The following formulas illustrate the relationship between the speaker’s location and time:

- The location of the observer → the present
- The space in front of the observer → the future
- The space behind the observer → the past

(Lakoff & Johnson 1999:140)

Linguistic expressions of this type of conceptualization are: “We’re looking ahead to the future” and “that’s all behind us now.” Based on the time orientation metaphor, more complex metaphors concerning the state (static or dynamic) of time and the observer are constructed. The complex metaphors reveal how people conceive of the passage of time and the relative sequence of temporal events in terms of space.

4.2.1.2. The moving time metaphor

As for the moving time metaphor, which Lakoff (1993) calls “special Case 1”, time is regarded as a moving object while the observer is fixed at a certain point. Time moves toward the observer from the direction of the future, meets the observer in the present and continues moving into the past. Linguistic examples of moving-time mapping include: “the time has long since gone when…”, “New Years is coming soon” and “time passes by”. The premise of the moving time metaphor is that time is viewed
as a moving object, and different temporal events are treated as individual moving objects as well. The sentence, “in the weeks following next Tuesday…”, is illustrated in Figure 4-1, and indicates that when time is metaphorized in terms of space, spatial distance can present the immediacy of temporal events.

**Figure 1**

In Figure 4-1, Time 2 (the following weeks) comes after Time 1 (Tuesday). If the observer is at a fixed location, then what is farther away from the observer is in the more distant future. The temporal sequence of temporal events “Tuesday” and “the following week” may also be explained by the moving time metaphor.
4.2.1.3. The moving observer metaphor

In the moving observer mapping, which Lakoff (1993) calls “special Case 2,” time is conceptualized as a (bounded) area or a path and the observer is moving with respect to time. For example:

(1) a. We’re approaching Christmas.
    b. I have been here for several years.
    c. I passed the deadline.

In Figure 4-2, the dotted line indicates the moving direction of the observer; the location of the observer is the present. When the observer is at time 1 (location 1), time 2 (location 2) is in the future relative to time 1, and the distance the observer has traveled is the duration of time.
4.2.1.4. Duality

Although the moving time metaphor and the moving observer metaphor seem to be incongruent, Lakoff and Johnson (1980) argue that these two metaphors are subcategories under one major category. As previously mentioned, these two metaphors are based on the time orientation metaphor (i.e., time is construed in terms of space). Conceptual metaphors for time fundamentally fit into this framework where the location of the observer is the present, the future is the space in front of the observer and the past is behind the observer. It does not matter whether time or the observer is moving--the point at which time and the observer coexist is the deictic center, the present time. The duality of the moving time metaphor and the moving observer metaphor originates from the same source domain: motion in space is mapped onto the temporal domain. Therefore, the two cases in fact are consistent with each other since both begin from the premise that from our point of view, time goes past us, from front to back.

4.2.2. The structure of time

In this section, concepts for time suggested by Evans (2004) are summarized and discussed. Although his proposal regarding concepts for time also has its roots in
cognitive linguistics, his proposal focuses more on temporal experiences per se rather than on linguistic expressions.

According to Evans (2004), when temporal experience is represented conceptually, the experience can be organized and expressed on two levels. The first level concerns lexical concepts, i.e., lexical items that denote temporality in a single word such as ‘tomorrow,’ ‘past,’ ‘future’ and so on. The temporal concept represented at the second level concerns cognitive models for time. At this level, various lexical concepts at the first level are integrated to provide more complex representations of time; the second level is the most familiar way in which we talk and think about time. The following sections review Evans’ categorizations of time concepts in English.

4.2.2.1 Lexical concepts of time

Evans ascribes eight distinct lexical concepts to the lexical form *time*. He suggests a lexical-semantic analysis that is based on word meaning, elaboration of concept and grammar, that is, the lexical item *time* can denote different meanings, such as a limited resource (e.g., time is money) or a period (e.g., a long time) which can have different grammatical constraints (time can be a mass noun or count noun depending on the pragmatic context), and can be elaborated from various cognitive
perspectives. The eight concepts for lexical *time* are: (i) duration, (ii) moment, (iii) instance, (iv) event, (v) matrix, (vi) agentive, (vii) measurement-system, and (viii) commodity.

The eight lexical concepts for time reveal a single level of conceptual structure with a focus on the connotations of the lexical item *time*; other lexical items related to temporality such as past, yesterday, and decade are not discussed and more complex cognitive models for time are not considered at this level either. In addition to the eight distinct lexical concepts for the lexical item *time*, there are three lexical concepts--past, present and future--which differ from the eight lexical concepts. The three concepts are based on the location of the experiencer (which is defined as the speaker or the observer by Lakoff and Johnson); the location of the experiencer is present, the future is in front of the experiencer, and the past is behind. The conceptualization of past, present and future is constructed on the orientation of our sensory organs, and according to Evans (2004, p.193), “the experiencer must rely on visual information previously obtained, and stored in memory, regarding the environment located behind” so that in English, for example, people say “the past is behind me”. As for the future, people tend to look away from completed and turn their attention toward unfinished tasks, which means people must “look at” the unfinished
tasks—the future is in front of the experiencer. For instance, “you have a bright future ahead of you”.

4.2.2.2. **Cognitive models for time**

In Evan’s explanation, cognitive models are more complex conceptualizations for time, which integrate the lexical concepts (primary and secondary ones) for time and elaborate these resulting in a coherent and consistent conceptualization of time. Three complex cognitive models for time in terms of space and/or motion through space are: (1) the moving time model, (2) the moving ego model and (3) the temporal sequence model. The first two models are similar to Lakoff’s (1993) “the moving time metaphor” and “the moving ego metaphor”, and therefore are not re-explained here. Unlike the first two models, which locate temporal events with respect to an ego, the third model explains how temporal events are sequenced with respect to one another.

The third complex model of temporality does not include the lexical concepts of past, present and future. Instead, this model explains how the temporal events are sequenced with respect to one another. Temporal events are conceived of as preceding and following one another. Examples are provided below:
(2) Thanksgiving is before Christmas.
(3) Tuesday is after Monday.
(4) In a baseball game, the first inning precedes the second inning
(5) Following the dinner, there will be a dance.

Examples (2) and (3) indicate the sequence of particular events--the order of these events will not be changed whether they occur in a year or week. Examples (4) and (5) reveal the earlier/later relationship between temporal events. Evans points out that besides before/after, other prepositions related to the front/back orientation, e.g., in front of, behind and in back of, are not compatible with the temporal sequence model. He gives the following examples:

(6)* February is behind January.
(7)* January is in front of February.

The explanation is that the temporal sequence model is conceptually elaborated in terms of deictic motion (see the usage of precede/follow in [4] and [5]); thus, the prepositions such as in front of and behind that relate to static spatial scenes are incompatible with this model, which involves motion.
4.2.3. Conclusion

Although both Lakoff and Johnson (1980) and Evans (2004) recognize the relationship between time and space, Evans argues that time is a real and directly perceived experience, so we structure time not because we use more concrete sensory experience (i.e., spatial experience) to describe time as Lakoff and Johnson (1999) claim; instead, we have evaluated and responded to our temporal experiences using an image concept derived from our sensory experiences. The phenomenological basis of time is adapted to our perceptions of the external world. Therefore, primary lexical concepts (e.g., the duration sense, the moment sense) reflect the fundamental aspects of phenomenological experience, and these concepts are further incorporated into complex cognitive models to talk about time. Nevertheless, Lakoff and Johnson (1999) state that “we have no fully fleshed-out concept of time-in-itself. All of our understandings of time are relative to other concepts such as motion, space and events” (p. 137). The notion of time is embedded in our conceptual system and time is conceptualized in significant part metaphorically and metonymically.

The difference between Evans’ and Lakoff and Johnson’s arguments is that the former thinks time is something that can be perceived directly and the direct temporal experience is enriched by concept elaboration. Lakoff and Johnson believe that our cognitive mechanism is partially unconscious with regard to the
conceptualization of time; therefore, the conceptualization of time is revealed by analyzing the way we talk about it.

While cognitive and psycholinguistic studies recognize the relationship between time and space and believe this relationship to be found across languages, linguistic evidence shows that each language may have its own specific construction of the temporal-spatial relationship. For example, Nunez and Sweetser (2006) examine linguistic and gesture data in the Aymara language and find that, in a static model, “the future is behind ego and the past is in front of ego”. The Aymara case shows that although the spatial metaphor for time based on back-front orientation may be universal, variations can still be found across languages. Chinese is another example which demonstrates that the front-back orientation may be universal but that how it is construed can vary across individual languages.

Review of studies of the time orientation metaphor in this section, especially with regard to front/back orientation actually relates more to English than to other languages. Although Nunez and Sweetser claim that their studies are from a cross-linguistic perspective, most of their linguistic examples are from English. In the next section, two proposals regarding the concept of time in language--the time orientation metaphor suggested by Lakoff and Johnson (1999) and the temporal sequence model proposed by Evans--will be used to explain Chinese temporal
expressions. The degree of compatibility of the two proposals and the concept of time in Chinese will then be discussed.

4.3 The concept of time in Chinese

In Chinese, the conceptualization of time is also related to space and motion through space, and the moving time and the moving ego metaphor are also found in Chinese. Below are examples of the moving time metaphor:

(8) a. jiang lai
    will come
    ‘future’
b. qu nian
    go year
    ‘last year’

In (8a), the lexical term “future” in English is actually expressed by two morphemes--“will” and “come” in Chinese--to express the idea of future. This linguistic expression reveals that the future itself is regarded as an entity that will be coming to the observer someday. Example (8b) indicates that the time that has gone by the observer is the past. Examples of the moving ego metaphor are given below:

(9) a. dao shihou jiu zhidao
Arrive time then know
‘when (you) arrive the moment, (you) will know…’ (when you come to
the moment, you’ll know).
b. mei dao guo nian qian…
Every arrive pass year front
‘before (I) arrive New year…”

While it seems that moving time and moving ego metaphors are found in
Chinese, there are still significant differences from English in the time orientation
metaphor, which are: (1) the reversal front-back orientation, and (2) the up-down
orientation.

4.3.1 Horizontal spatial-temporal expressions

The conceptualization of time in Chinese, as in English, also can be expressed
in horizontal spatial terms; however, the conceptualization of time on the horizontal
plane (i.e., Lakoff’s front-back time orientation metaphor) in Chinese seems to call
for a more complex explanation than does the English system. Some linguists believe
that Chinese is past-oriented while others believe that it is future-oriented, like
English. In the following passages, various explanations of the Chinese front-back
time orientation metaphor are discussed.

Two pairs of adverbials indicate relative location in English: one is spatial—a
front/back (behind), and the other is temporal—before/after. The first pair of prepositions is usually used to describe static scenes, such as “my house is in front of/behind the supermarket”, and cannot be used to indicate temporal sequence, as Evans (2004) indeed points out. The pair before/after, on the other hand, denote both temporal and spatial relationships. For example, in the sentence “she slammed the door after her,” “after” is interchangeable with “behind,” as in “she closed the door behind her.” However, in the sentence, “April is after March”, after cannot be replaced with behind. In Chinese there is no distinction between prepositions for static or dynamic scenes. The words qian—‘in front of/behind’—and hou—‘behind/after’—can be used both temporally and spatially.

Alverson (1994) states that in Chinese the future is behind the observer while the past is in front of the observer, and therefore the conceptualization of time in Chinese is past-oriented. He suggests that Mandarin speakers are always stationary and face the past by deploying the following linguistic expressions:

(10) a. qian tian  front day  ‘day before yesterday’
b. cong qian from/front  ‘before; previous’
c. yi qian from/front  ‘before’
d. hou tian back/day  ‘day after tomorrow’
e. yi hou from/back  ‘after;/ hereafter’

Alverson’s suggestion, is disputed by Yu (1998), who argues that Alverson is incorrect
with regard to the reference point. In Yu’s view, the correct reference point for the expression *yi-qian* ‘before’ is not the observer but a point in time. Thus, *yi-qian* fits into the complex temporal sequence model developed by Evans Yu also provides a counterexample, given in (11), that shows a future rather than a past orientation, as claimed by Alverson.

(11) *wanfan qian*

supper front

‘before the supper’

In example (11), the reference point is supper, and *qian* only indicates the time before supper but has nothing to do with the past. Therefore, Yu argues that *qian* and *hou* are parallel to the English words “before” and “after”. He uses English examples such as “I have done that before” or “I did that before Christmas” to explain that “before” refers to temporal sequence and should not be interpreted as the past is before the observer.

However, Shi (2004) proposes that in Chinese, *qian* ‘front’ can indicate both the past and the future while *hou* ‘back’ can only indicate the future. Shi uses the examples in (10) to illustrate how *qian* can denote the past, as well as the example offered by Yu, *qian-tu* (‘front-road’) “prospects; the future” to illustrate that *qian* can also refer to the future. Nevertheless, Shi points out that there are no linguistic
collocations of the morpheme *hou* that indicate a past period of time. Shi’s explanation is that the contradictory temporal expressions of *qian* originated from two different metaphorical models: in the first model, time is conceptualized as a horizontal axis that points to the past and two sub-cases are under this model. In the first sub-case, the reference point co-occurs with the time at which the statement was made, while in the second sub-case, the reference point on the axis does not co-occur with the time of speaking. In either sub-case, the referent point is decided by the speaker. Example (12) below is compatible with the first model but may indicate different time periods in each sub-case:

(12) *wo jiehun yiqian shi laoshi*  
I marry before BE teacher  
‘I was a teacher before I got married’

Figure 4-3 illustrates the first sub-case, point J (the reference point, marriage) and point R (the time of speaking, the current time) are the same point on the time axis.
In the first sub-case, the first event (being a teacher) was inevitably included in the past. In most contexts, the reference point co-occurs with the time of speaking (Shi 2004, p. 10), and many temporal collocations of *qian/hou*, for example, *qian tian* “the day before yesterday”, *cong qian* “before; the past” and *houtian* “the day after tomorrow” are constructed on the basis that the referent point is synchronized with the time of speaking.

In the second sub-case, the reference point is not synchronized with the time of speaking. Figure 4-4 shows that the reference point is based on the temporal event (marriage) but it is not the same as the time of speaking. The time at which the experiencer made the statement, “I was a teacher before I got married”, could be two months or two years after the marriage; that is, any point on the time axis after point J. While the referent point is not synchronized with the time of speaking, *qian* is still associated with an earlier event.
Shi (2004) explains that the second metaphorical model treats time as a path and the speaker is facing the future while moving along the path (see Figure 4-2 on p. 90).

Linguistic collocations of *qian* in the second model are *qian-tu* ‘front-road’, *qian-chen* ‘front-road’ and *qian-jing* ‘front-view’, all can be translated as “prospects; the future”. In fact, according to Zhang (2003), whose perspective agrees with Shi (2004), the above mentioned collocations (*qian-tu* ‘front-road’, *qian-chen* ‘front-road’ and *qian-jing* ‘front-view’) are the only collocations of *qian* as indicating future found in the dictionary.

Shi (2004) concludes that the first model is the prototype metaphorical model for time in Chinese and the second is supplementary to the first. In the first model, the speaker sets up a reference point on the time axis; earlier, previous events are located before the reference point while later, upcoming, events are situated after the reference point. Nevertheless, the symmetry of linguistic collocations of *qian/hou* is not found in the second model; that is, while *qian* can indicate the future in this model no collocation of *hou* indicating the past or an earlier event is found. Shi states that
the asymmetry and the fact that collocations of *qian* are confined to “*qian+noun*”

structures suggests that the second metaphorical model is marked.

Although cognitive linguistics accounts of *qian/hou* in Chinese temporal

system are diverge, the pedagogical presentation in this study adopts Alverson’s view

that *qian* ‘before’ is associated with earlier events, the past and *hou* ‘after’ is

associated with future events. The choice of Alverson’s view is based on the following

pedagogical considerations. First, participants in this study are English-speaking

learners and Alverson’s view is counter to the basic metaphorical model for time in

English, which is future-oriented. According to some Chinese researchers (e.g.

Teng1997, Xing 2000) and my own experience as a Chinese instructor,

English-speaking learners of Chinese find the temporal expressions *qian/hou*

confusing and counter to their intuition. The reason might be that the primary

meaning of *qian/hou*, whether translated as before/after or front/back, is spatial, and

therefore their temporal collocations are cognitively more challenging. Second,

linguistic expressions and collocations in the first metaphorical model proposed by

Shi (2004) are consistent and symmetric. The consistency and symmetry are not only

compatible with STI but are also suitable to be translated into pedagogical

presentations. The first model provides the fundamental idea that explains the

essentials of Chinese temporal systems and since the second model explains a few
exceptional linguistic expressions\(^2\), the second model can be introduced at a more advanced level as needed.

### 4.3.2 Vertical spatial-temporal expressions

It has been noted that vertical temporal expressions are pervasively and systematically used in Chinese (Boroditsky 2001; Scott 1989; Yu 1998; Zhang 2004) In English, the earlier-later relationship is expressed by the prepositions before/after. However, in Chinese, the spatial terms *shang* ‘up’ and *xia* ‘down’ are used widely to indicate the past (up) and the future (down) in Mandarin. For example:

(13) \[ \text{shang ge yue} \]
\[ \text{up CL month} \]
\[ \text{‘last month’} \]
\[ \text{xia ge yue} \]
\[ \text{down CL month} \]
\[ \text{‘next month’} \]

(14) \[ \text{shang libai} \]
\[ \text{up week} \]
\[ \text{‘last week’} \]
\[ \text{xia libai} \]
\[ \text{down week} \]
\[ \text{‘next week’} \]

In examples (13) and (14), the pair of spatial terms *shang* ‘up’ and *xia* ‘down’ are used in a relative sense—they express a period of time with respect to a certain time reference point (now). In this sense, the conceptualization of time is “up is the
past” and “down is the future”. Nevertheless, shang and xia can also be used in an absolute sense:

(15) shang xueqi
    up    semester
    ‘the first semester’ or ‘last semester’
    xia   xueqi
    down semester
    ‘the second semester’ or ‘next semester

Example (15) shows that these vertical terms not only indicate the time of speaking but also the temporal order of events. Shang xueqi can refer to any first semester in a school year, but it also can indicate that the speaker is in the second semester and talks about the past semester. However, if a classifier is inserted between ‘up’ and ‘semester’ shang ge xueqi, the semantic ambiguity is erased. Most often shang ge xueqi refers to the “last semester”; for instance, if the current time is the fall semester 2008, shang ge xueqi will be spring 2008. Another example of using shang and xia in an absolute sense is given below:

(16) shang wu
    up    noon
    ‘morning; before 12 pm’
    zhong wu
    middle noon
    ‘noon’
    xia   wu

Examples (16) and (17) indicate the fixed order of certain time periods. The earlier part of a day is “up” and the later part is “down”. It should be noted here that the spatial term zhong “middle” is only used in this sense. When there is a deictic center to refer to the time of speaking, the person may be thought of as being at the center (i.e., zhong “middle”) and while the past is up, the future is down. For fixed temporal expressions, shang and xia are like ordinals that put different periods of time in order: “up” is an earlier temporal event and “down” refers to a later temporal event.

Examples (13)-(17) illustrate that there is a schema structure to the up-down metaphorical temporal expression: what is beyond the reference point on the time scale is earlier/the past, and what is below this point is later/the future. The reference point in (13)-(15) is the speaker’s location (i.e., the present in the time orientation metaphor). In (16) and (17), the reference point is the middle point/part, which is
marked in a bounded time area or scale (e.g., day, month). The upper part of the time scale is an earlier time and the lower part is a later time.

So far, it seems that spatial-temporal linguistic expressions in vertical dimensions in Chinese treat periods of time as discrete entities (e.g., last week, next month) or a sequence of temporal events with respect to one another (e.g., morning and afternoon). When time is viewed as separate entities, the prefixes *shang* and *xia* can be duplicated before the time period—for example:

(18) a. *shang shang ge yue*
    up up CL month
    ‘the month before last month’

(18) b. *shang shang libai*
    up up week
    ‘the week before last week’

Example (18) shows that while *shang* and *xia* mean the immediately preceding time and the immediately following time, the duplication of *shang* and *xia* expresses a farther past and future time. The duplication of *shang* and *xia* most likely implies that the vertical time axis has no definite boundary and can be traced upwards and
downwards.

Evans (2004) regards the concept of “up/down is earlier/later” as a particular version of the complex temporal sequence model. Nevertheless, in the complex temporal sequence model, the concept of past, present and future is not involved; linguistic expressions in (13), (14) and (18) show that when someone uses an expression like *shang lìbái* ‘last week’, the expression not only denotes the temporal sequence (last week is before this week) but also indicates a period of time in the past. Evans’ temporal sequence model better describes examples (16) and (17), in which the order of the time periods is fixed, while up/down only denotes the earlier/later relationship between each temporal system but does not indicate the time of speaking.

### 4.4 Implications for teaching Chinese temporal metaphors

As shown in the previous discussion, spatial-temporal metaphors in Chinese mainly accord with moving time and moving ego models as well as the temporal sequence model. The conceptualization of time in Chinese significantly differs from English in at least two respects: (1) the productive and systematic usage of vertical spatial-temporal terms, and (2) the front-back time orientation metaphor.
Boroditsky (2001) conducted a series of experiments to investigate whether English and Mandarin speakers think about time differently because they talk about time differently—the former tend to talk about time as if it were horizontal, and the latter talk about time as vertical. In the first experiment, horizontal and vertical primes were shown to English and Mandarin speakers. In verification of the sentence, “March comes earlier than April”, English speakers were found to be faster after being shown horizontal primes than vertical primes. Mandarin speaker were faster after vertical primes than after horizontal primes. She points out that, “habits in language encourage habits in thought” (p. 12), regardless of the language in which one speaks, since thinking is influenced by language-encouraged habits in one’s mother language.

In her second experiment involving Mandarin-English bilinguals who acquired English at different ages, those who learned English later in life showed a greater bias toward the vertical prime. In the third experiment, she taught English speakers to use vertical spatial terms to talk about time as Mandarin speakers do. After the training, English speakers showed the same bias (vertical) in thinking about time. Her conclusion was that: (1) language can shape thought about abstract domains and (2) L1 is influential in shaping habitual thought but does not entirely determine one’s thinking.
Boroditsky’s study indicates that conceptualizations of time in different dimensions (vertical and horizontal) indeed influence our habitual thoughts and that these thoughts may influence our learning of a new language. In learning a new language, our thoughts are inevitably influenced by already-formed conceptualizations of abstract things. In the case of the conceptualization of time, although English and Chinese both construe time in terms of space and motion through space, the significant difference between the front-back orientation in both languages (English is regarded as future-oriented [“front is future”] while Chinese is past-oriented [“front is past”]), and the usage of vertical spatial terms to express temporal meanings may perplex learners of Chinese who do not have these conceptualizations in their first language. Alternatively, the difficulty could be in conceptualization, where different learners find the new language to be a reversal of what they know in their first language. In the case of English learners of Chinese L2, the problems of learning temporal expressions probably lie in two areas: (1) the ‘back if future, and front is past’ metaphor model in horizontal dimension, and (2) the set of vertical temporal expressions which is not available in their L1.
4.4.1 Some pedagogical implications

To learn a new language oftentimes means reshaping learners’ thoughts so that the most difficult part of the teaching-learning process may be acquiring new conceptualizations or learning to think (and talk or write) about an abstract concept in a new way. Nevertheless, conceptualizations of abstract notions are not usually visible to us. In this chapter, I have shown that temporal metaphorical expressions used in everyday language are in fact much more complex than we assume. While metaphors for temporal concepts are not only unconscious implicit knowledge for native speakers of any language they also vary in several respects from language to language. It is necessary to make the complexity of the temporal system in the target language visible to learners in order to provide them with a cognitive basis for comparison and analysis of similarities and differences between the target language and the learners’ first language.

Littlemore and Low (2006) promote the importance of metaphoric expressions, including idioms and conceptual metaphors, in second language learning. They claim that understanding metaphoric expressions can influence second language learners’ communicative competence and communicative skills. Xing (2000) holds similar opinions to Littlemore and Low; she uses spatial-temporal terms in Chinese to illustrate the need to teach cognitive and metaphoric functions to foreign language
learners. She believes that the content of pedagogical grammar should be decided by the commonality of grammatical elements, and their importance in communication.

Xing (2003) uses the grammatical elements of spatial and temporal expressions in Chinese as examples. She argues that *shang* ‘up’ and *xia* ‘down’ are both words of high frequency in Chinese, and similarities and differences in pairs of temporal and spatial expressions (e.g., up/down, front (before)/back (after)) in Chinese and in English should be made clear to first-year and second-year students. The most significant difference between the paired words *shang* and *xia* in Chinese and their counterparts “up/top/over” and “down/bottom/under” in English is that the Chinese pair can express temporal and spatial meanings while their English counterparts only denote spatial meanings (Xing 2000:77). Moreover, the extended lexical meanings of the spatial-temporal terms *shang/xia* that are driven by metaphorization may perplex even upper-level Chinese learners. When teaching spatial and temporal terms and their extended cognitive discursive function in Chinese, Xing proposes that the first step be to present the basic function of temporal and spatial terms in Chinese and then compare it with its English counterpart and illustrate the situations in which these Chinese terms are used. Exercises are then provided to help students use the target terms in appropriate contexts. The final goal is for students to have the ability to distinguish and explain the various functions of *shang/xia* in Chinese. She notes that
when teaching the grammatical elements of a foreign (or any given) language, the most important task is to find “the system that connects various functions of a given grammatical element and then explain that system systematically” (Xing 2000:88).

The cognitive and discursive functions of syntactic elements and the similarities and differences in the cognitive functions between learners’ L1 and L2 should also be made clear. Xing’s argument centers on the methods and content of pedagogical grammar; although she does not directly address the issue of teaching temporal system in Chinese, the examples (spatial-temporal terms) she uses to illustrate the possibility of teaching the cognitive and metaphorical functions of basic and traditional expressions shed some light on the teaching of temporal system in L2 Chinese. Xing’s study suggests that Chinese spatial-temporal terms are not often taught to L2 learners probably because these terms are not considered an essential part of the temporal system. However, spatial-temporal terms should not be regarded only as grammatical points but also as grammatical concepts. The complexity and subtle nature of these concepts is what should be made known to L2 learners. By explicating the conceptualization of time in Chinese, learners should be able to see the difference in the target language and their L1, and this understanding may be the basis of the true development of concepts in L2. Tai (1991) also points out the difficulties experienced by English speakers in learning vertical spatial-temporal expressions in Chinese. He
suggests that the difficulty may be caused by the preference for different conceptual metaphors in English and in Chinese.

This discussion has shown that perceptions of space may be identical, while the focus on the dimension (vertical or horizontal) or directions (front/back or up/down) may vary from language to language. Learning to express temporality in a new language requires conceiving of (not necessarily acquiring) time from a different spatial perspective. Linguistic analyses can provide foreign language learners with a clear and concrete presentation of the conceptualizations of time in the target language, and may be the first step toward reshaping and developing new conceptualizations in the target language and further obtaining an ability to control the new language.

According to Fang (2000), the differences in Chinese and English tense systems stem from their adoption of different cognitive conceptions of time. Conventional grammatical presentations in L2 Chinese teaching materials often cannot point out the cognitive differences in temporal systems. From a cognitive linguistic perspective, presenting the temporal system as a coherent concept in the form of visual images may enable learners of Chinese to see the perceptual and conceptual differences in the target language and their mother language and turn their attention to meaning-based explanations.
In the next chapter the current approaches for teaching English speakers Chinese temporal system are discussed in some detail. It is followed by a description of the concept-based approach to teaching the Chinese temporal system developed for the present study. Study design and data collection are then described in Chapters 5 and 6.

Notes

1. The static model in Aymara proposed by Núñez and Sweetser is in fact the time orientation metaphor suggested by Lakoff and Johnson—the difference is that the front-back orientation is the opposite in Aymara and English.

2. According to Zhang (2003), in A Modern Chinese-English Dictionary (2001), the total entries of temporal collocations of *qian/hou* in the first model are 83 and 4 in the second model.

3. Although Mandarin in fact uses both horizontal and vertical axes, Boroditsky’s study focuses on the usage of vertical temporal expressions in Chinese for two reasons. First, the usage of vertical temporal-spatial terms is pervasive and systematic in Chinese which is not found in English. Second, she believes that Mandarin speakers are influenced by vertical temporal-spatial terms than horizontal ones.

4. There are some exceptions in English in which spatial prepositions are used in a temporal sense like “Move the meeting up” or “We are coming up on Christmas.” However, it is doubtful that these spatial prepositions really denote meaning in the temporal sense. Also, these vertical propositions are not used in a systematic way like the ones in Chinese are.
Chapter 5

Research Methodology

5.1 Introduction

This chapter presents the research questions, the research methodology as it was operationalized in the teaching plan implemented in the Chinese elementary course, and the procedures for collecting relevant data to assess the impact of the instructional approach. The research questions for this study are posed in section two. Section three discusses current pedagogical tendencies in the field of teaching Chinese as a foreign language with a focus on teaching Chinese temporal system. According to the discussion in section 5.3, teaching materials (SCOBA) based on linguistic analysis to teach Chinese temporal system are presented in section four. Section five provides the context of the study, which includes basic information on the course and the participants, and how STI was implemented in the course. Section six describes the data collection procedure and explains the design of each data set.
5.2 Research questions

The goal of this study was twofold. First, it explores the pedagogical implications and limitations of Systematic-Theoretical Instruction in the classroom setting. Second, it investigates the effect of STI and learners’ performance of the target grammatical concept (i.e. Chinese temporal system) as well as their reactions to the innovative teaching method. The research questions for the study are as follows:

1. How to translate the complicated grammatical concept of Chinese temporal system into accessible knowledge for novice foreign language learners?

2. Would learners who received STI outperform learners who received traditional teaching methods?

3. How would learners’ L1 influence their L2 performance with regard to Chinese temporal system?

The first question aims to find a practical answer to L2 pedagogy in terms of making linguistic knowledge of the target language accessible to learners, even if this knowledge is complex. Vygotsky’s believed that teaching leads and promotes development; however, current L2 pedagogical practices tend to focus on readiness to learn and therefore withhold instruction on a particular feature of the target language until learners are presumed ready to uptake the feature. Moreover, complex features
such as temporal system are often taught in a piecemeal fashion on the assumption that by so doing learning will be made easier. STI, on the other hand, proposes that properly organized knowledge of the object of study, including L2, can be accessible to learners and therefore can enhance their development rather than wait for them to be developmentally ready.

The second question seeks to determine if a pedagogical program specifically designed in accordance with Gal’perin’s approach to education, is more effective than traditional instruction. Concretely, it asks if novice learners receiving STI on Chinese temporal system will have a better understanding of the concept as exhibited in specific performance tasks than will novice learners who receive traditional instruction on this topic. Moreover, it also asks how will students who receive STI perform relative to more advanced learners who have received traditional instruction on Chinese temporal system.

The third research question asks if learners L1 has an effect on how well they develop the ability to use Chinese temporal system regardless of whether they received STI or traditional instruction. It was suspected that even though participants received different teaching methods, their performance would still be influenced by their L1. According to Boroditsky (2001), although in English and Chinese time is conceptualized in terms of horizontal and vertical space, Chinese speakers are more
likely to conceptualize time using vertical spatial terms than are English speakers. In fact, very few temporal expressions collocated with up or down are found in English. However, as discussed in earlier chapters, Chinese temporal expressions are prevalently collocated with up or down. In light of the absence of a conception of time on a vertical dimension, it has been hypothesized that English L1 speakers will perform better on the front/back category than the up/down category.

5.3 Teaching Chinese temporal system

In chapter 4, Chinese temporal system was discussed from a cognitive linguistic perspective and major differences in the Chinese and English temporal concepts were noted. In this section, a survey of L2 Chinese textbooks and a discussion of teaching methods with examples of teaching temporal system are provided. Then, pedagogical issues with regard to teaching temporal system raised by researchers in teaching Chinese as a foreign language are provided.

5.3.1 Teaching Chinese as a foreign language

While the field of teaching Chinese as a foreign language has been growing over the recent decade, the literature on Chinese pedagogy is relatively sparse in
comparison to the pedagogical literature on other languages. This has the potential consequence that pedagogical practices are primarily influenced by information on established teaching practices in other languages. According to Xing (2006), the practice of teaching Chinese as a foreign language (TCFL, hereafter) is influenced by two different teaching styles: traditional Chinese style and Western style. Chinese style is a teacher-centered approach that emphasizes word-by-word translation and memorization. This approach has been mainly adopted by missionaries and scholars, who further compile teaching materials according to their self-learning experiences. The Western style is influenced by the teaching of Indo-European languages as FLs and includes various teaching methods such as grammar-translation, communicative, functional-notional, etc. (Xing, 2006, p. 63–65). The principle of TCFL is guided by either unstructured instruction or by the experiences of teaching other languages. In other words, instruction may not provide learners with a systematic explanation of the linguistic differences between their L1 background and the target language. In addition, Teng (1997) pointed out that in Chinese language teaching grammatical patterns are chosen “arbitrarily” and are approached in a “linear and discrete fashion” (p.33). According to Teng, the patterns are presented only in beginning texts and each grammatical pattern is usually presented just once\(^1\). The above statements have been verified in several researchers’ examinations of L2 Chinese textbooks. (see Cheng,
Wang (2000) also noted that although the number of L2 Chinese textbooks has been increasing since the 1990s, innovations in terms of textbook design, teaching approaches and media of presentation are limited. Lincoln (2004) pointed out that the compilation of L2 Chinese textbooks is still being influenced by L1 Chinese textbooks.

The lack of organized instruction and accessible pedagogical presentation was raised in the survey of L2 Chinese textbooks commonly used at universities in the U.S. carried out for the present study. These books include Integrated Chinese (UCLA, USC, MIT, University of Hawaii, etc.), Chinese Link (Penn State), and the New Practical Chinese Reader (CSULA, CSULB, Tufts, etc.). Target users of these textbooks are English speakers. Their design is generally grammar-based and includes pattern drills, simple translations of each new word, and an audio-lingual style. To provide a sense of how these textbooks present grammar, two examples of grammatical categories of temporal system—temporal expressions and aspect marker—are offered below. Temporal system in Chinese is generally introduced at different times: temporal expressions are usually taught first at the beginning level, followed by aspect markers at the intermediate level.

Since Chinese does not have verb inflections to mark tense, time expressions (or “time adverbs” in some textbooks) often become indicators of tense. However, the
presentations of temporal expressions are rather contingent. For example, in *Chinese Link* and the *New Practical Chinese Reader*, temporal expressions are introduced in lessons in which the topic is expressions of time. Table 5-1 offers information from the grammar unit in a textbook used in the second semester of first-year Chinese:

Table 5-1: Expressing dates, year, month and days of the week

<table>
<thead>
<tr>
<th>qian tian</th>
<th>Zuo tian</th>
<th>Jin tian</th>
<th>Ming tian</th>
<th>Hou tian</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘the day before yesterday’</td>
<td>‘yesterday’</td>
<td>‘this year’</td>
<td>‘tomorrow’</td>
<td>‘the day after tomorrow’</td>
</tr>
<tr>
<td>qian nian</td>
<td>Qu nian</td>
<td>Jin nian</td>
<td>Ming nian</td>
<td>Hou nian</td>
</tr>
<tr>
<td>‘the year before last year’</td>
<td>‘last year’</td>
<td>‘this year’</td>
<td>‘next year’</td>
<td>‘the year after next year’</td>
</tr>
<tr>
<td>Shangshang ge xingqi</td>
<td>Shang ge xingqi</td>
<td>Zhe ge xingqi</td>
<td>Xia ge xingqi</td>
<td>Xiaxia ge xingqi</td>
</tr>
<tr>
<td>‘the week before last week’</td>
<td>‘last week’</td>
<td>‘this week’</td>
<td>‘next week’</td>
<td>‘the week after next week’</td>
</tr>
<tr>
<td>Shangshang ge yue</td>
<td>Shang ge yue</td>
<td>Zhe ge yue</td>
<td>Xia ge yue</td>
<td>Xiaxia ge yue</td>
</tr>
<tr>
<td>‘the month before last month’</td>
<td>‘last month’</td>
<td>‘this month’</td>
<td>‘next month’</td>
<td>‘the month after next month’</td>
</tr>
</tbody>
</table>

The goal in offering temporal expressions in Chinese in a tabular format is to provide learners with a way to become familiar with these expressions. Temporal expressions are organized according to English translations. For example, the first
column in Table 5-1 contains all temporal expressions that can be formulated as “time noun + before+ time period”, such as ‘the day before yesterday’ and ‘the month before last month’. The second column contains expressions in the form of “last + time noun” and so on. Chinese morphemes shang ‘up’ and qian ‘front’ are both translated as ‘last’ in the table, and the actual meaning of these morphemes is neglected. The same situation happens with regard to xia and hou, which mean ‘down’ and ‘back’, respectively, but are translated as ‘next’ uniformly.

Although most L2 Chinese textbooks fail to point out the spatiotemporal relations of time expressions, the notion that “this,” “last” and “next” in time expressions are very different in Chinese from those in English is raised in another textbook, Interactions, compiled by the Chinese program at Indiana University. According to the authors, the instructional design for this textbook is based on the belief that by explicating grammar with the aid of linguistic rules and conceptual principles that “relate to students’ existing world knowledge” (Yan & Liu, 1997, p.x), linguistic knowledge can be better delivered since the learners’ perspectives are taken into account. Their intentions can be illustrated by comparing the explanations for the time expression shangwu ‘morning’ in the New Practical Chinese Reader and Interactions. In the former, the explanation for shangwu is simply ‘morning’ but in Interactions, shangwu is translated as ‘[upper-noon] morning’ with the original
meaning of *shang* rendered. The efforts to present spatio-temporal relations among
time expressions are shown in the following explanations (Yan & Liu, 1997):

In contrast to English, Chinese uses the vertical spatial relation above-below to
denote past and future. Imaging a calendar hanging on a wall; you turn “last
month” *up* so that “this month” is right in front of your eyes and “next month”
is *below*. The same concept holds true for “last week” and “next week.”

(p.122)

While the illustration is helpful in terms of helping learners appreciate the
relationship between “above-below” and “past-future”, the calendar example is used
as a convenient example rather than as a cognitive tool to mediate their full
understanding and use of the concept. The systematic conceptualization and linguistic
complexity of time in terms of space are not fully presented in the example (see
section 5.4.1 for a detailed discussion of the relationship between “above-below” and
“past-future”)

In the case of teaching aspect markers, these are not usually taught as a unified
grammatical concept but are explained through word-for-word glosses and are
accompanied by some grammatical formulae and examples. For instance, the textbook
*Chinese Link* introduces the perfective aspect marker –*le*, and the durative and
progressive aspect marker -*zhe* at the intermediate level, but teaches the progressive
aspect marker –zai at the beginning level. Simple explanations for these markers are
given in the relevant grammar unit. The aspect marker le, for instance, is explained as
follows: “the aspect le indicates completed action. It is placed after a verb or at the
end of the sentence” (Chinese Link, level 2 part1, p. 39). This is accompanied by a
simplified chart of grammatical patterns, illustrated in Table 5-2:

Table 5-2. Grammatical patterns for aspect marker le (Source: Chinese Link Level 2
Part I, p. 39)

<table>
<thead>
<tr>
<th>Structure</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions: le ma/le meiyou</td>
<td>Ni chi fan le ma?</td>
</tr>
<tr>
<td>ASP Q/ASP not</td>
<td>You eat rice ASP Q</td>
</tr>
<tr>
<td></td>
<td>“Have you eaten?”</td>
</tr>
<tr>
<td>Affirmative</td>
<td>V. + le/ sentence-end +le</td>
</tr>
<tr>
<td>Answer:</td>
<td>Wo chi le.</td>
</tr>
<tr>
<td></td>
<td>I eat ASP</td>
</tr>
<tr>
<td></td>
<td>“I have eaten”</td>
</tr>
<tr>
<td>Negative Answer: (hai) meiyou ...ne</td>
<td>Wo hai meiyou chi ne.</td>
</tr>
<tr>
<td>(yet) not….. REx</td>
<td>“I haven’t eaten yet”</td>
</tr>
</tbody>
</table>

Again, while Table 5-2 might offer learners a quick guide to when and how to use the
aspect article –le, the oversimplified explanation and examples of this perfective
aspect marker do not offer sufficient guidance for learners to be able to distinguish
between tense and aspect. As a result, beginning learners of Chinese (and even some
advanced learners) often interpret the perfective aspect marker as a past tense marker,
which does not exist in Chinese. In the next section, I show how learning difficulties with either temporal expressions or aspect markers might affect students’ learning process.

5.3.2 Pedagogical concerns in teaching Chinese temporal system

In the preceding section, some examples from L2 Chinese textbooks were offered to show the unsystematic and incomplete nature of grammatical explanation encountered in most textbooks. With regard to the teaching of Chinese temporal system, some interesting issues have been raised by previous studies.

Tai (1991) claimed that experienced teachers have observed that learners of Chinese at the elementary level whose first language is English often have trouble associating ‘up’ with ‘past’ and ‘down’ with ‘future’. Xing (2000) noted that the paired words shang ‘up’ and xia ‘down’ can express temporal and spatial meanings while their English counterparts only denote spatial meaning. The extended lexical meanings of the spatial-temporal terms shang/xia that are driven by metaphorization may perplex even upper-level Chinese learners. Xing argued that when teaching grammatical elements of a foreign language, the most important task is to find “the system that connects various functions of a given grammatical element and then
explain that system systematically” (Xing, 2000, p. 88). Similar mistakes made by English speakers learning Chinese are also found in their use of the horizontal spatial-temporal expressions. There are two pairs of horizontal terms in English: before/after and front/back (see chapter 4 for a detailed discussion) but only the former pair has temporal meaning. Nevertheless, in Chinese, both pairs may be used to denote temporal meaning. (Tai, 1991; Xing, 2000). Hence, spatial-temporal expressions do perplex English learners of Chinese. However, the teaching of spatial-temporal expressions have not received much attention, probably due to some teachers’ belief that learners will be able to distinguish these expressions (not to establish the metaphorical concept) after they have accumulated a sufficient amount of learning experiences. The attitude of wait-till-students-mature is problematic, because it leaves students to figure out the complex linguistic analysis by themselves (and often the students fail to do so). Moreover, temporal system, like other scientific concepts in Vygotsky’s sense of them, should be presented as a coherent and unified concept from the beginning stages of instruction. The possible consequences of teaching temporal system piecemeal can be seen in some Chinese L2 studies on the acquisition of aspect markers.

Studies of the acquisition of aspect markers by L2 Chinese learners have mostly focused on acquisition order. (e.g., Jin & Hendriks, 2003; Sun, 1993; Teng, 1999; Wen
What is most relevant to the present study is Wen’s (1997) discussion of the sequence of acquisition of Chinese aspect markers by English-speaking learners at the university level. Her results showed that the perfective aspect marker –le and the past experience marker –guo are acquired almost at the same time and before the acquisition of the durative aspect marker –zhe, which is not surprising since most L2 Chinese textbooks teach –le and –guo first, and leave the durative marker –zhe until the intermediate level. Wen concluded that the process of L2 Chinese acquisition of aspect markers is mainly meaning-based because learners have been found to use time adverbials and conjunctions for time references and lexical aspects and word meanings (i.e. telicity) to help them choose select aspect markers. It also shows that learners at a lower level of proficiency rely more on the time adverbial expressions (e.g., yiqian ‘before, previously’) and lexical aspect than learners at a more advanced level. Wen pointed out that with regard to the perfective marker –le and the experience marker –guo, English-speaking learners of Chinese are already familiar with the concepts of completion of action and past experience, but the concept behind the durative –zhe that conveys “a state associated with its activity” is more language specific and maybe new to English speakers (Wen 1997, p. 21). Sentences (1) and (2) illustrate the Mandarin-specific durative sense of –zhe indicated by Wen:

(1) *Men shi kai zhe de*6
Door be open ASP GEN
‘The door is open’

(2) Wo jia mian dui zhe shan
My house face toward ASP mountain
‘My house faces toward the mountain.’

Wen’s results indicated that L2 Chinese learners might be able to figure out and produce the correct temporal meaning when they have undergone the process of constructing a functional meaning of temporal system; nevertheless, it is at a later stage in the process that learners no longer need to turn to other linguistic devices to mark aspect. In the earlier stages of the learning process, learners seem to construct their understanding according to their own trial-and-error observations (e.g., dependence on time adverbs to use the aspect marker). In addition, English-speaking learners acquire some aspectual concepts in Chinese that also exist in English more quickly than those that do not exist in their L1.

Although Wen did not provide details about the content and approaches to instruction received by participants, the action of seeking clues from temporal expressions to co-construct the meaning of aspect markers may indicate that coherent and well-organized instruction in temporal expressions and aspect markers as a holistic concept might help L2 Chinese learners to understand and establish the concept of temporal system. Negueruela (2008) similarly believes that complex concepts posited to be more suitable for advanced learners can, and should, be taught
to novice learners; grammatical meanings imparted in a systematic way can ignite
cognition and further lead to L2 development (p. 203).

This discussion of the teaching and learning of Chinese temporal system
illuminates the problem of unsystematic instruction. To provide organized and
systematic instruction on temporal system, schemata for a complete orienting basis of
action (SCOBA) based on the linguistic analysis in chapter 4 are presented next and
explained in the following sections.

5.4. SCOBA

Teaching materials (SCOBA) that illustrate the metaphorical concept and
cognitive conceptions of time in Chinese are presented and discussed in this section.

Four pictures that illustrate the metaphorical concept, pragmatic functions and
meanings of temporal expressions and aspect markers are constructed based on
linguistic analyses of the Chinese temporal system. In section 5.4.1, the
SCOBA-based explanation of temporal expressions is provided and in section 5.4.2,
the SCOBA-based explanation of the aspect markers is presented.
5.4.1 SCOBA of spatial-temporal expressions

Chinese spatial-temporal expressions can be divided into two main categories: horizontal temporal expressions and vertical temporal expressions (see Chapter 4). Table 5-3 lists commonly-used temporal expressions and was compiled by the instructor/researcher. This table was used as supplementary teaching material in the beginning Chinese course as well (for both the experimental and control group 1). Columns 1 and 5 contain horizontal temporal expression, columns 2 and 4 present vertical temporal expressions and column 3 gives expressions for indicating current time.
Table 5-3. Commonly-used temporal expressions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>qian tiān</td>
<td>zuó tiān</td>
<td>jīn tiān</td>
<td>míng tiān</td>
<td>hòu tiān</td>
</tr>
<tr>
<td>front day</td>
<td>yesterday</td>
<td>now day</td>
<td>bright day</td>
<td>back day</td>
</tr>
<tr>
<td>“the day before yesterday”</td>
<td>“yesterday”</td>
<td>“today”</td>
<td>“tomorrow”</td>
<td>“the day after tomorrow”</td>
</tr>
<tr>
<td>qián nián</td>
<td>qù nián</td>
<td>jīn nián</td>
<td>míng nián</td>
<td>hòu nián</td>
</tr>
<tr>
<td>front year</td>
<td>go year</td>
<td>(now) year</td>
<td>bright year</td>
<td>back year</td>
</tr>
<tr>
<td>“the year before last year”</td>
<td>“last year”</td>
<td>“this year”</td>
<td>“next year”</td>
<td>“the year after next year”</td>
</tr>
<tr>
<td>shàng gè xīngqì</td>
<td>zhè gè xīngqì</td>
<td></td>
<td>xià gè xīngqì</td>
<td></td>
</tr>
<tr>
<td>up QUA week</td>
<td>this QUA week</td>
<td></td>
<td>down QUA week</td>
<td></td>
</tr>
<tr>
<td>“last week”</td>
<td>“this week”</td>
<td></td>
<td>“next week”</td>
<td></td>
</tr>
<tr>
<td>shàng gè yuè</td>
<td>zhè gè yuè</td>
<td></td>
<td>xià gè yuè</td>
<td></td>
</tr>
<tr>
<td>up QUA month</td>
<td>this QUA month</td>
<td></td>
<td>down QUA month</td>
<td></td>
</tr>
<tr>
<td>“last month”</td>
<td>“this month”</td>
<td></td>
<td>“next month”</td>
<td></td>
</tr>
</tbody>
</table>
To illustrate the conceptualization of horizontal temporal expressions, which is based on the metaphorical concept “front is the past, and back is the future”, the visualization given in Figure 5-1 was constructed.

In this picture, the observer is parallel to a moving train with his face toward the past, indicated by the cars that have already passed by the observer. When the train passes, the cars that are in front of the observer are past events and those that are behind him indicate future events. The picture explains that in Chinese the speaker is assumed to already know what happened in the past, so that the past is something in front of his face and can be described, while the future cannot be seen since it is yet to be experienced, and therefore it is situated behind the speaker.\(^8\)
In Figure 5-1, the character, 前 qian, in car two means ‘front’, and 后 hou, in car six means ‘back’. This picture was used to explain temporal expressions in horizontal spatial terms to students. Thus qiantian ‘front day’ means ‘the day before yesterday’ and hounian ‘back year’, means ‘the year after next year’, and these horizontal temporal expressions refer to relatively distant past and future time periods.

Another set of temporal expressions that denotes time in vertical terms as is visualized in Figure 5-2.
The SCOBA in 5-2 was constructed based on the metaphorical concept of “up is past, and down is future”. This concept is visualized in the calendar’s layout, since previous months (and weeks) are placed above later months (and weeks) in a calendar. If the calendar is in the format of a pamphlet, the first page on the top of the whole calendar is usually January, and the user needs to flip over past months to reach the current or future months. For illustrative purposes the third week of October (in green) is assumed to be the current time (week), and weeks before the current week are above the third week, and weeks after the current week are beneath the current week. The same applies to the month example; September is above October, and November is below October. The arrow on the right side of the calendar indicates that every time period that is above the current time belongs to the past, and the time period that is below the current time belongs to the future. The SCOBA in Figure 5-2 thus helps learners to deal with vertical spatial-temporal expressions such as shang xingqi ‘[up week] last week’ and xia ge yue ‘[down month] next month’ that are used for close time (immediately preceding or following the current time unit). (For vertical spatial-temporal expressions, see Table 5-1, columns two and four.)

Learners might find Chinese temporal expressions to be unsystematic and confusing since the past is conceptualized in two directions—front and up, and the future is conceptualized in the directions of back and down. A third SCOBA, given in
Figure 5-3, was thus constructed to unify the expression of time into a single and systematic framework.

Figure 5-3. SCOBA of the immediate and distant past/future

Figure 5-3 indicates that the space that is in front and above the speaker represents the past. However, if a temporal expression is collocated with a vertical spatial term—for example, *shang xingqi* ‘[up week] last week’ or *xia gu yue* ‘[down month] next month’—the temporal expression that is being referred to *immediately* precedes or follows the current time unit. Therefore, up and down denote immediate past or future.
If, however, one unit of time is between the current time period and the referred-to time period, such as the day before yesterday’ or ‘the year after next year’, the directional morphemes qian ‘front’ (qiantian‘[front-day]) and hou ‘back’ (hounian [back-year]) are prefixed to the time units to indicate that the referred-to time expressions have some distance from the current time.

5.4.2 SCOBA of aspect markers

Two aspect markers that are considered the most problematic for beginning and intermediate Chinese learners -zhe and –le, were selected as the unit of instruction. Their pragmatic functions and semantic expression are provided below.

The durative aspect marker -zhe is placed after the verb to describe an ongoing action. When this aspect particle co-occurs with the adverb zhengzai (exactly at) ‘right now’, or zheng (exactly) ‘right now’ (the shortened form of zhengzai), it describes a state that is continuous or stationary, as seen in examples (3) and (4):

(3)Mama zheng mang zhe zuo fan
‘Mother is busy cooking’
(4)Ta zhengzai chi zhe mian.
‘He is eating noodles now’
Another situation that zhe describes is that when two events co-occur one is usually the main event and the other is the background event. In examples (5) and (6), zhe is suffixed to the verb for the background event to signal the background against which the main event occurs:

(5) Wo kan zhe caidan dian cai
    I look ASP menu order meal
    ‘As I looked at the menu I ordered my meal’
(6) Ta kan zhe dianshi chi fan
    He watch ASP television eat meal
    ‘He eats while watching television’

The perfect aspect marker le indicates a completed or, when duplicated in the same sentence, an ongoing action. When it is placed after an action verb, it signals the completion of an event or action, as in examples (7)–(10):

(7) Zuo tian wo xie le yi feng xin
    Yesterday I write ASP one CL letter
    ‘I wrote a letter yesterday’
(8) Ta jiao le gongke
    He submit ASP homework
    ‘He handed in his homework.’
(9) Zuo tian wo xia le ke hou jiu qu kan dian ying
    Yesterday I finish ASP class after then go see movie
    ‘I went to the movie after class yesterday’
(10) Ming tian wo xia le ke hou jiu qu kan dian ying
    Tomorrow I finish ASP class after then go see movie
‘I will go to the movie after class tomorrow’

In sentences (7) and (8), *le* is suffixed to the action verb to indicate the completion of the action with respect to the current time (the time of speaking). If L2 Chinese learners were taught mainly via English translations of sentences (7) and (8), chances are that they would mistake *le* for a past tense marker. However, the grammatical function of *le* as an aspect marker is shown clearly in sentences (9) and (10). In those sentences, two features of the Chinese temporal system are made salient. First, tense is not signaled by verb inflections but rather by temporal expressions (yesterday and tomorrow). Second, different temporal expressions in (9) and (10) demonstrate that the particle *le* only indicates the completion of the action but not the time at which the action takes place; the particle *le* is only concerned with the inherent temporality of an event\(^{10}\).

In addition to indicating the completion of an action, *le* can indicate an ongoing action when *le*- occurs twice in the same sentence. The first follows the verb, and the second is placed in sentence final position. The double *le* structure describes an action that began in the past and continues into the current time of speaking. Examples of the ongoing situation described by the double *le* structure are provided in (11) and (12):
(11) ta xue zhongwen xue le san nian le
He study Chinese study ASP three year ASP
“He has been studying Chinese for three years’

(12) wo kan le liang ben shu le
I read ASP two CL book ASP
“I have read two books (and there are some more books for me to read)”

To illustrate the pragmatic and semantic functions of the aspect markers le and zhe, the visualization in Figure 5-4 shows an egg floating in the water, which is a static and continuous situation. The floating egg signals the background event (i.e., the durative marker zhe) while other actions are displayed in this picture simultaneously. On the right there is another egg starting to sink all the way down to the bottom. The direction in which the egg is sinking indicates an ongoing situation that can be described by the double le structure. When the egg hits the bottom, that is, the movement is complete, and the perfect aspect maker le is used to describe the stage at which the action is completed.
5.5 Context of the study

The background of the study, including the course content and participants’ linguistic background as well as study design is provided in this section.
5.5.1 Participants

Participants were recruited from three different groups: two groups consisted of students at the beginning level (CHNS 001), and the other consisted of students at the intermediate level (CHNS 003). Participants at the beginning level were from two sections that were both being taught by the researcher/instructor, and both sections followed the same syllabus. One section (section 008) was taught by the innovative teaching approach and hence was the experimental group. The other section (section 006) was designated as control group 1 and did not receive STI. Since STI emphasizes a complete and systematic pedagogical presentation of concepts, the experimental group received instruction on temporal system, including temporal expressions and aspect markers despite the fact that aspect markers were not supposed to be taught at the beginning level according to the existing conventional syllabus. Therefore, control group 1 only received instruction in temporal expressions as originally planned on the standard syllabus for the beginning level of this course. In order to investigate performance on aspect markers, another control group was recruited and named control group 2. Participants in control group 2 were intermediate Chinese learners who had enrolled for a third semester of instruction and therefore had one more year of experience in learning Chinese than those at the
beginning level. Participants in control group 2 were given extra credit for completing tasks relevant to the present study. They were given instruction by two other instructors in accordance with the textbook used in the course. Control group 2 was tested on their performance on aspect markers, which they had just learned during the fall 2008 semester—when the study took place. In all three groups, most participants’ first language was English and the others were educated English-wise (See Table 5-4 below for the number of participants in each group and their L1). Since this study adopts a between-group design to ensure that students in the experimental group and control group 1 started at the same level, those who had prior knowledge of the Chinese language (dialects) were excluded from this study. Although these students might not have the ability or only have limited ability to write, read and speak Mandarin, they might have already known the conceptualization of time in Chinese.

Students enrolled in the beginning level course were informed at the first class meeting that their written data (including tests, assignments, essay practices, etc.) would be collected for the course instructor’s doctoral research project. Their decision to consent or not to consent to do so did not influence their final grades. All participants were assured that their identity would be kept confidential and their names were replaced with codes in the database and the dissertation. Students who agreed to participate in the study signed the required informed consent form.
After ruling out students who were heritage speakers of Chinese dialects other than Mandrain and those who opted not to participate in this study (one student in the experimental group, three students in control group 1), a total of 16 agreed to participate in the experimental group, 13 in control group 1, and 13 in control group 2.

Table 5-4. Background on participating groups

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Control 1</th>
<th>Control 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of participants</strong></td>
<td>16</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td><strong>Participants’ L1</strong></td>
<td>English (13 people)</td>
<td>English (10 people)</td>
<td>English (13 people)</td>
</tr>
<tr>
<td></td>
<td>Korean (3 people)</td>
<td>Korean (3 people)</td>
<td></td>
</tr>
<tr>
<td><strong>Language proficiency level</strong></td>
<td>Beginning</td>
<td>Beginning</td>
<td>Intermediate</td>
</tr>
<tr>
<td><strong>Receive STI</strong></td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Instructor</strong></td>
<td>Researcher for this study</td>
<td>Researcher for this study</td>
<td>Two other instructors</td>
</tr>
<tr>
<td><strong>Grammar categories tested</strong></td>
<td>Tense and aspect</td>
<td>Tense</td>
<td>Aspect</td>
</tr>
</tbody>
</table>
5.5.2 Course

The course (Chinese 001) chosen for STI implementation was a first semester of Chinese taught at The Pennsylvania State University during the fall 2008 semester. The classes met five days a week and each class session was fifty minutes. All students started the course learning the Chinese Romanization system (*pinyin*), four tones, characters, and basic vocabulary. By the end of the semester, students were expected to be able to conduct simple conversations, to write short essays (10–20 sentences) and to perform a skit. Whereas instructors for each section of the course were free to design their own teaching materials and classroom activities, the uniform syllabus with regard to topics provided by the Asian Studies program was followed by all instructors. Therefore, no significant changes were made in assignments (i.e., workbook exercises) and exams, and grammatical points and vocabulary covered in the course textbook were not replaced or deleted.

Although no specific teaching methods were adopted for the course, when it came to grammar instruction, traditional methods were adopted in the Chinese program in most situations: instructors introduced grammatical points in each chapter and explained the syntactic and occasionally the semantic and pragmatic functions of the target grammatical points. Students then would have to translate or produce one or
two sentences in Chinese via the format of fill-in-the-blank exercises or short conversations.

Both the experimental group and control group 1 completed the same homework assignments, exams, and final project and followed the same syllabus. The only difference in the assignments in these two groups was that the control group did not receive instruction on aspect markers but only on temporal expressions.

5.5.3 Timeline

The experiment spanned from the ninth week of the semester to the sixteenth week (the final week of the semester), including a one-week break. By this time, the students in both groups were able to write short essays (five to ten sentences) and conduct short conversations. A questionnaire used in evaluating students’ understanding of the Chinese temporal system and seeking their feedback on the teaching approach was distributed after the teaching ended. The detailed teaching agenda is given in the following section.
5.5.4 Teaching agenda

A metaphor awareness activity spearheaded the formal implementation of STI so that students would become aware of the conceptual metaphors embedded in everyday language. The purpose of the activity is nicely illuminated in Gal’perin’s words:

... the uniqueness of linguistic consciousness becomes especially clear when we compare these meanings in several languages in which the form of the same category will have a different meaning and compare the always limited group of these linguistic meanings with the unlimited set of properties and relation of objects themselves (Gal’perin, 1992, p. 85).

The instructor first explained the idea of the conceptual metaphor and then gave students examples of metaphorical expressions in English. The examples were intended to increase students’ awareness of the relationship between time and space, so expressions involving the moving time and moving ego models (see chapter 4 for discussion of the metaphor models), such as ‘Midterm is approaching’, ‘we will meet at 10 o’clock’ and ‘Before I moved to Philadelphia, I lived in Pittsburgh’ were explained to students. After the students had a fundamental understanding of conceptual metaphors and had been shown temporal-spatial expressions in English,
the students were taught that Chinese also has spatial terms to express temporality metaphorically. In addition to showing the temporal-spatial expressions in Chinese to the students, the instructor also reminded them that Chinese does not have tenses—instead, the language relies on linguistic devices such as temporal expressions, discourse contexts or aspect markers to set up a time frame.

The implementation of STI was conducted in the following fashion: the concept of Chinese temporal system was introduced first, and then spatial-temporal expressions were taught using the SCOBAs presented in Figures 5-1 to 5-3. Students next completed in-class practices and assignments designed to help them use and produce the targeted grammatical concept. Aspect markers were then taught using the SCOBA in Figure 5-4; this was followed by translation exercises. A unit exam included fill-in-the-blank, translation exercises and short essay writing on the Chinese temporal aspect—this occurred in the seventh week of the experiment.\(^\text{12}\) (See Table 5-5 below).

The experimental group and control group 1 basically followed the same teaching agenda. Control group 1 received instruction on temporal expressions and practiced the exercises given in the textbook, but did not receive instruction on aspect. Therefore they were not given the tests on aspect markers. The experimental group had the same format and number of assignments and exams as the other sections at
the beginning level, but was given a questionnaire to collect their feedback on the innovative teaching approach after students had accomplished all course requirements. This questionnaire was used as an extra credit opportunity for all students and not limited to participants in the present study in the interest of fairness; however, only participants’ answers were collected.

A teaching schedule outlining the teaching topic and activities for each week is provided in Table 5-5. The weeks are numbered according to the teaching agenda for STI, not the semester syllabus.

Table 5-5. Schedule for teaching Chinese temporal system to the experimental Group

<table>
<thead>
<tr>
<th>Week</th>
<th>Teaching Topic</th>
<th>Assignment/Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Metaphor awareness activity-Time and space</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introducing the Chinese temporal system –tense and aspect</td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>1. Temporal expression chart (Table 5.3)</td>
<td>2. SCOBA (picture 5.1-3)</td>
</tr>
<tr>
<td>Week 3</td>
<td>Review temporal expressions</td>
<td>In-class exercise (oral practices)</td>
</tr>
<tr>
<td>Week 4</td>
<td>Review temporal expressions</td>
<td></td>
</tr>
<tr>
<td>Week 5</td>
<td>Preview aspect (the concept)</td>
<td>HW 10-essay writing (a day in your life) (data set 1)</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Week 6</td>
<td>Thanksgiving</td>
<td></td>
</tr>
<tr>
<td>Week 7</td>
<td>1. Aspect marker –zhe, le...le and le 2. SCOBA (picture 5.4)</td>
<td>HW 11-essay translation (data set 2) Take-home assignments (data set 3) Final exam (data set 4)</td>
</tr>
<tr>
<td>Week 8</td>
<td>Performing skit</td>
<td>Questionnaire (data set 5)</td>
</tr>
</tbody>
</table>

5.6 Data collection

Data were collected during the last eight weeks of the fall 2008 semester. Since the majority of participants were beginning learners of Chinese and had limited ability to speak Chinese, all data in this study were in written form. The data consisted of two parts: the first part was composed of several written tasks produced by participants, and the second part was a questionnaire. The first part of the data analyzed students’ written ability and development in the target grammatical concept; the second part focused on students’ own definition of the grammatical concept and their reflections on the teaching method.
5.6.1 Data collection procedures

Quantitative data were collected from three groups: the experimental group, control group 1, and control group 2 (referred as E, C1 and C2 groups respectively hereafter). The first two groups were at the beginning level and the latter was at the intermediate level. The E group received explicit instruction in Chinese temporal system (i.e., temporal expressions and aspect markers) via STI. C1 group received instruction on temporal expressions only and the pedagogical approach used was based on the textbook and followed traditional teaching methods. C2 group had been exposed to various aspect markers from a textbook since the second semester of an introductory Chinese course and was also taught via traditional teaching methods. The E and C1 groups were taught by the researcher and C2 group was taught by two other instructors.

Two items were given priority during the conduct of the study and data collection. First, the allotted time for lectures, in-class practice activities and home assignments needed to be as equivalent as possible between the E and C1 groups. The E group was exposed to aspect markers, which were not normally covered in the elementary course. That meant that, given the same amount of time for these two
groups, the E group was expected to learn two grammatical categories (tense and aspect) while C1 group was only expected to learn temporal expressions. Unavoidably the time allotted for teaching and practicing temporal expressions was slightly less for the E group. Apart from that, the assignments, in-class practice activities, and course handouts on temporal expressions were the same for the E and C1 groups. Second, the standard syllabus, the format of assignments and exams, and the timing of exams were not significantly altered for administrative reasons. For instance, there was a discrepancy between the standard syllabus of the Chinese program and the university’s academic calendar in terms of the timing of the final exam. According to the Chinese program’s syllabus, the last lesson test was scheduled in the 7th week (see Table 5-5), which was two weeks before the official final exam week assigned by the university (i.e. the 9th week which was not shown in Table 5-5 since the program’s syllabus did not plan any activities in that week) The university policy did not allow any format of testing (e.g. quiz, lesson test and exams) to take place in the week preceding the official final exam week (i.e. no tests could be held in the 8th week (see Table 5-5). The administrative regulations made it impossible to execute the original schedule of STI; the original plan was to test the learners’ performance on aspect markers in the week (i.e. the 8th week) after they were taught this grammatical concept in the 7th week). As a result, participants in the E group had to be tested on
aspect markers soon after they had learned the concept. (The concept of aspect markers were taught on December 2nd and 3rd, and the test was conducted on December 5th.). In addition, questions designed to test students’ performance on the target grammatical concept needed to be integrated as part of regular class activities and exams; these questions were not to exceed a certain percentage of all questions on the exam (ideally, no more than 20% of the exam’s content). After these priorities were taken into account, the procedures for designing questions and collecting data were developed.

5.6.2 Question design

Participants’ performances on two major grammatical categories of Chinese temporal system were investigated: temporal expressions and aspect markers. For temporal expressions, the crucial question was whether students could appropriate the metaphorical concepts of *up is past, and down is future* and *front is past and back is the future*; for the category of aspect markers, participants’ usages of the target aspect markers were investigated. If a student acquired the temporal metaphorical concepts to some extent, he or she might perform better in distinguishing the semantic meaning of each morpheme and producing the correct temporal expression.
Participants in the E group and C1 were asked to translate four temporal expressions into Chinese on their final exam. These expressions are representative of horizontal- and vertical-temporal expressions. The reasons for testing temporal expressions in the format of translation but not in other formats like composition are as follows: first, since the Chinese language does not have obligatory tense markers (e.g., verb inflections), it is difficult to judge whether learners truly chose the temporal expression they intended. For example, time frames in the following sentences, ‘I went to the library last week’ and ‘I will go to the library next week’, are set up by verb inflections and temporal expressions; however, if the sentences are expressed in Chinese, only temporal expressions can indicate the time frames. In other words, if a student made mistakes on temporal expressions, there was no other way for the instructor to conjecture about the intended time frame within the sentence. The second reason is that students might avoid using temporal expressions in their writing to reduce mistakes. Therefore, the translation task is considered more suitable for collecting and analyzing the use of temporal expressions quantitatively.

Nevertheless, the uses of aspect markers were investigated in the format of composition. Participants were asked to use aspect markers (not limited to the target aspect markers illustrated by SCOBA) to describe an unforgettable experience. The
actual occurrence and accuracy of target aspect markers in their essays were then
counted and analyzed.

5.6.3 Performance and development data

The performance and development data was consisted of several written
tasks. The tasks are listed below according to the temporal order assigned to
participants in the E group, but it should be noted that the control groups also
completed some of the tasks (see Table 5-6 below for tasks accomplished by each
group):

(1) Essay composition (in Chinese) with a focus on temporal expressions

(2) Essay translation with foci on temporal expressions and aspect markers
(from Chinese to English)

(3) In-class practice and assignments on aspect markers

(4) Final exam: translation, short essay writing on temporal expressions
and aspect makers

(5) Prepare a written script for a skit that was performed after final
exam(skit performance) (see Appendix for the original questions and
instructions for the above tasks)
Table 5-6. Activities for each participating group

<table>
<thead>
<tr>
<th>Task</th>
<th>E group</th>
<th>C1 group</th>
<th>C2 group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task One</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Task Two</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Three</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Four</td>
<td>X</td>
<td>X (translation of temporal expressions)</td>
<td>X (essay with a focus on aspect markers)</td>
</tr>
<tr>
<td>Task Five</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

The first task asked the students to use as many temporal expressions as possible in the writing of a short essay, and both the E group and C1 group completed the task. The second task—essay translation—required the students to translate a passage from English into Chinese. The passage contained several target spatial-temporal expressions and aspect markers. The third task was to practice the use of aspect markers in translating English sentences into Chinese. Since the second and third tasks involved the usage of aspect markers, only the E group did the tasks. On the final exam, the students had to complete tasks, including translations (in the form of fill-in-blank and sentence translations) and essay writing on aspect markers. The performance of the E and C1 groups on temporal expressions was assessed on the same exam and on the same day. On this exam, four temporal expressions—*last week,*
the day after tomorrow, next year, and the day before yesterday—were blended into a short passage (in Chinese) and in a sentence (in Chinese). Participants in both groups were asked to translate these items into Chinese. The first three temporal expressions were embedded in a passage written in Chinese and were provided in English in the blanks to be filled in. The participants had first to understand the Chinese passage and translate the given English temporal expressions in to Chinese correctly. The fourth expression was embedded in a sentence translation, and the participants had to translate the whole sentence from English to Chinese. (See Appendix for the exam.) These four items were further categorized into two subcategories according to the metaphorical concept behind the spatial-temporal expressions to conduct the quantitative analysis: (1) up/down: last week and next year, and (2) front/back: the day after tomorrow and the day before yesterday. C1 group had the same translation task but did not write the essay on aspect markers.

Part of the fourth task completed by the E group was also completed by C2; this part of task asked the participants to use aspect markers to write a short essay describing an event or experiences in their life. The E group was asked to write the short essay on the final exam, which was the same exam used to assess their performance on temporal expressions. The essay was to take the form of a letter or an email to their friends about school life. This topic was selected based on practical and
linguistic considerations. First, in order to fulfill the course objective that by the end of the first semester students would be able to write a letter in the correct format (including the placement of greetings, date, and signature), the topic of the essay on the last lesson test (i.e., the exam to be used in assessing aspect markers) had to be a written letter. Second, in order to investigate their ability to use aspect markers, the topic had to create a situation that allowed students to use aspect markers to describe various actions (e.g., completed or ongoing actions) carried on in different time frames. On the exam, students in the E group were given seven keywords and asked to include at least five of the keywords in their essay. Among these seven keywords, four were aspect markers: le...le (ongoing), zai (progressive), zhe (to indicate background status) and le (completed action). Although there was no strict time limit on writing the essay, since this was a formal exam and to comply with the school’s policy, students had to finish the test within two hours. The minimum number of sentences for the essay was ten. C2 group, which was composed of students from the intermediate Chinese course, was assigned the task in a different setting. They were asked to use the aspect markers (not necessarily all of them), le...le (ongoing), zai (progressive), zhe (to indicate background status) and le (completed action), to describe an event or an unforgettable experience in their life. (See appendix for the original essay guidelines.) They were required to write at least twelve sentences.
Since the researcher/instructor did not teach intermediate Chinese course, instructors of intermediate Chinese sections had different opinions regarding including the essay task as part of the exam. The alternative was thus made—the essay was given to participants in C2 group as an extra credit opportunity. In order to allow the two groups had as similar setting as possible, participants in C2 group were reminded that the most important thing was their completion of the essay, not its accuracy. However, since they did not complete the task in class, there was no strict time limit for the task imposed.

For the fifth activity, students in a group of three or four worked on a written script as their final project for this course. Since this project involved group work, it was not possible to identify each participant’s performance in the written script. However, the script was completed at the end of the semester, and it may be regarded as a final examination of students’ collective ability to use the targeted grammatical concept.

The translation from the target language into English aimed to examine students’ comprehension ability. Translation from English to Chinese and short essay writing were included to investigate students’ ability to control the functionality of the target grammatical concept. Quantitative data were collected from task four. The E group was compared with C1 group on their performance in translating temporal
expressions on the exam, and the E group was compared with control group 2 regarding their performance on using aspect markers to write a short essay. The rest of the tasks were used for qualitative analyses to investigate L2 development of learners in the E group. In addition, since task one was also completed by C1 group, a comparison between the E group and C1 group will be discussed in the qualitative analysis as well. Analyses of the above tasks will be presented in chapters 6 and 7.

5.6.4 Definition data

A questionnaire was designed to check students’ understanding of the grammatical concept (temporal system) and to obtain their feedback on the teaching-learning process. This survey was distributed to the E group at the end of the semester. The questions were as follows:

1. Can you explain how Chinese (the language) indicates the concept of “past”, “present” and “future”, and how does it differ from English? Can you give some examples?

2. Can you explain the following aspect markers “le”, “le….le” and “zhe”? How can you use these to describe events or actions? Can you give some examples?
3. Do you think the pictures (calendar, train, and egg) make concept of time in Chinese more meaningful to you, and do they help you when you are doing your homework and/or tests?

The first two questions asked students to provide their own definition of tense and aspect in Chinese, since explanations were not available in the textbook or on class handouts. This made the students create their own definition. The third question asked the students to provide feedback on the mediation tool and reflections on their learning experiences. The theoretical rationale for these questions and analyses of students’ answers are described in Chapter 7.

5.7 Conclusion

In this chapter, I discussed current CFL teaching practices with regard to the Chinese temporal system. I then proposed and explained the construction of SCOBAs used in this study. Finally, I presented the details with regard to the different treatment groups and the instructional procedures and assessment tasks they were given. In chapter 6, quantitative analyses of the experimental group and control group 1’s performance on temporal expressions are provided and discussed.

Notes:
1 It is not clear from Teng’s article why grammatical patterns are only presented
in beginning texts but not in intermediate or advance texts. However, he claimed that “a cursory examination of two textbooks Speak Mandarin (1967) and Practical Chinese Reader (1981) will confirm this criticism.” (Teng, 1997, p.33)

Table 5-1 presents the original table in the textbook; the only modification is that Chinese characters are dubbed by pinyin.

The original table only has Chinese characters, and I translated Characters into Pinyin and added English translations. For symbols used in the table, see the abbreviation list.

Participants in Wen’s study were college students and were divided into two groups. The lower level group and the advanced group consisted of students who had been studying Chinese for 15 months and 27 months respectively. However, Wen did not specify the participants learned the language by tutoring or classroom teaching.

Wen did not use the term telicity in her article. However, she indicated that learners at lower level use the verbs’ inherent meaning as a cue to select correct aspect markers.

It should be noted in sentence (1), the verb shi ‘to be’ can be deleted, and the sentence men shi kai zhe de ‘the door is open’ can be shortened as men ‘door’ kai ‘open’ zhe ‘durative aspect marker’. In this type of sentence, whether shi and kai can be viewed as verbs is still argued by linguists. De at the end of the sentence is a particle used in colloquial speech and does not have a meaning.

The list was prepared for and shown to the experimental group and control group 1, which were both at the beginning level. Nevertheless, when doing in-class practices, homework, and tests, students were not allowed or encouraged to refer to the list. Additionally, the original table was presented in Chinese characters without morpheme-by-morpheme translation; for reader’s convenience, Pinyin and morpheme-by-morpheme translation in English are added.

Note that all pictures shown in chapter 5 are the original SCOBAs used in the classroom; therefore not every Chinese character has an English translation in the pictures presented.

Zhe exhibits the features of durative or progressive aspect markers in examples (3)-(6); however, the situations mentioned in examples (1) and (2) are slightly different. The inherent meanings of verbs in examples (3) and (6) are mutually understandable in Chinese and in English. (e.g. eat, cook and watch are considered durative verbs in both languages). The verbs in examples
(1) and (2) (open and face) are not considered as durative verbs in English and are not even considered as complete verbs in Chinese.

10 Sentences (9) and (10) were used as supplementary examples to illustrate grammatical function of the perfect aspect marker le to the experimental group in class lecture as well.

11 Some textbooks do emphasize that the particle le is an aspect marker. For example, in New Practical Chinese Reader (p.201), it notes that le indicates “only the stage of the realization or completion of an action” and the completion of the action can happen in the past, present, or future.

12 The experiment lasted from the ninth till the sixteenth week in the semester and had eight weeks in total. For the convenience of reference, the ordinal numbers for weeks hereafter indicate the order in the schedule of STI implementation (cf. Table 5-4).

13 Since Chinese does not have obligatory tense markers, temporal expressions are considered a major linguistic device to express temporality. In this chapter and henceforth, temporal expressions and tense are interchangeable terms.
Chapter 6

Data Analysis and Discussion I

6.1 Introduction

Data in this study were analyzed quantitatively and qualitatively. Quantitative analysis aims to demonstrate the effects of STI and the relation between learners’ L1 and the influence of learners’ linguistic background on their L2 performance. In this chapter, procedures of, and results from, the quantitative analysis are reported, those related to the qualitative analysis will be discussed in chapter 7.

This chapter is organized as follows: section two recaps the proposed hypotheses and then provides the results of the quantitative analyses. Section three discusses the results. Section four provides the conclusion.
6.2 Analysis

In this section, hypotheses for quantitative analyses are briefly reviewed. Then detailed statistical analyses and results are provided.

6.2.1 Hypotheses

The previous chapter presented the research questions addressed in the study. As a reminder to the reader, I summarize these briefly here. The overarching hypothesis was that learners who received STI would outperform learners who did not. Since STI presented the complicated Chinese temporal system in a coherent and cohesive manner, novice learners in the E group who received STI would outperform the beginning learners in the C1 group and the advanced learners in the C2 group as well. Both C1 and C2 groups received traditional teaching methods. In addition to investigating the overall effect of STI, the influence of learners’ L1 was examined via quantitative analysis. The hypothesis was that L1 would affect learners’ performance, if learners’ L1 has a grammatical concept that is similar to the target grammatical concept, learners would perform better on that concept.

The following sections report the findings of the research that addressed the research questions as they relate to temporal expressions and aspect markers in L2 Chinese instruction.
6.2.2 Temporal expressions

The performance of the E group and C1 group on temporal expressions was assessed on an exam. On this exam, four temporal expressions—*last week, the day after tomorrow, next year, and the day before yesterday*—some appeared in fill-in-blank task and some were blended into English sentences and participants in both groups were asked to translate them into Chinese. (See Appendix for the exam.) These four items were further categorized into two subcategories according to the metaphorical concept behind the spatial-temporal expressions: (1) up/down: last week and next year, and (2) front/back: the day after tomorrow and the day before yesterday.

When assigning points to the translation, each response was scored as either incorrect (=0 points) or correct (=2 points); no partial credit was given. As long as students gave the keywords (i.e., the directions words [up/down and front/back] that are used as prefixes with spatial-temporal expressions) correctly, they received full credit; otherwise, they received zero. If mistakes were made on the time unit noun—for example, a student translated ‘week’ as ‘month’ in Chinese--this type of mistake was not counted either. The reason was that the analysis focused on the appropriation of conceptual knowledge, that is, whether students acquired the metaphorical concepts of Chinese temporal system. Mistakes on pinyin or characters
(e.g., missing strokes, or homophones) or tones were not counted because these mistakes did not affect interpreting the meaning of the temporal expressions in this study.¹

There were four items in the temporal expressions category and two items in each subcategory for a total of 8 points overall and 4 points for each subcategory. Table 6.1 shows each group’s average score on use of temporal expressions as well as on subcategories of metaphorical concepts. Table 6-2 shows the average score categorized by participants’ L1 in the E and C1 groups, respectively.

Table 6-1. Average score on temporal expressions (Numbers reported in this study are rounded up to the second decimal place unless specified)

<table>
<thead>
<tr>
<th></th>
<th>Temporal expressions (tense)</th>
<th>Up/Down (vertical)</th>
<th>Front/Back (horizontal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>6.25</td>
<td>2.63</td>
<td>3.63</td>
</tr>
<tr>
<td>Control Group 1</td>
<td>3.85</td>
<td>1.54</td>
<td>2.31</td>
</tr>
</tbody>
</table>

The tables offer a preliminary confirmation of the effect of STI and the influence of learners’ L1. In all three categories in Table 6-1 (tense, and vertical/horizontal dimensions), the E group scored higher than C1 group.
Table 6-2. Average scores on use of temporal expressions by participants’ L1

<table>
<thead>
<tr>
<th></th>
<th>Temporal expressions (tense)</th>
<th>Up/Down (vertical)</th>
<th>Front/Back (horizontal)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1: English</td>
<td>6</td>
<td>2.46</td>
<td>3.54</td>
</tr>
<tr>
<td>L1: Korean</td>
<td>7.33</td>
<td>3.33</td>
<td>4</td>
</tr>
<tr>
<td><strong>Control Group 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1: English</td>
<td>2.8</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>L1: Korean</td>
<td>7.33</td>
<td>3.33</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6-2 further indicates that participants in both groups performed better on the horizontal dimension than on the vertical dimension, no matter the learners’ L1 was English or Korean. It is interesting to find out that Korean L1 speakers had the same average scores in both groups and the difference of the average scores in the two dimensions is rather small. According to the data in Table 6-2, Korean L1 speakers who received STI performed as well as those who did not receive STI. However, this observation does not hold for the English L1 speakers where the average score on temporal expression of the E group is more than twice as high as the score of C1 group. Unfortunately, the sample size was too small to run appropriate inferential statistical analyses for the language variable.
A logistic regression analysis (GEE [generalized estimating equations] analysis) was thus conducted to deal with dichotomous outcomes (i.e., correct or incorrect responses) and to see within-subject correlation. The GEE analysis was conducted to compare the performance on temporal expressions by the E group and C1 group. The analysis also compared, in overall samples, the performance by all participants in both groups on different dimensions and English L1 speakers’ performance with Korean L1 speakers.

In Table 6-3, the significance tests are in the Z and Pr>|z| columns (the p < 0.05 for all three independent variables). The significance tests indicate that all three effects hypothesized are significant: (1) STI is effective, (2) all participants performed better in the horizontal dimension than in the vertical one, (3) all Korean L1 speakers from both groups outperformed all English L1 speakers.

Table 6-3. Analysis of GEE parameter estimates

| Parameter           | Estimate | Z    | Pr>|z| |
|---------------------|----------|------|------|
| STI Effect          | -1.68    | -2.62| 0.0089|
| Front/Back vs. Up/Down | 1.28    | 3.76 | 0.0002|
| Learners’ L1        | -2.33    | -2.60| 0.0092|

Moreover, the odds ratios (the odds of success for each group) listed in Table 6-4 illustrate the test results for the hypothesized effects more effectively. In the
column of odds ratios in Table 6-4, relative comparisons between each hypothesized
effect are shown. The value of 5.37 in the second row implies that the odds of
translating temporal expressions correctly are 5.37 times higher in the experimental
group than in the control group. In both groups, all students, regardless of their L1,
performed better in the front/back subcategory than in the up/down category, with an
odds ratio of 3.61. Also, Korean L1 speakers in both groups were more likely to
translate both types of temporal expressions with higher accuracy than English L1
speakers in both groups (for participants’ performance in the two dimensions, see
Table 6-2), with a ratio as high as 10.31--indicated in the third row.

Table 6-4. Contrast estimate results

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group</td>
<td>5.37⁴</td>
<td>3.45</td>
</tr>
<tr>
<td>Front/Back vs. Up/Down</td>
<td>3.61</td>
<td>1.23</td>
</tr>
<tr>
<td>Korean L1 vs. English L1</td>
<td>10.31</td>
<td>9.25</td>
</tr>
</tbody>
</table>

6.2.3 Aspect markers

To investigate the use of aspect markers, the E group and C2 group were asked
to complete a short essay using aspect markers to describe (an) events in their life.
The E group was asked to write a short essay on the final exam. On the exam, students in the E group were given seven keywords and asked to include at least five of the keywords in their essay. Among these seven keywords, four were aspect markers: le...le (ongoing), zai (progressive), zhe (to indicate background status) and le (completed action). The minimum number of sentences for the essay was ten.

The C2 group, were asked to use the aspect markers (not necessarily all of them), le...le (ongoing), zai (progressive), zhe (to indicate background status) and le (completed action), to describe an event or an unforgettable experience in their life. (See appendix for the original essay requirements) They were required to write at least twelve sentences.

Since not all student essays were of the same length, the first step in analyzing the data was to categorize their sentences into three types and count the number of sentences for each type: (1) the total number of sentences in the essay, (2) the total number of sentences containing aspect markers (regardless of correctness), and (3) the number of sentences in which aspect markers were used correctly.

It was assumed that there was a linear relationship between the number of sentences written and the number of sentences containing correct aspect markers. Although for this study the goal was to compare the proportion of aspect markers used correctly by each group, if the aforementioned relationship was not taken into account,
the proportion was likely to be misinterpreted. Two ratios were calculated for each participant; the first denoted the occurrence of sentences containing aspect markers (i.e., the target grammatical concept) and the second denoted the accuracy of sentences containing aspect markers. The two ratios were expressed as below:

(1) \( \frac{\text{the total number of sentences containing aspect markers}}{\text{the total number of sentences in the essay}} \)

(2) \( \frac{\text{the number of correct sentences containing aspect markers}}{\text{the total number of sentences containing aspect markers}} \)

The average number of each sentence type in each group and the correlation between the number of sentences written and the number of sentences containing aspect markers are presented in Tables 6-5 and 6-6. The correlation table (estimated \( r=-0.088, p=0.65 \)) indicates that there is no correlation between the total number of sentences and the proportion of sentences containing correct aspect markers.
Table 6-5. Average number of sentences

<table>
<thead>
<tr>
<th>Group</th>
<th># of participants</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control 2</td>
<td>13</td>
<td>12.15</td>
<td>2.64</td>
</tr>
<tr>
<td></td>
<td>Total # of sentences</td>
<td>2.62</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>Total # of sentences (asp. markers)</td>
<td>1.85</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>Total # of correct sentences</td>
<td>0.75</td>
<td>0.27</td>
</tr>
<tr>
<td>Experimental</td>
<td>16</td>
<td>10.38</td>
<td>2.09</td>
</tr>
<tr>
<td></td>
<td>Total # of sentences</td>
<td>3.19</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>Total # of sentences (asp. markers)</td>
<td>2.06</td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td>Total # of correct sentences</td>
<td>0.71</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Table 6-6. Pearson correlation coefficients

<table>
<thead>
<tr>
<th></th>
<th>Proportion of Correct Usage</th>
<th>Total # of Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Correct Usage</td>
<td>1.000</td>
<td>-0.088</td>
</tr>
<tr>
<td>Total # of Sentences</td>
<td>-0.088</td>
<td>1.000</td>
</tr>
</tbody>
</table>

After confirming that the number of sentences produced is not related to the accurate usage of aspect markers, a one-way ANCOVA analysis with the covariant of total number of sentences was then carried out to compare the proportion of aspect markers used correctly by each group. (This is a two-tailed test with an alpha level of 0.05).
The output of group mean differences is presented in Tables 6-7 and 6-8.

Table 6-7. Least squares means

| Group       | Mean | Standard Error | DF  | t Value | Pr>|t| |
|-------------|------|---------------|-----|---------|-----|
| Control 2   | 0.81 | 0.088         | 25  | 9.17    | <.0001 |
| Experimental| 0.68 | 0.080         | 25  | 8.57    | <.0001 |

Table 6-8. Differences in least squares means

| Effect     | Experiment | Experiment | Estimate | Standard Error | DF  | t    | Pr>|t| |
|------------|------------|------------|----------|----------------|-----|------|-----|
| Experiment | Control 2  | Experimental | 0.13     | 0.12           | 25  | 1.06 | 0.298 |

Table 6-7 shows that the estimated mean proportion of C2 group and the E group is 0.81 and 0.68, respectively. Although the proportion of correct use of aspect markers by C2 group was higher than that of the E group, in Table 6-8, the t-test for significance had a probability of 0.298, which is larger than the standard accepted value of 0.05. Therefore, the means are not statistically different. The hypothesis that the E group will outperform C2 group is not proved however, there is no statistical significance between these two groups.
6.3 Discussion

In the previous section, the statistical analyses support the main hypotheses proposed for the study: (1) learners who received STI outperformed learners who did not, and (2) L1 had influences on participants’ performance in different conceptual grammatical categories. Overall, the statistical results indicate that STI has a significant positive effect on teaching complex grammatical concepts to novice learners. However, the results also show that the group of novice learners did not outperform advanced learners by a significant degree with regard to aspect. Detailed accounts of the comparisons are thus needed to illuminate the effect and efficiency of STI and are given in the following sections. A discussion of the results as these offer insights into the pedagogical implications of STI is provided as well.

6.3.1 STI’s effect on learners at the same proficiency level

The effect of STI on the E group is clear when comparing their performance on temporal expressions with the C1 group. The two groups were assessed under the same conditions (date and duration of exam); additionally, both groups were taught by the same instructor, and the amount of time allotted for teaching and practicing target grammatical concepts in both groups was the same.
Despite the fact that the two groups received different instructional methods, the major difference between these two groups was that the E group was encouraged to use the SCOBAs during practices. Students were allowed to bring their SCOBAs (without any notes on the SCOBAs) as a reference on the exam if they wanted. In order to investigate their voluntary use of SCOBAs, a questionnaire was distributed in the end of the semester. The questionnaire will be discussed in Chapter 7. Given that STI had taken place over a relatively short period of time (see Table 5-5 for the timeline of the experiment), the learners were provided with SCOBAs on their practice activities and exams to insure that they could make full use of the mediation tool if needed. Due to the limited time of the experiment, it was suspected that the learners might not have had enough time to fully internalize the information in the instructional unit. A questionnaire was thus distributed at the end of the semester to collect students’ reflections on using SCOBAs during their practice activities, assignments, and exams in order to investigate if they were moving toward the goal of full internalization. Analysis of the questionnaire will be discussed in the next chapter. Another difference between these two groups that was not related to the teaching method per se but might have affected the scores was the actual time the two groups had for their tasks. While these two groups had the same exam on the same date and the testing time for each group was no more than two hours, the E group had a more
complicated essay task since they were assessed on their performance on aspect markers on the same exam. Both groups were assigned the same essay topic and had to write at least ten sentences; nevertheless, the keywords that had to be included in their essay were different. The E group had to use the aspect markers they had just practiced over the previous two weeks as well as other keywords they had learned from the textbook. C1 group only used keywords from the textbook which they had practiced for more than a month (the number of total keywords was the same for both groups); this difference might have affected the allotted time for other tasks (including translating temporal expressions). If the E group did need to spend more time on the essay, they had relatively less time for the translation tasks. If C1 group did not have to spend as much time as the experimental group on essay writing, C1 group had more time to solve the translation tasks. In either scenario the E group had less or the same amount of time as C1.

The results, not surprisingly, were in line with the results from other experiments with STI in different subject domains, like Pantina’s (1957) experiment involving pupils learning to write the Russian alphabet (see Haenen, 2001) or Dyachenko’s (1986) experiment in which children retold stories (see Karpov & Haywood, 1998). All of these demonstrate the advantage of systematic instruction in reducing students’ mistakes and facilitating the learning process. Moreover, compared
to other experiments in which STI was applied in the teaching of foreign languages, like Kucherova’s (1970) research program for teaching aspects and tense in English to Russian speakers (see Talyzina, 1973) or Neguruela’s (2003) study of English speakers learning Spanish aspect and mood, the quantitative analyses from this study indicated a more direct comparison of STI and traditional teaching methods by examining the performance of the experimental group and control groups and demonstrating STI’s efficiency in shortening instructional time. As mentioned earlier in this chapter, a standard syllabus for a basic Chinese course was followed by all sections of Chinese, under the premise that the experimental group had to learn an additional grammatical category (aspect markers) and every grammatical topic covered on the original syllabus could not be replaced or deleted. The result was that the actual time spent on teaching, learning, and practicing temporal expressions was less than that for C1 group. (See Table 5-4 for the teaching schedule of the E group.)

In addition to findings directly related to the effect of STI, related statistical analyses showed that a person’s habitual thought shaped by their L1 influences how he/she speaks (and writes) in the target language. In the next section, a detailed discussion of participants’ linguistic background and its influence on their performance is provided.
6.3.1.1 Learners’ L1 influence

It was hypothesized that learners with an L1 that had a similar concept to the grammatical concept in the target language would have greater accuracy in performing the grammatical concept. Statistical analyses provided support for this hypothesis.

First, in looking at the participants’ L1s, which were Korean and English, the former group performed better in translating temporal expressions on both the horizontal and vertical categories in both E and C1 groups. (see Table 6-2). Since Korean also uses vertical directional words to indicate temporal order, the original assumption was that Korean speakers would outperform English speakers on the category of vertical temporal expressions but not necessarily on the category of horizontal ones. The descriptive statistics do not support the original assumption, since the Korean speakers did better than the English speakers on both dimensions; however, the difference was smaller on the horizontal than on the vertical dimension. The inferential statistical analysis also indicates that in the overall sample the Korean speakers outperformed the English speakers when their total average scores in temporal expressions were compared. Clearly, however, the difference between the Korean and English speakers was much smaller in the E than in the C1 group, attesting to the overall effect of STI.
A likely explanation for the Korean L1 learners’ superior performance is that, in addition to the fact that Korean is close to Chinese in terms of linguistics and culture, Korean speakers are more familiar with the Chinese writing system since they have adopted part of the Chinese writing system in their own system; this may give Korean speakers a certain advantage on written tasks. A more meaningful comparison would have involved the performance of Korean speakers in the experimental group and the control group; however, due to the small population of Korean L1 speakers in both groups (three Korean students in each group), the comparison would have been meaningless in terms of statistical analysis.

The second hypothesis—that all learners would perform better in the category of horizontal spatial-temporal expressions than in the category of vertical ones—was supported. The hypothesis was suggested because both English and Chinese use the prepositional words “before/after” to indicate temporal order in the same way while the usage of vertical prepositional words “up/down” is only found in Chinese.

The subjects included in the analysis to test the second hypothesis combined English and Korean L1 speakers from both groups. The influence of L1 would have been more precisely revealed by the analysis if the comparison had been made only among the English speakers. However, as already explained, the small sample size precluded use of appropriate inferential statistics. Therefore, Korean L1 speakers were
added to the sample to make the analysis workable. Moreover, the most important reason to include Korean L1 speakers in the sample was because their working language was English and they had been educated via English to learn Chinese. It was therefore suspected that Korean L1 speakers, while they made use of vertical prepositional words indicating temporal order in Korean, they were still more familiar with the use of horizontal prepositional words to indicate temporal order since this use exists in both their first language and in their working language. Considering these factors, the analysis was thus conducted and concluded that all participants performed better on the horizontal dimension than on the vertical one.

6.3.1.2 Short conclusion

The study demonstrated the effect and efficiency of STI. Nevertheless, it is difficult to trace the perception and construction of the target grammatical concept by language learners through quantitative analysis alone. These aspects of the teaching-learning process are captured in the qualitative analysis presented in the next chapter.

In addition, the analysis of learners’ L1 to some degree corresponds with Boroditsky’s (2001) study that habits in L1 are evident even when subjects are
involved in tasks not directly related to language. In this study, the case was more complicated since the subjects were in fact participating in language activities. The inferential analysis showed that participants’ performance was influenced by their L1; a concept that exists in both the learner’s L1 and the target language might help learners to perform better on that concept. The descriptive analysis also showed that if learner’s L1 is relatively close to the target language, different teaching methods seemed to have no obvious effect on learners’ performance (see Table 6-2 for Korean speakers’ average score). It should be noted that this concluding remark is based on the analysis of available data; a longitudinal study adopted the same design with a larger sample pool (more learners and L1s) to investigate learners’ performance on Chinese temporal expressions in horizontal and vertical dimensions, respectively, at different points of time during the teaching-learning process is needed. This may in turn offer a clearer picture of the intricacy between learners’ L1, the target language, and the effects of different teaching methods. Nevertheless, from Table 6-2, the effect of STI is demonstrated by comparing the performance of English speakers in the E and C1 groups. The average score of English speakers in the E group was very close to that of Korean speakers, but there was a considerable difference between the average scores of English and Korean speakers in C1 group.
6.3.2 STI’s effect on learners at different proficiency levels

Another part of the quantitative analysis concerned performance on aspect markers by the E group and C2 group; the former group was at the beginning level and the latter was at the intermediate level. Statistical analysis showed that the performance of the E group was statistically no different than C2 group.

The most crucial influencing factor in the second part of the study (performance on aspect markers) was that the participants were at different levels of proficiency. The main reasons for these different levels were administrative and pedagogical. On the one hand, it was hoped that there would be few adjustments to the Chinese courses. In other words, both beginning-level sections taught by the researcher did not have to learn the grammatical category of aspect markers—it was not originally included in the first semester of the Chinese course. Moreover, since C1 group only received traditional teaching methods and followed the standard syllabus, it was difficult to persuade the participants in that group to learn something extra. On the other hand, it was relatively easy to teach the Chinese temporal system as a holistic grammatical concept by STI compared to teaching the temporal system as discrete grammatical points by the rules stated in the textbook. Since traditional teaching methods were adopted for C1 group, the original exercises offered in the textbook had to be accomplished, which meant that teaching time had to be spent explaining grammatical
rules, drilling, and memorizing, with little time left for extra grammatical concepts.

Therefore, the teaching agenda for C1 group at the beginning level remained the same and the comparison of performance on aspect markers was thus made on the E group and the C2 group at the intermediate level since the latter had indeed received instruction on aspect via traditional teaching methods. Nevertheless, since the researcher did not teach an intermediate-level section, it was difficult to assign the essay writing task as part of the standardized tests. The alternative was then to collect students’ essays using aspect markers and compare their writing with that from the experimental group. This decision led to several differences that might have affected both groups’ performance.

The first difference involved task setting. While the topic and requirements of the essay for both groups (see Chapter 5) were basically the same, the pressure to accomplish the task and the time limit for writing were essentially different. The experimental group had to write the essay on the exam (the same exam on which their performance on temporal expressions was being assessed); to fail the task might affect their final grades to some extent. The control group was not under time pressure since this task was assigned for extra credit, and they could submit the assignment at any time during the semester. Consequently, participants in the control group could use as much time as they needed to write the essay while the experimental group had limited
time for the task (total time for the exam was two hours).

Second, total learning time on the aspect markers for the two groups was markedly different. The experimental group received instruction on the target aspect markers near the end of the first semester (see Chapter 5 for the teaching schedule) but the control group had studied the target aspect markers in the second and third semesters. They first worked with the perfective aspect marker –le in their second semester of study, and they received instruction on the two –le structure (indicating ongoing action) and the durative aspect marker –zhe at the beginning of the third semester. In other words, by the time the two groups were assessed on their ability to use aspect markers, the control group had almost one more year of experience with the grammatical concept of aspect.

Taking the differences into account, the performances by the experimental group and control group 2 are discussed in more detail in the next section.

6.3.3 STI’s effect on novice learners

STI certainly facilitates the learning process. The most convincing evidence may have emerged from the comparison of the amount of time spent on the study of the target grammatical concept by the two groups. Nevertheless, the results indicated
that the two groups performed similarly in using aspect markers to describe an experience or event—interestingly, given that the two groups were at different proficiency levels. It may be argued that the experimental group had more recently studied the target grammatical concept, while the control group at the intermediate level was not tested immediately after completing the grammar unit on aspect markers. However, the argument is unlikely to be supported considering the nature of the tasks adopted in this study. While both tasks focused on participants’ accuracy, different methods were used in the assessment; the participants were assessed on their ability to translate temporal expressions with contextual clues (e.g., a fill-in-the-blank exercise) and use aspect markers to describe events in a short essay. In other words, participants were able to focus on the testing items without creating an entire discourse, but the requirement for cognitive capacity and linguistic ability was higher for the writing task. The translating task might be suitable for novice learners but the essay writing task was rather challenging for novice learners. The participants had to create a discourse on a given topic, pay attention to their characters, and ensure cohesion and coherence in the essay. In addition, the E group also needed to follow the specific format of Chinese letter writing and had limited time for the task. Given the fact that they had studied the target grammatical concept for a few weeks, they might not be able to deal with the various linguistic abilities needed for this complicated task.
Hence, the best explanation is that STI and the SCOBAs enabled the E group to perform as well as learners at the intermediate level, who had been studying Chinese for a longer period of time.

From a sociocultural point of view, the E group was actually more advantaged in their learning. They acquired Chinese temporal system on the foundation of well-organized linguistic analysis, and avoided possible trial-and-error experiences. The coherent and complete presentation of Chinese temporal system may enable beginning learners to better control the establishing of various time frames by using temporal expressions, and describe the temporality of an event or an action. As a result, the essay-writing task was not so difficult as it might have appeared for this group of learners. The statistical result that intermediate learners performed no better than beginning learners also indirectly attests to Neguereula’s (2008) statement that complicated grammatical concepts can be taught to novice learners.

The findings that novice learners who received STI performed similarly to intermediate learners who received traditional teaching methods illustrated the relationship between organized education and conceptual development. First, regardless of learners’ maturity (i.e. language proficiency in the presented study), systematic instruction helps learners to assimilate scientific concepts that are reasonably complicated. Therefore, linguistic analysis of a particular grammatical unit
imparted through carefully designed and well-organized instruction can and should be taught to beginning learners as long as the learners have the basic linguistic skills to learn and practice the target unit.

The second point has to do with the development of concepts by all three groups (experimental group, control group 1 and control group 2) in this study. Since both control groups were exposed to traditional teaching methods, it was expected that students would acquire the target grammatical concepts in a manner similar to spontaneous thinking. Unlike scientific thinking which starts with a professional and systematic definition of the subject matter, and then the definition is applied to explain phenomena, spontaneous concepts generate from observed phenomena and then move upward to generalizations. (Vygotsky, 1986, p. 148). Karpov (2003) also pointed out that traditional school instruction often emphasizes rote skills or verbal definitions of scientific concepts instead of real scientific knowledge, as a result, students were forced to develop spontaneous concepts. Therefore, the control groups were likely to form pseudo-scientific or spontaneous concepts of the target grammar unit through rule-of-thumb explanation, drills and lots of memorization work. Consequently they were less capable of solving the assigned linguistic tasks.
6.4 Conclusion

In this chapter, the effect of STI on foreign language pedagogy and the psycholinguistic and pedagogical implications of the application of STI to foreign language pedagogy are discussed. According to the quantitative analyses, STI did enhance students’ performance on the target grammatical concepts; qualitative analyses that focus on the L2 development of learners and learners’ reflection on STI will be discussed in the next chapter.

Notes

1. The grading is different in the lesson test than that employed in the study. In the lesson test, points would be deducted for mistakes of tones, characters (missing strokes), or the temporal units per se (e.g. year, day, and week). However, in this study, since the focus is on the conceptualization of L2 temporal system, grammatical mistakes are not counted in the statistical analysis.

2. It is not allowed to require the students to use all or only use the target aspect markers. Since the grammatical category of aspect markers were not originally covered in the beginning Chinese course, there is certain limitation on using aspect markers on the final exam for fairness between each section.

3. This is a two-tailed test with an alpha level of 0.05.

4. Sections of the intermediate Chinese course were taught by several instructors and thus made it difficult to directly assess the participants in the control group on one exam as what was done to the experimental group. Some instructors preferred to use the exam format designed by themselves and some instructors declined the idea of collecting students’ essays involving the usage of aspect markers on past exams.
Chapter 7

Data Analysis and Discussion II

7.1 Introduction

This chapter provides qualitative analyses of the learners’ performances on Chinese temporal system and their responsiveness to STI during the teaching-learning process. Various data sets on writing performance from the experimental group are examined. In addition, the chapter also examines some data from control group 1, in order to provide a close analysis of the effects of STI.

7.2 Data

Performance and definition data are analyzed to reveal the progress and development of the L2 learners who received STI. The following sections provide a detailed account of each data set.
7.2.1 Data sets

Various sets of written data including homework assignments, in-class practices, exams, essays, and questionnaires were collected in order to provide a basis for investigating students’ performance under the implementation of STI. Table 7-1 outlines the teaching activities and topics of the STI schedule and summarizes the format and the time points at which each data set was collected. The period during which all the experiments were conducted spanned eight weeks. This time frame includes the initial teaching activities that did not have accompanying practices.
Table 7-1. Schedule of STI and data collection

<table>
<thead>
<tr>
<th>Week</th>
<th>Teaching Topic</th>
<th>Assignment/Data Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Metaphor awareness activity: time and space</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introducing the Chinese temporal aspect: tense and aspect</td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>1. Temporal expression chart (Table 5-3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. SCOBA (picture 5-1-3)</td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>Review temporal expressions</td>
<td>In-class exercise: oral practice</td>
</tr>
<tr>
<td>Week 4</td>
<td>Review temporal expressions</td>
<td></td>
</tr>
<tr>
<td>Week 5</td>
<td>Preview aspect (the concept)</td>
<td>HW-essay writing (a day in your life) (data set 1)</td>
</tr>
<tr>
<td>Week 6</td>
<td>Thanksgiving</td>
<td></td>
</tr>
<tr>
<td>Week 7</td>
<td>1. Aspect marker: zhe, le...le, and le</td>
<td>HW-essay translation (data set 2)</td>
</tr>
<tr>
<td></td>
<td>2. SCOBA (picture 5-4)</td>
<td>Take-home assignments (data set 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Essay writing and sentence translation (data set 4)</td>
</tr>
<tr>
<td>Week 8</td>
<td>Performing skit</td>
<td>Questionnaire (data set 5)</td>
</tr>
</tbody>
</table>

Table 7-1 shows that the first two weeks of the agenda were spent on raising learners’ awareness of their L1 and the target language. The metaphorical concept wherein time is understood in terms of space was explicitly taught, and the conclusion of a cognitive linguistic analysis of the temporal system of both languages was discussed. *(see Chapter 4 for a detailed discussion of temporal system from the perspective of cognitive linguistics)* In week 2, the E and C1 groups were shown a
chart of temporal expressions (see Table 5-3 in Chapter 5); however, only the E group participants were shown the SCOBAs of the temporal expressions. In week 3, after the SCOBAs of the temporal expressions had been presented to the students, an in-class exercise followed. First, the exercise used flash cards to review the temporal expressions that the students had just learned in the previous week. Students were given either an English or a Chinese temporal expression. When the expression was in English they had to orally translate it into Chinese, and when it was in Chinese, they had to translate it into English. Next, the students orally translated sentences that included temporal expressions from English to Chinese and vice-versa. Representative English sentences for this exercise include “I will go shopping tomorrow” and “I went to the library yesterday,” and the Chinese sentences were similar. The E and C1 groups practiced the exercise, the goal of which was to help them understand how time frames are established in the two languages. The first data set, based on a homework assignment that required students to write a short essay about their daily lives, was collected in week 5. For this essay, the students were encouraged but not required to use temporal expressions. This task was completed by both the E group and the C1 group. The second data set, which was homework, required the students to translate a short article that included temporal expressions and aspect markers from Chinese to English. Therefore, only the E group completed this
task. The third data set, which was collected as a homework assignment, required participants in the E group to translate several English sentences describing the temporality of events into Chinese. The fourth data set was based on an exam that was also used for quantitative analysis. On the exam, the students were required to translate English temporal expressions into Chinese, to translate sentences containing aspect markers, and to write a short essay using aspect markers. The first task was analyzed quantitatively and the second and third were analyzed qualitatively. The final data set was based on a questionnaire that focused on the students’ own explanations of Chinese temporal system and their feedback about the extent to which they found the SCOBAs to be useful.

7.3 Data analysis

Qualitative analysis examines the participants’ performance as a group. It also reports on aspects of the teaching-learning process. The analysis includes data collected from the performance of the C1 group on the same tasks. In this way, the analyses distinguish between the effects of different teaching methods on beginning Chinese learners.
The following section examines each data set and explains the developmental outcomes it seeks to achieve and the students’ actual performance. The section also discusses the principles and the criteria derived from STI, according to which the analyses were conducted.

### 7.3.1 Criteria for data analysis

Gal’perin stated that when STI is implemented, “the formation of new actions and concepts are revealed by this [stage-by-stage teaching-learning] process” (Gal’perin, 1978, p. 61). In other words, when this instructional approach is successfully applied, the process of development becomes evident. In this study, each data set is regarded as a stage of new action and the formation of the target grammatical concept was shaped and revealed through the different stages.

Arievitch and Haenen’s (2005) description of Gal’perin’s teaching model was adapted to analyze the data. They categorized STI into five steps and three levels (basic level is not counted), as summarized in Table 7-2.
Table 7-2. Gal’perin’s teaching model by Arievitch and Haenen (2005)

<table>
<thead>
<tr>
<th>Step</th>
<th>Level</th>
<th>Learners’ Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Basic Level</td>
<td>Learners are oriented by external forms</td>
</tr>
<tr>
<td>Step 2</td>
<td>Material Level</td>
<td>Learners learn to use physical tools to solve problems</td>
</tr>
<tr>
<td>Step 3</td>
<td>Verbal Level</td>
<td>Learners can articulate concepts in words (overt or covert speech)</td>
</tr>
<tr>
<td>Step 4</td>
<td>Mental Level</td>
<td>Learner should be able to construct a mental image or pure conceptual thought that he or she can employ to predict outcomes of taken actions and adjust to unexpected situations</td>
</tr>
<tr>
<td>Step 5</td>
<td>Return to the first step</td>
<td>Repeat previous steps with a better understanding of the actions</td>
</tr>
</tbody>
</table>

Arievitch and Haenen noted that in real learning situations, variations are possible; that is, some steps may be merged or skipped according to the learners’ situations, abilities and prior knowledge. Accordingly, the study’s teaching-learning experiments repeated some steps and combined others in order to accommodate practical (administrative) concerns (see Chapter 5) and learners’ situations (such as the learner’s current linguistic ability).

The three levels (material, verbal, and mental) set out in Table 7-2 are referred to as levels of appropriation, which is one of the four parameters of an action considered by Gal’perin (Haenen 1996). In addition to adopting these three levels to categorize the teaching-learning progress, this study examines the quality of an action
in regard to Gal’perin’s other three parameters: degree of generalization, degree of abbreviation or completeness, and degree of mastery.

Degree of generalization refers to the ability to focus on and apply relevant scientific knowledge to various tasks. Degree of abbreviation or completeness refers to the extent to which an operating process involved in an action can be abbreviated without making mistakes. For example, beginning foreign language learners often have to formulate their answers on a piece of paper when doing oral activities. Over time they are able to more easily produce spontaneous spoken language as they gain familiarity with the language. Degree of mastery refers to the rate at which, the ease with which, and the motivation for which an action is carried out. It should be noted that while the formation of an action has to pass through the three levels, there is no one-to-one correspondence between each level and the three parameters. The four parameters (i.e. levels of appropriation, degree of generalization, degree of abbreviation, and degree of mastery) are independent. Each action at different levels of appropriation may exhibit characteristics and properties of the other three parameters. Nevertheless, the sequence of levels is fixed and a full-fledged action must have gone through the three continuous levels and demonstrate properties of one or all of the other three parameters (Haenen, 1996, p. 129). A flow chart that
illustrates the interaction between level of appropriation and the other three parameters is provided below.

![Diagram](image)

Figure 7-1. Formation of an action in Gal’perin’s teaching model

The four parameters are capitalized in Figure 7-1. The formation of a full-fledged action is indicated by the series of boxes connected by horizontal arrows. The learner has to move through the three levels (which belong to the level of appropriation) and might return to the first level with a better understanding of the action and repeat the procedures to appropriate a matured mental action. The fine arrows from the other three parameters (in oval shapes) toward each level indicate that one or two or all three parameters might appear at each level. As stated in earlier passages, the four parameters are independent, and hence there is no direct link between the level of appropriation and the other three parameters.
7.3.2 Data set one—essay writing

The first period (weeks one and two in Table 7-1) in the experiment corresponded to the basic level. At this level, the students were apprised of the purpose of the teaching plan, and the orienting basis of the chosen grammatical unit was presented to them. The students were told that the SCOBAs were meant to help them construct their own mental images of the target grammatical concept such that they would eventually be able to use the concept at will without recourse to the SCOBAs. During weeks three to five, the students learned to solve the given tasks in circumstances in which they had access to the SCOBAs (e.g., they were able to look at the SCOBAs while working on the tasks). That is, they were at the material level and, therefore, they used the SCOBA to execute specified actions.

Data set one was collected in week five. During this week, the participants in the E and C1 groups each completed a homework assignment that required them to write an essay about their lives using temporal expressions learned in the past three weeks. In the essay they were encouraged to talk about their daily lives, habitual activities, and future plans. The students had to use certain phrases and words in the textbook that they had just learned in that week in this essay. The phrases and words are: then (ranhou), after (yihou), not until (cai) and as early as (jiu); the first two phrases indicate temporal order and the latter two indicate an action happened later
(cai) or earlier (jiu) than expected. However, the use of temporal expressions (i.e. the temporal expressions listed in Table 5-3) was optional. (See the Appendix for original essay topics and instructions.)

The purpose of the essay-writing task was to examine students’ ability to construct a coherent text using temporal expressions. It was for each student to decide the time scope that the essay would address; they could write about one day, their plans for the coming semester, or their everyday lives. The analysis of data set one focuses on two points—semantically and pragmatically appropriate use of temporal expressions and whether the participants had purposefully used or avoided the use of temporal expressions. The first point is related to whether learners have the ability to use temporal expressions in a meaningful context and understand their grammatical function (i.e., their use to indicate temporal frames). The second point is related to learner motivation: as the students were not obliged to use temporal expressions, they could choose not to use them at all, to use only a few expressions, or to use numerous expressions.

In order to use temporal expressions correctly and appropriately, first, the learners had to know that in Chinese, tense is mainly expressed via temporal expressions. Furthermore, once a temporal frame is set up by a temporal expression, it is not necessary to signal the tense (i.e., to repeat the temporal expression) for other
events and/or verbs within the same frame. The temporal frame is reset only when another temporal expression appears. This feature is very different from learner’s L1 in which most verbs must be inflected to indicate tense. An example of using temporal expressions to reset temporal frame in Chinese is given below:

(1) Zuo tian wo you san men ke, ranhou wo qu
Yesterday I have three class then I go
ushuguan wo 11 dian cai shuijiao. Mingtian.
library I 11 o’clock as late as sleep Tomorrow,
wo you kaoshi.
I have test.
“I had three classes yesterday. Then, I went to the library, and I went to bed as late as 11 o’clock. I will have a test tomorrow.”

In addition to understanding the grammatical properties of temporal expressions, learners must also know how to use them unambiguously. Since marking tense mostly relies on temporal expressions rather than verb inflection, mistakes in use of these expressions can result in communicative confusion. For example, tense can only be indicated by temporal expressions in the following sentences in Chinese:

(2a) Zuo tian wo qu tushuguan.
Yesterday I go library.
“I went to the library yesterday.”
(2b) Mingtian wo qu tushuguan.
Tomorrow I go library.
“I will go to the library tomorrow.”

If a student makes a mistake in use of a temporal expression (e.g., tomorrow for today), it is difficult to recognize in the absence of other contextual clues. To complete the writing task, learners had to plan their essays in advance and decide on the temporal frames they were going to use. They were aware that their use of temporal expressions could only be fully understood if sufficient contextual clues were also included in the texts. Appropriate control of the target grammatical unit is, therefore, evidenced by the production of a coherent essay.

7.3.2.1 The experimental group

Thirteen participants in the E group submitted the homework assignment. Their essays can be categorized into three types: (1) six participants used various temporal expressions to describe their daily lives, particular events that occurred during certain periods of time, or future plans—more than two temporal frames were found in each essay; (2) five participants wrote about a day in their lives and briefly mentioned what they had done the day before and what they were planning to do on the following day—only two temporal frames were found in each essay (present and past or present and future); and (3) two participants wrote about a typical day in their lives—these essays used only the present temporal frame. Excerpts from
representative essays in each group are provided and analyzed in the following passages.

Participant 008-1 began his essay with the sentence “This semester I am very busy” (zhe ge xueqi “this semester”), and then he went on to describe his everyday life:

He calls his parents most evenings. Then he noted what he had done on that day (today) in (3a), which was immediately followed by (3b):

(3a) Jintian wo gei wo de didi (dai dianhua). Wo san
dian cai shuijiao.

Today I gave GEN brother (phone call) I three o’clock not…until sleep.

“Today, I called my younger brother, and I did not go to bed until three o’clock.”

(3b) Wo zuotian si dian cai shuijiao.
n yesterday four o’clock not…until sleep.

“I went to bed as late as four o’clock yesterday.”

He then noted that he wished he could have had more sleep; therefore, he changed the temporal frame in (3c):

(3c) Wo mingnian *zhu bu hen mang.²

I next year wish not very busy.

“I hope that I won’t be very busy next year.”
He concluded his essay by stating that he knew he would continue to be very busy and that his job is very difficult.

Participant 008-01’s essay was quite coherent, especially in terms of changing the temporal frames. The participant demonstrated his understanding of the target grammatical concept by using various temporal expressions to depict general and particular activities at different points of time. His narrative uses four temporal expressions (this semester, today, yesterday, and next year) to describe patterns of daily life, occasional events, and future plans. It is noteworthy that the essay has a logical structure in which the temporal frames connect smoothly. The essay’s opening offers a general picture of the participant’s daily life, followed by references to occasional events that happened at particular times or on specific days. It concludes by discussing the participant’s future plans. The sentences are not just meaningless imitations of the simple sentence structures practiced in class (e.g., sentences (2a) and (2b), which were used in class lectures to demonstrate the grammatical functions of temporal expressions). Instead, the essay clearly engages with notions of time and reflects the narrator’s life patterns and future schedule precisely.

Similar characteristics are found in participant 008-08’s writing. She began the essay by introducing herself, and in the second paragraph she reported her hourly schedule. In the conclusion, she wrote,
(4a) shang xingqi, wo feichang mang, wo changchang qu tushuguan.
Up week I very busy I often go library.
kan shu. Wo si dian cai shuijiao.
read book I four o’clock not…until sleep.
“Last week I was very busy. I often went to the library to study. I didn’t go to bed until four o’clock.”

(4b) xia xingqi shi ganenjie xiuja. Wo hui feichang chi.
Down week be Thanksgiving break I will very eat
he shuijiao he shop.¹
and sleep and shop.
“Next week is Thanksgiving break. I will eat a lot and sleep and go shopping.”

In addition to the hourly schedule of her college life, she clearly contrasted
what her life was like the week before and what it will be like the following week.
She also used temporal expressions to describe an upcoming event specifically that
she had submitted her homework immediately before the week of Thanksgiving
break.

While the two participants just discussed arranged their essays chronologically
others used temporal expressions to supplement their descriptions of certain events or
situations in their lives. For example, participant 008-15 frequently used temporal
expressions in order to provide a context for the events she describes:

(5a) Wo meitian you zhongwen ke. Zuotian wo (you) liang ge
I everyday have Chinese class Yesterday I (have) two CL kaoshi. Zhe xingqi, wo you san ge kaoshi. Wo hen mang.
Test this week I have three CL test I very busy “I have Chinese class every day. Yesterday, I had two tests. This week, I have three tests. I am very busy.”

First, she mentions that she had a Chinese class every day. She then notes the number of tests that she has taken recently in order to emphasize how busy she is.

Then she notes that she did not return from the library to her dorm until 5:30 a.m. She adds that

(5b) Qu nian, wo zhu zai wo mama he baba de jia. Xianzai, Gone year I live at I mother and father GEN home Now wo zhu zai wo de sushe. I live at I GEN dorm.
“Last year, I lived at my parents’ home. Now I live in the dorm.”

Although her use of temporal expressions is not as well-integrated as that of participants 008-01 and 008-08, the structure of her narrative demonstrates her voluntary use of such expressions. Each expression adds background information to the fact/situation to which the essay refers, and their use is in accord with the order of the events described.

Of the six participants who used more than three temporal expressions, only one (participant 008-10) used them in ways that are not grammatically correct. This
participant used the same temporal expression to reset the temporal frame, which is not necessary in Chinese. See excerpt (6):

(6) shang ge xingqi, wo you san ge kaoshi. Shang ge xingqi, last CL Week I have three CL test. last CL week wangshang wo si dian ban cai shuijiao. evening I four o’clock half not…until sleep. “Last week, I had three tests. Last week, I went to bed as late as 4:30.”

As explained, once the temporal frame has been set in Chinese, it is not necessary to repeat the temporal expression for every action/event. Some beginning learners might feel uncomfortable using just one temporal expression to describe several events that all happened with the same temporal frame. However, only the work of this one participant from the E group evinced usage (incorrect repetition of a temporal expression) associated with this sense of discomfort.

The participants in the second group used only two temporal frames in their essays. Most of these participants reported their everyday hourly schedules and mentioned a particular day on which they went to bed very late or woke up rather early. For example, in her essay, participant 008-2 reports that she had woken up as early as 9:30 every morning and continued by relating her hourly schedule. In the last two sentences, she writes,
(7) Mingtian wo shiyi dian qi chuang.
   tomorrow I eleven o’clock get up bed.
   “Tomorrow, I will get up at 11 o’clock.”

All the other participants in this group used temporal expressions similarly to example (7), such that all the temporal frames were set up clearly without any confusion. Only participant 008-07’s essay includes a mistake. He states that “my life is very busy, and last semester was also very busy,” and he writes ‘last semester’ as qu xueqi (gone semester) instead of shang xueqi (up semester), a mistake that obviously derived from the temporal expression qu nian (gone year) “last year.”

Participants in the third group reported their daily life patterns within the present temporal frame by limiting themselves to use of a single temporal expression “every day (meitian).”

Two salient characteristics of the usage of temporal expressions are found in the E group. First, participants rarely made mistakes in using these expressions. Typically, beginning learners find the structure of temporal expressions (directional prefix + time period) confusing. For example, shang xingqi (up week) “last week” is produced as qu xingqi (gone week), as evidenced in participant 008-07’s essay.

Second, most participants used several temporal expressions to talk about their lives
in different temporal frames. They successfully employed the grammatical concept in
order to create temporally coherent essays. The usage pattern suggests that the
participants had, by and large, neither under- nor over- used the expressions. The
expressions were used to give background information of the narrative (e.g.
participant 008-08) or to describe the changes of life patterns (e.g. participant 008-01).
The E group’s control of the grammatical concept can be better appreciated when
compared to the essays produced by group C1.

7.3.2.2 Control group 1

Of the 12 participants in the C1 group, six submitted essays with more
than two temporal frames, two submitted essays with two temporal frames, and four
submitted essays that used only one tense (present or past).

Although a similar number of participants in the E group as in the C1 group
used temporal expressions, the latter group’s use of these was less consistent and less
coherent than that of the former group. This observation is supported by the excerpts
from the group that used more than two temporal frames. Participant 006-1’s essay
used seven temporal expressions (every day, yesterday, today, tomorrow, last year, this
year, and next year) to talk about his life; however, the essay was, in fact, written in
numbered sentences and lacked structure. The sentences were numbered from 1 to 15, and each began with a temporal expression, as illustrated in items (8a) to (8d):

(8a) *Meitian* *shi dian qi chuang, wo shangke.*
    every day, ten o’clock get up bed I class begin.
    “Every day, I get up at 10 o’clock and then I go to class.”

(8b) *Zuotian, wo dai qiu.*
    yesterday, I play ball.
    “Yesterday, I played ball.”

(8c) *Jintian, wo qu shangke. Xiake yihou, wo chi wu fan.*
    today I go class begin class end after I eat noon meal.
    “Today, I went to class, and after class I ate lunch.”

(8d) *Mingtian, wo chi hangou cai.*
    tomorrow I eat Korean food.
    “I will eat Korean cuisine tomorrow.”

Though participant 006-01 used numerous temporal expressions, his essay was assembled from sentences copied from class practices and showed little ability to actually engage with or create meaning. He wrote four sentences about the activities that he intended to do the next day, such that all of the sentences began with the temporal expression “tomorrow,” with sentence (8d) being the first in this sequence. Next, he stated that he would go to the library, get up at 9 o’clock, and go to his apartment. This sequential order, however, is inconceivable, given normal human life activities, and it appears unlikely that he used the temporal frame that he actually intended.
Participant 006-02 also used numbered sentences to complete the writing task. Although his meaning was clearer, it is still unclear whether the temporal expressions were used correctly due to the unusual arrangement of his essay. For example, he had the following sentences in a sequence:

(9a) *wo you duo hao pengyou
   I have many good friend
   “I have many good friends.”

(9b) qu nian, wo luxing yilake
   gone year I travel Iraq
   “Last year, I travelled to Iraq”

(9c) zuotian he mingtian, wo you liang ge kaoshi.
   yesterday and tomorrow, I have two CL test
   “Yesterday and tomorrow, I have two tests.”

From (9a) to (9c), the participant mentions first that he had many good friends and he had travelled to Iraq during the previous year, whereas in the last sentence, he wrote “yesterday and tomorrow, I have two tests.” As stated earlier, expressing tense in Chinese relies on temporal expressions and contextual clues. The disruption of the writing flow made the context unclear; therefore, it was difficult to decide whether the learner had truly chosen the correct temporal expression. Temporal frames were not clearly identified in these discrete sentences.
Even those participants who wrote their essays in a more organized way also had a coherence problem that made it difficult for the reader to identify the temporality. Participant 006-07 began by writing about what she had done that day (today). She introduced her daily activities, and then wrote that “In the evening, I watched TV and did my homework. I don’t like to go to the library but I love my room.” In the next paragraph, she wrote,

(10a) qian nian, wo you hen duo gongke.
    front year, I have very much homework.
    “The year before last year, I had a lot of homework.”
(10b) Ming xueqi, wo you wu meng ke.
    next semester I have five CL course.
    “I will have five courses next semester.”

In (9a), although the temporal expression “the year before last year” was produced correctly, the sudden change from the present temporal frame to a further past temporal frame raises doubts about whether the participant had actually chosen the right temporal expression. Sentence (10b) immediately follows sentence (10a) in the essay, in which the student made a mistake with the temporal expression *ming xueqi (next semester) “next semester” (the correct form is xia xueqi (down semester)). After (10b), she continued to report her hourly schedule. The two temporal
expressions (“the year before last year” and “next semester”) do not seem to be
directly related to other paragraphs in the essay.

Uncertain temporality is also apparent in participant 006-10’s essay. She wrote
three similar paragraphs that were all about her daily schedule, and each paragraph
began with a temporal expression: “this year,” “last year,” and “tomorrow,”
respectively. Below are the first two sentences from each paragraph:

(11a)  *jin nian meitian  shi dian ban, wo qi chuang.* 
      this year everyday  ten o’clock  half  I  get up  bed
      “I get up at 10:30 every day this year.”
(11b)  *yi dian yi ke wo shang ke*
      one o’clock  one quarter  I  have class
      “I have class at 1:15.”
(12a)  *qu nian yi dian wo qi chuang.*
      gone year  one o’clock  I  get up  bed
      “Last year, I got up at one.”
(12b)  *meitian liang dian ban wo shang ke*
      everyday  two o’clock  half  I  have class
      “I have(had) class at two o’clock everyday.”
(13a)  *mingtian jiu dian wo qi chuang.*
      tomorrow  nine o’clock  I  get up  bed
      “I will get up at nine o’clock tomorrow.”
(13b)  *shi dian chi fan*
      ten o’clock  eat  meal
      “I (will)eat meal at ten o’clock.”

Sentences (11a) - (13b) are very similar, in contrast to the different temporal
expressions used at the beginning of each paragraph. Since the chronological order
and the scope of the time periods were rather inconsistent (this year, last year, and then tomorrow) and each paragraph had very similar content, there must also be doubts about whether the participant truly conveyed the intended temporality. The essay does not show any strong necessity to use these temporal expressions to reflect changes of life patterns, or add background information to the story. Did she simply choose some temporal expression without understanding how to use it in order to fulfill the assignment’s requirements?

As for those participants who used only one or two temporal frames in their essays, their work shows no major mistakes. In addition, their descriptions of a day in their lives are very easy to understand.

7.3.2.3 Conclusion

Data set one shows the actual performance of the E and C1 groups following instruction. The participants in the C1 group made mistakes with regard to temporal expressions that are similar in terms of morphology (word/phrase structure) to the mistakes made by participants in the E group. The common structure of Chinese temporal expressions is a directional prefix+time period, for example, xia xingqi (down week) “next week”. Mistakes in using the wrong directional prefix in
temporal expressions were found in both groups. Yet, a significant difference between the two groups inheres in their relative control of the temporal expressions. More participants in the E group than in the C1 group used temporal expressions coherently. An important indicator of mastery of the target grammatical concept is that the more advanced participants wrote essays in which all the temporal expressions function well pragmatically and semantically. Moreover, the communicative and meaningful narratives produced by the E group evidence the participants’ confidence in using temporal expressions. Many participants already had the ability to use temporal expressions to set a foreground for, and add background information to, their narratives. On the other hand, participants in the C1 group seemed to have difficulty switching temporal frame, failing to relate events in an organized way, and/or randomly choosing some temporal expressions and overusing them to describe a single event. Some of their essays remained at the level of unconnected sentences that were not organized into paragraphs. It appears that the learners in the C1 group did not have sufficient capacity to execute the task, which means that their degree of mastery is likely to be lower than that of the learners in the E group.

It should be noted that this comparison is based mainly on participants who used more than two temporal expressions. The choices of the participants who used only one or two temporal expressions are more difficult to explain. Some learners
may have been concerned with the complexity of using temporal expressions and, therefore, chose to limit the number of these expressions in order to avoid making mistakes. Others may have wanted to keep their storylines as simple as possible.

### 7.3.3 Data set two—essay translation

Two levels of action took place in week seven. Participants in the E group continued to practice using temporal expressions. They were also introduced to another part of the experiment’s orienting basis with regard to aspect markers, which is the first step in the spiral model (orienting) of teaching. By this point, students had become more familiar with the concepts that determine the correct use of temporal expressions. As a consequence, given that the learners already had experience using material presentations, the explanation of SCOBAs with regard to aspect markers could be abbreviated. It was also during this week that the students learned to use SCOBAs to solve tasks regarding aspect markers soon after the orienting step. Aspect markers have traditionally been regarded as more difficult to use than are temporal expressions from both the perspective of TCFL and that of SLA (Dietrich, Klein, & Noyau, 1995; Wen, 1997). Therefore, the first task was to assess students’ understanding of the target aspect markers.
The participants were required to translate a short passage written in Chinese into English. The target aspect markers *le…le* (ongoing action), *le* (completed action), and *zhe* (to describe a continuous situation) were used in this passage (see the Appendix for the original Chinese text and the English translation). Thirteen participants in the E group submitted the homework assignment, all of whom translated the passage correctly. Below are some examples:

(14) *wo zai State College zhu LE liu ge yue LE*.  
I at state college live ASP six CL Month ASP  
“I have lived in State College for six months.”

(15) *wo meitian dou mang ZHE zhunbei kaoshi*.  
I every day all busy ASP prepare test.  
“Every day, I was busy preparing for my test.”

(16) *wo dian LE shi ge jiaozi*.  
I order ASP ten CL dumpling.  
“I ordered ten dumplings.”

The above sentences are similar to the example sentences that were used in class lectures to explain the semantic and pragmatic functions of the target aspect markers. The next step was to guide the students to practice using aspect markers to construct sentences in Chinese. Data set three is based on material from those activities.
7.3.4 Data set three—translations of sentences

After completing the task of translating the Chinese passage into English, the participants in the E group were given five sentences in English and asked to translate them into Chinese. Each sentence contained an internal temporal constituent that could be described by the target grammatical aspect markers.

The five sentences are

(a) She has been studying Chinese for two months.
(b) I am reading a book.
(c) I ate two plates of fried noodles.
(d) I have had two cups of green tea, and I would like to have another one.
(e) After three glasses of red wine, I felt dizzy.

Sentences (a) and (d) each indicate an ongoing situation that requires the aspect marker le...le. Sentences (c) and (e) each indicate a completed action that requires the aspect marker le. Sentence (b) uses the aspect marker zai, which indicates a progressive state. Although zai was not included in the SCOBA for aspect markers, it was covered in the textbook and was, therefore, included in the practice activity. The aspect marker zai is also considered the easiest one for Chinese learners to acquire (Wen, 1997).

Since the sentences were similar to examples (14)–(16) in terms of sentential structure and semantics, the practice was originally assigned as homework; however,
most students could not successfully complete the task on their own. The practice was thus completed in class under the instructor’s guidance. First, the students were asked to describe the semantic situation expressed by each sentence; they then had to refer to the SCOBA for aspect markers. After they had decided which aspect marker should be used to describe a specific temporal situation, the instructor helped them to revise their sentences for other grammatical mistakes including word order and word choices. However, nearly two-thirds of the students still failed to produce sentences with a clear meaning. Instead of examining each individual’s output, general mistakes are discussed in the following paragraphs.

In general, most participants were able to understand that sentences (a) and (d) required the double –le structure. Their major problem, though, was that they were uncertain of where the verb should be placed in the sentence. Sentence (17) below is the correct Chinese translation of sentence (a):

(17) ta xue zhongwen xue le liang ge yue le
she study Chinese study ASP two CL month ASP
“She has been studying Chinese for two months.”

Although some students did choose the right aspect marker (le…le) to use in sentence (17), they did not know where to insert the verb “study” or they only used
the verb once. Most students correctly chose the aspect marker *le* to describe the completed action in sentence (c) and sentence (e), and the instructor helped them to sort out the correct word order in each case. The correct aspect marker in sentence (b) is *zai*, which is a progressive marker indicating that someone is in the process of doing something. The correct translation of sentence (b) is given below:

(18) Wo *zai* kan yi ben shu.
    I ASP read one CL Book.
    “I am reading a book.”

Although beginning learners usually do not have many problems understanding and using the progressive aspect marker *zai*; however, once the durative and progressive marker, *zhe*, is introduced, many students manifest confusion between use of the two markers. While both markers denote a progressive state, *zhe* is usually used to describe simultaneous actions or enduring state that serve as background information. *Zhe* is used to modify punctual, stative, and emotion verbs (e.g. open, read, remember, love).³ Three students used the aspect marker *zhe* to describe the progressive state in sentence (b), whereas the rest of the students used *zai*. 
At this point, students already had a basic, although vague, idea of the target aspect markers; they might be able to predict the correct aspect markers but still could not use them to form sentences with clear meaning. This data set showed the participants’ limitations in using the target grammatical concept, such that mediation in the form of more direction and assistance in the material SCOBA and/or from the instructor was strongly needed. The participants still needed orientation in using the SCOBAs. In addition, the degree of generalization was considerably low at this stage, since most participants failed to apply the grammatical concept to the task.

7.3.5 Data set four—sentence translation and essay writing

Data set four consisted of sentence translations and essays by participants from the E group. The sentence translations and essay were components of the final exam and both focused on using aspect markers. During the test, if the students thought SCOBAs could provide assistance, they were allowed to use them.

Two sentences in English were to be translated into Chinese. These were as follows:

(19) I am busy reading my book.  
   “wo mang ZHE kan wo de shu.”  
   I busy ASP look I GEN book.

(20) I have lived in State College for three years.
Sentences (19) and (20) were similar to the sentences included in data set three.

Twelve of the 16 participants translated sentence (19) using the correct aspect marker, *zhe*, and 14 participants translated sentence (20) using the correct aspect marker, the double *le* structure. Although some students still made mistakes on word order, their performance in terms of using the aspect markers had definitely improved. Stronger evidence demonstrating the participants’ ability to use aspect markers, however, could be found in their essay writing.

Each participant had to choose from the target aspect markers taught via SCOBAs, the *zhe, le*, and the double *le* structure, to write an email describing his or her school life. (See the Appendix for the assignment’s complete instructions.)

In their essays, most students chose to use *zhe* and the double *le* structure. It is reasonable to speculate that they may have chosen these two aspect markers because the translation section on the same test included similar sentences (see sentences (19) and (20)). However, it was not possible for the students to directly copy and paste the translated sentences into their essays. It is therefore likely that the students understood how to use the aspect markers in a way appropriate to the context of their essays.

Most of the participants had grasped the pragmatic and semantic properties of the
aspect marker *zhe* in denoting the sense of durative and simultaneous actions. Below are examples using *zhe* from individual participants:

(21) *wo mang ZHE xie zhe dianzi youjian.*
    I busy ASP write the electronic mail
    “I am busy writing this email.”

(22) *wo yimian xie ZHE dianzi youjian, yimain da dianhua*
    I while write ASP electronic mail while make phone (call)
    “I am writing email while making a phone call.”

(23) *kan shu yihou wo chi ZHE wanfan kan dianshi.*
    Read book after I eat ASP dinner watch TV.
    “After studying (reading the book), I was eating dinner while watching TV.”

(24) *wo ZAI kang ZHE shu xie zhe xin.*
    I ASP read ASP book write the letter.
    “I was reading the book while writing the letter.”

These examples showed that the participants who used the aspect marker *zhe* had not merely copied the sentences they had practiced before. Instead, they had infused the sentences with their own meaning. For instance, sentences (21), (22), and (24) offer appropriate descriptions of the current activities in which the writers were engaged. Sentence (23) also provides sufficient information about the writer’s activity and clearly describes the internal temporality of the activities. At this stage, although some participants might still have needed mediation from the SCOBAs, their overall performance had improved greatly. Compared with their performance at the previous
stage, where most participants failed to produce complete sentences on their own they could now generate sentences without the instructor’s guidance. The participants made few errors on the aspect marker 

*zhe*. Among the 16 participants, 10 used 

*zhe* in their essays and seven used the aspect marker correctly. Obligatory context for 

*zhe* involves descriptions of simultaneous actions (e.g. *laoshi* (teacher) *zhan* (stand) *ZHE shang ke* (teach class). “The teacher is standing while teaching the class”) or a stative (e.g. *men* (door) *kai* (open) *ZHE*, “the door is open.”). Participants who used the aspect marker 

*zhe* correctly all used it to describe simultaneous actions (and they all only used it once in their essays). The erroneous sentences that used 

*zhe*, however, were not clear in meaning; it is difficult to know whether the participants intended to use the marker to describe simultaneous actions or a durative state. The mistakes in these sentences presumably arise from the participants’ misunderstanding of either verb properties and/or word order. Below are the examples:

(25)* wo mingtian xihuan qu Zhe tushuguan xue.  
I tomorrow like go ASP libaray study.  
“Tomorrow, I would like to go to the library to study.”  
(26) *wo ZAI xian ZHE kan shu. wo xie LE xin gei ni.*  
I ASP before ASP read book I write ASP letter to you.  
“I was before reading the book. I wrote the letter to you.”
A semantic problem is found in sentence (25), the actions “go” and “study” do not happen simultaneously (the person has to go to the location first and then studies at that location) and thus makes the sentence semantically implausible. Moreover, the sentence is still erroneous even if the participant (008-01) wanted to use zhe to describe a durative state. Although qu “go” can be used alone in a sentence such as wo qu xuexiao “I will go to school”, the English translation that is closer to the original Chinese meaning should be “I am departing from ...(e.g. home) and go to school now”; qu is not an action verb but rather a directional verb in Chinese. It is often used in compounds such as like jin (enter) qu (go) “go inside” and cannot be used with the durative aspect marker zhe. Sentence (26) seems to depict a durative state. Participant 008-09 might want to indicate that before he wrote the letter, he was reading something. The major problem in this sentence is word order; zhe should be placed after the verb. The correct sentence should be: Wo xianshi “before” zai kan ZHE shu. Nevertheless, both sentences indicate that the students tried to use the aspect marker zhe to describe simultaneous actions or a durative state.

Participants who used the double le structure all used the ongoing sense in their sentences. For example,

(27) Wo xue zhongwen xue LE san * (ge) yue LE
I study Chinese study ASP three CL month ASP
“I have been studying Chinese for three months.”

(28) Wo kan LE yi ben shu LE.
I read ASP one CL book ASP
“I already read one book (there are more books for me to read).”

(29) wo *zhu zai daixue LE san nian LE
I live at college ASP three year ASP
“I have lived on campus for three years.”

Though the above examples contain some errors in terms of word choice
and/or word order, they do accurately express ongoing actions. Surprisingly, most
errors have to do with the perfective aspect marker le that indicated a complete action,
resulting in difficulties in interpretation of several sentences. This problem can be
attributed to two sources: the first is that beginning learners are often confused by the
notion of using the sentence-ending particle le, which indicates a change of state with
the perfective aspect marker le, which indicates a complete action (the two forms are
homophones and are represented by the same character “了”). The second reason is
that they might still regard the aspect marker as indicating the past tense. Nevertheless,
several participants did appropriately use this aspect marker to express a completed
action, as illustrated in the following sentences:

(30) wo xie LE xin gei ni.
I write ASP letter to you.
“I wrote a letter to you.”
Sentences (30)–(33) depict particular actions completed by a certain point in time. Problematic sentences using the aspect marker le follow:

(34)* wo zheng ZAI xue LE zhongwen.
I exact ASP study ASP Chinese.
“I am studying Chinese.”

(35) *wo de xueqi hen hao LE.
I GEN semester very good ASP.
“My semester was very good.”

(36) *wo shi hen mang LE.
I be very busy ASP.
“I was very busy.”

Sentence (34) should express an ongoing action; therefore, the aspect marker le is inappropriate. It is noteworthy that two participants tried to conclude their reflections on the past semester in sentences (35) and (36) and thus employed the aspect marker le to indicate an occurrence (the semester) was over. Nevertheless, the perfective aspect marker le cannot be used with most copular verbs in Chinese. In fact,
although beginning learners might have a good understanding of the semantic and pragmatic functions of aspect markers after STI, they still need to develop their understanding of the properties of specific verbal categories to enable them to use the aspect markers in a fully appropriate way. For example, sentences (35) and (36) are influenced by English constructions. That is, in English it is possible to modify the verbs in these sentences using durative and perfective aspect markers. However, in Chinese, these verbs cannot be modified by these aspect markers.

In terms of the development of the target grammatical concept, data set four included far fewer errors than did data set three. Although the participants completed data sets three and four with the mediation of SCOBAs, they showed a higher degree of mastery, generalization, and abbreviation in data set four. First, they translated the sentences and wrote the essays without the instructor’s guidance. The task was more complicated than the task in data set three. The participants not only had to translate assigned sentences, but they also had to produce their own sentences to describe temporal events. Second, in the previous stage, most participants could not even translate the English sentences into Chinese in the practice. However, in data set four, they translated the sentences with greater accuracy and in less time. In sum, the overall quality of the specified language uses (i.e. the action executed) was greatly improved in terms of smoothness, independence, and accuracy.
It is of great importance to understand the ways and extent to which participants relied on SCOBAs in doing their homework and exams and whether the SCOBAs helped them to use the grammatical concepts to execute the different tasks in data sets one to four. The next section, therefore, discusses the participants’ development of the grammatical concept and the developmental outcome and the teaching-learning process in reference to the questionnaire completed by the participants from the E group at the end of the semester.

7.3.6 Data set five—questionnaire

In the final week of the experiment, the students were asked to complete a questionnaire in which they gave their definitions of the grammatical concepts and recalled if SCOBAs had assisted them during the learning process. This task assimilated to the verbal level in which learners are able to express their thoughts in words without the assistance of material representations of the grammatical concepts.

First presented in Chapter 5, the questions are presented again below for ease of reference:
1. Can you explain how Chinese (the language) indicates the concept of “past,” “present,” and “future,” and how it differs from English? Can you give some examples?

2. Can you explain the following aspect markers “le,” “le…le,” and “zhe”? How can you use these to describe events or actions? Can you give some examples?

3. Do you think the pictures (calendar, train, and egg) make the concept of time in Chinese more meaningful to you, and do they help you when you are doing your homework and/or tests?

Twelve participants in the E group completed the questionnaire. During the experiment, external forms were used first to orient the participants, and then they learned to use SCOBAS to help them to carry out the tasks. The first two questions, therefore, were designed to discover if the participants had advanced from the material level to the verbal level or even the mental level. In other words, the point of these two questions was to establish whether the students had gradually acquired the target grammatical concepts and were able to explain Chinese temporal system in their own words. Participants’ complete definitions and examples are provided in the Appendix. Excerpts that illustrate participants’ reaction and reflection on the teaching method are presented in the following passages.
Eight participants clearly stated that there is no tense in Chinese and that the expression of temporality relies on time phrases. For example, participant 008-09 pointed out that, “the verbs in a Chinese sentence are not conjugated in any way that would indicate the temporal time of a sentence…. in Chinese temporal aspect markers are used to indicate time in a Chinese sentence. These temporal markers are “yesterday”, “today”, “tomorrow’ etc.” He also gave two examples to demonstrate his understanding. The sentences he wrote were “wo (I) zuotian (yesterday) qu (go) tushuguan (library) [Yesterday, I went to the library]” and “wo (I) mingtian (tomorrow) qu (go) tushuguan (library) [Tomorrow, I will go to the library].” Participant 008-10 also gave a similar example in Chinese (“Yesterday, I went to class”) and commented that “the verb has no tense.” Participant 008-03 explained that “the Chinese language indicates past, present and future by using time expressions such as tomorrow, the day before yesterday, etc. Participants 008-01 and 008-12 both explained that in Chinese time flows in a way that conceives of front as past and behind as future, which is opposite to English. The answers indicate that the participants, in addition to their satisfactory performance on the test, were able to provide their own explanations and even examples in overt (written) speech.

The second question focused on the participants’ understanding of aspect. The participants who gave well-defined answers to the first question also gave clear and
accurate answers to the second question. Participant 008-02 indicated that “zhe is used to explain that an action is either ongoing or is simultaneous with another action (since no tenses are used).” She also gave this example: “wo zai mang zhe shangwang” /“I am busy on the internet.” Although the participant somewhat misunderstood the distinction between tense and aspect, her definition and examples show that she could explain the concept in her own words and use the grammatical concept to convey meaning. The other participants all indicated that le is used to describe a completed action, and le…le describes an ongoing action. Participant 008-09 precisely explained that le…le indicates that “(the action is) still continuing in the present moment.” Not surprisingly, the participants who failed to verbalize the temporal concept correctly in question one continued to show misunderstanding; that is, they could not distinguish tense from aspect. For example, participant 008-07 could not distinguish tense and aspect. In explaining how to indicate tense in Chinese, he stated that “for past, they use le and for present they just use the normal form of verb or vocabulary. For the future, I think they use ba.” The explanation shows that the participant obviously did not know how to establish time frames in Chinese. He repeated the fallacious explanation in answering the second question and stated that “Le is when it is in past tense”.
The two definition questions show that most participants at this stage had advanced to the verbal level. Regardless of their actual performance (and some of the participants did evince a mature ability to control the target grammatical concept when conducting the tasks), most offered meaningful and consistent explanations in answering the two questions. In fact, the participants performed better in giving definitions of the grammatical concepts than on using the grammatical concepts to execute tasks. The students improved understanding of the concepts should later push their development in performance. Negueruela (2003, 2008) claimed that the organized teaching of concepts promotes the development of concepts to a higher level (i.e. learners are more aware of the concepts and be able to regulate themselves), and development in performance is a consequence of the further development of conceptual understanding. Since the grammatical concepts were introduced to the participants in a coherent and systematic manner from the beginning, possible confusion caused by traditional teaching methods (i.e., unsystematic presentation of grammatical items) were reduced by STI. This made it easier for participants to grasp and explain the concepts. However, the participants still required some time to gain full control of the concept, with respect to performance.

The third question asked the participants to reflect on their use of the SCOBAs. The purpose of the third question was twofold: the first was to complement the
conceptual explanation that participants had given in the earlier questions; the second was to investigate how the participants had used the SCOBAs during the teaching-learning process. Overall, the point was to determine whether through using SCOBAs the participants had constructed their own mental representation of the target grammatical concept.

The responses to the third question were classified according to the participants’ attitudes toward SCOBAs and self-reported understanding of the target grammatical concept. The first category comprises answers giving positive feedback to using SCOBAs and describing how they helped the participants to understand the concept. The second category comprises answers from participants who recognized the mediation that SCOBAs provided when conducting the tasks but did not provide reflections on their understanding of the target grammatical concept. The third category consists of answers that show diverse attitudes toward SCOBAs.

The first group has five participants, who all indicated that the SCOBAs were helpful in understanding the temporal concept. Participant 008-01 stated that “pictures definitely help to visualize the concept. It makes it easier to understand and memorize. One still needs explanation to understand but looking at the picture, it reminds you what was taught in specifically about the topic.” Participant 008-02 reported that “the pictures are extremely helpful because shang (up) and xia (down) are used to describe
past and future, but ‘up’ and ‘down’ confuse me when trying to learn the meaning.

With the pictures, I am able to understand it easier. The other picture that was very helpful was the *le* and *zhe* sheet.” Participant 008-06 offered a similar report: “the pictures helped me visualize the concepts that had to do with time.” The answers state that the visual schemata presented the grammatical concept in a concrete and accessible way. Moreover, with the visual schemata, the participants could understand or recall the target grammatical concept more easily. When the participants sought mediation from the SCOBAs, they may have gradually built their own mental representations of the concept. Nevertheless, their answers indicate that they were continuing to focus on the external mediation that helped them to establish an intermental relationship.

It is noteworthy that two other participants did show that they were moving toward a more advanced stage during the teaching-learning process, the goal of which is to internalize the concept. Participant 008-09 reported that “I found the picture of the train and how the Chinese feel that they see the past in front of them traveling away helpful to understanding temporal aspect in Chinese. As well as the egg example just for the fact that it gives a good mental picture of the aspect markers.” The participant explicitly stated that the SCOBAs not only explained the temporal concept but also presented the concept at the mental level. Although this brief answer does not
provide sufficient evidence that mental development is underway, it does suggest that
the mediating artifact is not only an external object used to regulate linguistic
behavior but that it also has the potential to be transformed into an accessible mental
tool. Participant 008-12’s account also provides evidence that he had begun to
develop a better understanding of the concept on the internal plane: “They [the
pictures] were a little strange at first but they actually did help a lot. It helped explain
a basic idea and it stuck in my head so it did help realize the concept of time.” For
participant 008-12, to some degree, at least, involuntary memorization had taken place
as indicated by the statement, “it stuck in my head.” This might serve as an important
step on the way to full internalization. Internalization refers to the idea that an
individual can conduct cognitive tasks “on the basis of mental representations”
(Stetsenko, 1999, p. 245) and decrease his/her reliance on external forms of mediation
(Lantolf & Thorne 2006). Therefore, that the two participants referenced mental
representation may mean that STI not only had a positive effect on their performance
but also helped them to understand the grammatical concept. It should be noted that
none of the participants in the first group explicitly said that the SCOBAs helped them
do the homework or tests; instead, they focused on the mediation that the SCOBAs
provided as helping them to understand the concept better.
The second group included two participants who expressed a positive attitude toward the SCOBAs in terms of assisting them in doing homework and tests. Participant 008-03 stated that “I think the pictures were helpful in conveying the concept of time while doing homework and tests.” Participant 008-14 also claimed that “the pictures did a better job of helping me understand and grasp the concept of tense in Chinese. They were also very helpful because they were used as a quick reference guide during homework and exams.” This group appeared to be more reliant than the first group on the physical presence of the concepts. It is clear that the participants in the second group regarded the SCOBAs as a tool that provided analyzed knowledge for them, although they had not yet internalized that knowledge. The SCOBAs were at best a “quick reference guide” that they could turn to when they had difficulty doing the homework and exams. The participants were able to state the concept overtly.

Participants in the third group were either cautious and/or had problems using the SCOBAs. Among these participants, the Korean speakers evinced attitudes toward the SCOBAs that are particularly contradictory. Participant 008-11 stated that “I think it certainly helped me when I was doing my test or quiz because I often confused that the word for last is ‘shang’ and the word for next is ‘xia’ because in Korean it is kind of backward.” She did not continue to explain how “up” and “down” are used in
Korean in a backward fashion (in terms of temporal or spatial order). Another Korean-speaking participant (008-07) claimed that “It helped me a little. I knew the concept of past because I was in similar culture with China, so I did not have any confusion about time.” While their answers both related to their native language/culture, their attitudes toward SCOBAs were rather diverse. The first participant might have experienced confusion in using “up” and “down” in a relative sense (to indicate “last” and “next”). If so, she would have found the SCOBAs helpful in explaining the temporal concept in Chinese. The second participant might already understand the concept very well; therefore, he would have found the SCOBAs to be of little help. His reflection might be more representative of other Korean speakers (in both the E and C1 groups)—SCOBAs were of less help to them than to English speakers. This speculation may be supported by the quantitative analyses presented in Chapter 6.

Other participants in the third group indicated that the SCOBAs had been of limited use, stating that some of the visual schemata did not present the concept clearly enough. Participant 008-10 stated that “They are helpful to give a hint about the time expression. However, the concept behind that is not clearly illustrated and more explanation is needed for someone new in Chinese to understand it.” For participant 008-16, “the calendar and the trains were helpful to further understand the
way time is viewed in Chinese.” However, this participant added that the egg “was somewhat confusing and thus I chose not to use it on my homework and tests. The egg example didn’t seem to be as readily understandable as the other examples.” It was evident that these participants required more orientation and guidance. What is noteworthy is that participant 008-10 indicated that she had difficulty in understanding the concepts (and the SCOBAs), and her performance reflected this (see example (6) in this chapter). Participant 008-16 was more advanced than participant 008-10, given that the former understood the concept of time via the SCOBAs and even could decide whether he wanted to rely on the SCOBAs. The participants in the third group gave various kinds of feedback in regard to the SCOBAs (and STI). Overall, the extent to which they found the SCOBAs useful varied considerably, especially with regard to their linguistic background and their acceptance of the explanation of the concept. The reflections of the participants in the third group pointed to the need to modify the SCOBAs according to learner’s previous learning experience. This point will be discussed further in the concluding chapter from the perspective of pedagogical considerations.

The questionnaire revealed the participants’ development of the target grammatical concept was at different levels. In general, STI helped the participants understand the concepts better and even assisted them in establishing their own
mental representations. Most participants were able to use their own words to explain temporal concept in Chinese. Although some participants were cautious about using the SCOBAs, most acknowledged that the SCOBAs did provide useful mediation. Although no conclusive statements can be made at this time, the definition answers and self-reported reflections at least demonstrated that most participants were at the verbal level by the time the questionnaire data was collected and that some of them might have constructed mental representations of the concept or did not need the physical presentation of the concepts to conduct mental activity. It should also be noted that the experiment period was not very long (eight weeks), such that the participants might have shown more evidence of internalization if they had been given more time to develop the concept on the intramental plane.

7.4 Conclusion

In this chapter, written data from the E group was analyzed according to the participants’ linguistic performance and evaluated in terms of the parameters of STI. Karpov and Haywood (1998, p. 32) have observed that “the main features of knowledge acquired in the course of theoretical learning are a high level of mastery and maintenance, broad transfer, and intentional use by students.” The analysis
showed that the participants made progress in terms of the degrees of generalization, abbreviation, and mastery across each stage (data set). As they completed the different tasks, the number of mistakes they made and the time and guidance they needed to carry out a task gradually lessened. In addition, in the skit performance (see Table 7-1, week 8), the students had voluntarily used aspect markers in their scripts, even though they had not been required to do so. Through the learning process, the participants imitated the sentence patterns first; then they created their own sentences (with their own meaning) using the same sentence patterns; and, eventually, they used the grammatical concept in collaboration with fellow classmates in order to make more meanings. Due to the short experimental period and administrative concerns, it was difficult to assign more tasks to the beginning learners in order to investigate the entire path of their development of the grammatical concept. However, the data analyses presented in this chapter show that most of the participants knew how to use physical tools to solve problems (material level) and articulated the target grammatical concept unequivocally (verbal level). The analyses reveal that the E group exhibits more maturity than the C1 group in adopting temporal expressions to produce written discourse.

A comparison between the E and C2 groups is not presented here for the following reasons: first, the C2 group made fewer mistakes than the E group (see
Chapter 6. Second, most mistakes made by the C2 group related to the incorrect placement aspect markers in sentences (see example (26) above) not to a mismatch of aspect markers and verbs (see example (25)). However, the primary findings from the C2 group also reinforce the argument that explicit instruction of verbal semantics is essential to a full-fledged understanding and use of aspect markers.

Notes

1 Although temporal system was presented from a perspective of cognitive linguistics, the students were only taught by the conclusion of the analysis not the discussion of cognitive linguistics per se.
2 The sentence has some grammatical mistakes, but it is still comprehensible. The student misused the verb zhu “wish, bless” for xiwang “hope”; however, the word “hope” is not taught in this course. This learner’s mistakes that are not related to the temporal system are preserved without detailed explanation and marked with *.
3 Aspect markers are capitalized in transcription and in word-by-word translation as well.
4 Li and Shirai (2000) assert that although zai and zhe are both considered imperfective aspect markers, only the former aspect marker denotes a progressive state (an action is in progress), and they consider zhe as a morpheme indicating a durative state (an enduring or continuing situation).
5 Although qu “go” can be used alone in sentence like wo qu xuegiao “I will go to school”, English translation that is closer to the original Chinese meaning should be “I am departing from …(e.g. home) and go to school now.” Therefore, qu is not an action verb but rather a directional verb in Chinese. It is often used in compound like jin (enter) qu (go) “go inside”.
6 In fact, Korean uses “up” and “down” to indicate sequential order. For instance, if a book has two volumes, the first volume is volume “up” and the second one is volume “down.” The same usage is found in Chinese.
The scripts were not included in the implementation of STI; instead, they were used to fill one of the course requirements of Chinese 001. As the script required collaborative work, the contributions of individual participants could not be identified.
Chapter 8

Conclusion

8.1 Summary of findings

The dissertation investigates through quantitative and qualitative analyses the effect of STI L2 development. The overall findings demonstrated that the concept-based teaching had a positive impact on use of temporal markers among novice CFL learners. The quantitative analyses presented in Chapter 6 showed that STI assisted the experimental group in outperforming the elementary-level control group 1 with regard to translating temporal expressions from English into Chinese. Moreover, the experimental group performed no differently in terms of statistical significance than did control group 2, which was at the intermediate level, on using aspect markers to describe events. The qualitative analysis in Chapter 7 examined the experimental groups’ written performance data, which includes a translation task and an essay on temporal expressions and aspect markers as well as questionnaires that probed the learning process. Control group 1’s translation exercises and essay on
temporal expressions were also examined in Chapter 7 for comparative purposes. The performance data evidenced learners’ improvement in using temporal expressions and aspect markers, and the survey data exhibited the learners’ positive attitude toward STI.

In addition to the aforementioned findings, another significant finding is the comparison of English L1 and Korean L1 participants’ performance in the experimental group and control group 1. While the average scores of the experimental group were higher than those of control group 1, it was found that the average scores of L1 Korean participants in both groups were the same (see Table 6.2 in Chapter 6). The reason that L1 Korean learners performed similarly in both groups is likely because Korean, like Chinese, uses vertical temporal expressions may owing to that Korean language also has vertical temporal expressions. In other words, L1 English participants in the experimental group scored much higher on average than their counterpart in control group 1. This finding in fact demonstrates the effect of STI even more clearly. While the inferential analysis attested that L1 had influence on CFL learners’ performance (L1 Korean participants did better than L1 English participants in both groups), the descriptive analysis in Table 6.2 indicated that STI narrowed the gap considerably between L1 English and L1 Korean participants in the experimental group.
Meanwhile, L1 English participants in control group 1 seemed to have had difficulty acquainting themselves with the new concept that time is conceptualized on a vertical plane in Chinese. The result also suggests the necessity and importance of taking learners’ L1 into account when developing teaching materials and an instructional plan.

With regard to the respective performance of E group and C2 group on using aspect markers, the result showed that through STI the E group performed no worse than C2. The implication is that complicated grammatical structures can be taught at elementary level as long as they are presented in a coherent and consistent teaching method. The qualitative analysis revealed that as the course progressed, the E group needed less time to complete the assigned tasks with fewer mistakes. The E group also exhibited more coherence and consistency in using temporal expressions than C1 group.

From the questionnaire, most participants could articulate the conceptualization of time in their own words correctly and acknowledged the assistance by SCOBAs. A few participants pointed out that although the explanations of temporal system seemed to be confusing and complicated in the beginning, as they had more practices along with use of the SCOBA, the concepts became clearer.
8.2 Pedagogical implications of the study

The study has several pedagogical implications for the teaching of CFL and foreign language pedagogy in general. First, the empirical study demonstrated that sophisticated grammatical concepts can be translated into accessible theoretical knowledge for foreign language learners and the coherent presentation of the knowledge can help learners establish a solid foundation for development. Gal’perin’s STI stressed that any theoretical knowledge, even knowledge as complex and abstract as Chinese temporal system, if well-analyzed and presented in a systematic and comprehensible way, can be taught even to beginning learners. The present study proves that it is not necessary to withhold the teaching of certain complicated grammatical structures of that concept until the learners are linguistically more mature. As a matter of fact, the principle of STI is that education should lead development. STI’s stepwise teaching procedures are designed to foster the development with the ultimate goal that learners can recontextualize the knowledge in the future. Although the study did not show that the learners exhibited clear evidence of internalization, their performance illustrated the positive effects of the concept-based, stepwise teaching approach.

Second, the study explored an under-researched area in foreign language teaching. The teaching of figurative language has focused mostly on idioms, or
formulaic expressions, but conceptual metaphors are relatively less discussed.

Conceptual metaphors are deeply embedded in our everyday language and thus are not easily detected as a possible source of problems in L2 teaching and learning. In the field of TCFL, only a few researchers who are experienced Chinese teachers noticed the confusion experienced by English L1 speakers as a result of Chinese spatial-temporal expressions on the vertical plane. To acquire a new language means to acquire or establish a new concept in one’s original cognitive system, the intrinsic complexity of conceptual metaphor deserves to be studied not only for linguistic analysis but also for foreign language teaching and learning.

Third, from a practical view, STI is more efficient than traditional teaching methods. The present study showed that STI can include more grammatical structures than traditional curriculum and the learners’ performance was even better than those who received traditional teaching methods. Learners who received STI were efficient in completing more tasks with fewer mistakes than those who received traditional instruction (see Chapter 7).

The last implication concerns the impact of language learners’ L1 on the design and implementation of a teaching plan. Numerous studies have investigated the influence of language learners’ L1 on their acquisition of a new language. The result of the study showed that when learners’ L1 has a similar conceptualization as that in
the target language, STI did not exert much effect on these learners’ performance. Since the design of SCOBAs was partly, and the explanation of the concept was mostly, based on the comparative analysis between English and Chinese, it is not too surprising to find that STI had less effect on the Korean L1 participants. However, the pedagogical implication is that a comparison of the target grammatical concept in learners’ L1 and the target language can be effective in raising awareness of those learners whose L1 indeed parallels the L2 with regard to a particular feature. It is also suggested that in a situation where learners have different L1s the development of teaching materials and accompanying explanations need a more comprehensive and systematic pedagogical plan prior to the initiation of instruction.

8.3 Limitation of the study

Although the present study has made contributions to Chinese and general language pedagogy, the study also encountered several practical shortcomings arising primarily from the concrete circumstances in which the instructional program was implemented. First of all, the original design of STI was changed considerably in order to accommodate the requests made by the language program administration. The motivational stage of the plan had to be shortened in order to allot more time for
other standardized course requirements. Scheduling constraints resulted in a one-week Thanksgiving break between the explanation of aspect and the introduction of the SCOBAs, on the one hand, and opportunities for practice, on the other. After the break, the researcher/instructor had very limited time for reviewing and practicing the SCOBA on aspect. The final written test had to be held a week earlier than originally planned due to administrative reasons and the result was that the experimental group had to take the test almost immediately after they had studied the concept of aspect. The lack of practice of the second grammatical topic (aspect) might explain why the average scores of the experimental group were slightly lower than control group 2, although, as pointed out, no statistical difference between the groups was found.

The last two stages of STI, stages of covert speech and mental stage were not observed during the teaching-learning process. While the learners had acknowledged that the SCOBAs helped them to understand the concept and a few participants claimed that they did not need the SCOBAs to assist them on the last few tasks because they already understood the concept or could recall the SCOBAs in their mind, no additional evidence was uncovered to indicate that they had moved to the stage of covert speech or even internalization. The original study design intended to record and/or videotape students’ in-class practice and face-to-face interview with the instructor to discover if there was any transformation of activity (e.g. from explicit
verbal explanation to whispered self-explanation or silence, less reliance on or even abandonment of SCOBAs); however, the original design was not approved by the IRB (Institutional Review Board). The learning process could have been more clearly revealed if recording had been allowed. For example, some native speakers of Chinese would point up unconsciously when they mention “last week” or “last month”. This gesture may be seen as their mental representation of the spatial-temporal concept. If the CFL learners had been found to have similar gestures, that might be considered as a reconstruction of the temporal concept. Improvised practices such as role-play, paired conversation and essay writing may also suffice as indirect evidence of internalization. Since conceptual development is a lengthy process, it is unfortunate that the eight-week long experiment period was too short to create more opportunities and include more activities to cultivate and observe conceptual development.

Besides the general positive feedback to STI, some participants reflected a level of confusion caused by the SCOBAs, especially the SCOBA for aspect markers. Instructors then must be prepared to modify a SCOBA when necessary, even if it is during the teaching process itself. Teachers and researchers should recognize that there is no ideal or perfect SCOBA for all students in all situations, and therefore continuous modification and adjustments of the SCOBAs may be necessary.
8.4 Directions for future research

It is interesting to find that earlier STI-L2 studies (before Negueruela’s 2003 study) are based more on structural linguistic analysis (e.g. Kabanova’s (1985) analysis of deep structure of sentences), while more recent STI-L2 studies have primarily adopted cognitive linguistic analysis in their pedagogical presentations. Since cognitive linguistic analysis is based on human being’s commonly shared experiences (mental and/or physical), cognitive linguistic analysis may be most compatible with STI for the following reasons. First, cognitive linguistics explains seemingly irregular and complicated linguistic features from an intuition-driven and/or experiential way that generate meaningful linguistic analyses instead of formula-like grammatical rules. The meaningful analyses may make the explanation of the grammatical concept and even contrastive analysis between the target language and learners’ L1 more easily understandable. Second, the purpose of SCOBAs is in line with the nature of cognitive linguistic analysis. The purpose of SCOBAs is to present theoretical concepts in concrete and accessible forms. Cognitive linguistic analyses explain language features in concrete forms or in terms of physical experiences and these are readily adaptable as SCOBAs. It is expected that more
STI-L2 studies can explore different grammatical concepts by adopting cognitive linguistic analysis (see Tyler, 2012).

In addition, more longitudinal STI-L2 studies are needed in order to provide a full picture of conceptual development. Most recent STI-L2 studies (including this dissertation) mainly investigate the immediate effect of STI but have not traced learners’ performance and development after a longer period of time has elapsed. A longitudinal study may not only inform the pedagogical practices but also shed light on the acquisition and understating of a new grammatical concept.
References:


The Cambridge Companion to Vygotsky (p.50-p.76) Cambridge: Cambridge University Press.


Danesi, M. (1993). Metaphorical competence in second language acquisition and


Lantolf, J. (2011). The Sociocultural approach to second language acquisition:

Sociocultural theory, second language acquisition, and artificial L2 development.


New York : Mouton de Gruyter.

Li, Q. (2002). Review of the Compulation and Research of L2 Chinese Textbooks in
Recent 20 Years. Yuyan wenzi yingyong [Applied Linguistics], No.3, 100-105.


*Journal of pragmatics.* doi:10.1016/j.pragma.2011.06.009


Zhang, J. (2003). Conceptualization and expression of *qian* and *hou* in Chinese temporal system. *Journal of Zhejiang University (Humanities and Social Sciences).* 33(5), 84-91

Appendix

Data set 1

Please write a short article (at least fifteen sentences) to talk about your daily life. For example, what you usually like to do, what you did (yesterday, last year...), what you do every day, or what you plan to do (tomorrow, next semester...). You can use all the temporal expressions (e.g. this semester, afternoon, today) we have learned so far. Also, please include the following phrases: 然後 (then), 以後 (after), 才/就 (not..until/as early as).

*This exercise makes up 20% of HW 10.

Data set 2

(Questions)

我來自我介紹一下，我叫 Emily，是 Penn State 的大學生。去年我住在紐約，今年我住在 state college。我在 state college 住了六個月了，這兒很好，我很喜歡。我的大學生活很忙。上星期，我有中文考試。我每天都忙著準備 (prepare) 考試。考試很難，可是我下學期還要學中文。昨天我去圖書館看了三個小時 (hour) 的書，希望 (hope) 下次我的中文考試會更好 (better)。

前天，我跟我的同學去了一家中國飯館 (restaurant) 吃晚餐。我點了十個餃子，一碗湯和三杯啤酒。他點了兩盤炒飯和四杯可樂。晚餐以後，我們去看電影。看電影的時候，我問他：「要不要喝可樂？」他說：「我喝了四杯可樂了，我不要再喝了，謝謝。」

(Answer)

Let me introduce myself quickly. My name is Emily, and I am a college student of Penn State. Last year, I lived in New York, this year I live in state college. I have been living in state college for 6 months. It is good here, I like it a lot.

My college life is very busy. Last week, I had a Chinese test. Every day I’m busy preparing for the test. The test was very hard, but I will take Chinese next semester.

Yesterday I went to the library and read for three hours. I hope next time, my Chinese test will be better.

The day before yesterday, my classmate and I went to a Chinese restaurant and ate dinner. I ordered 10 dumplings, a bowl of soup, and 3 glasses of beer. He ordered 2 pastes of fried rice and 4 cups of cola. After dinner, we went to watch a movie. During the movie (While we watched the movie), I asked him: “Do you want a cola?” He
said “I already had 4 cups of cola, I don’t want more. Thanks.”

Data Set 3

Translate the following sentences into Chinese:
(1) She has been studying Chinese for two months.
(2) I am reading a book.
(3) I ate two plates of fried noodles.
(4) I have had two cups of green tea, and I would like to have another one.
(5) After three glasses of red wine, I felt dizzy.

Data Set 4

1. Fill-in-blank exercise
我叫小美，是 Penn State 的大学生。我的大学(1)life 很(2)busy，(3) last week，我(4)everyday 都在图书馆看书。上午七点就(5)get up，八点就去上课，下午五点才下课。这(6)semester 我有很多功课，(7)the day after tomorrow 我还有中文考试。考了试以后，我想写(8)letter 给我的老师，让(9)him know 中文太难了，所以(therefore, so)我(9)Next year 不学中文了。
(English translation)
My name is Xiao-mei, and I am a student at Penn State. My college life is very busy. I was in the library everyday last week. I got up at seven in the morning and had class as early as eight o’clock. I had classes until five in the afternoon. This semester I have a lot of homework, and I have a Chinese exam the day after tomorrow. After the exam, I would like to write a letter to the teacher to let her know that Chinese is too difficult for me, and therefore I won’t continue studying Chinese next year.

2. Sentence translation
(1) Do you have class in the morning or in the afternoon?
(2) What would you like to drink? I would like to drink a cup of iced coffee(咖啡)
(3) I am busy reading my book. (for the experimental group)
   When he comes back, please ask him to leave a message. (for control group 1)
(4) He went to the library the day before yesterday.
(5) I have lived in State College for three years. (for the experimental group)
   I called her yesterday, but she was not in. (for control group 1)

3. Essay Writing
(Topic and instructions for the experimental group)
Write an email to your friend and tell him/her about your school life. The length of your composition should be at least 10 sentences long. Please include (but not limited to) at least 5 of the following expressions. Please also pay attention to the format of writing an email; don’t forget to address your friends, greetings, and date.

(20%):
了….了 (two le structure) （正）在（is doing…） ....的時候（the time when…） 吧（suggestive particle） 還是（or） 著（zhe） 了（completed action） 喜歡（like）
(English translation of keywords added, except for 了 (le). Since le has two meanings; change of status and completed action, it needs to be specified in the instructions which meaning the keyword has)

(Topic and instructions for control group 2)

Please use the aspects 了 (….了), 著, 了 (completed action) and 在 (doing something) to describe an event of your life or an unforgettable experience in your life. For example, the tastiest dish you have ever had, an adventure or a trip, the most interesting book you have ever read, etc. Please write at least twelve sentences.

Useful words: 最 [zui4]: the most

Data set 5
Questionnaire (for the experimental group)
Can you explain how Chinese (the language) indicates the concept of “past”, “present” and “future”, and how does it differ from English? Can you give some examples?
Can you explain the following aspect markers “了 le”, “了….了” and “著 zhe”? How can you use these to describe events or actions? Can you give some examples?
Do you think the pictures (calendar, train, and egg) make concept of time in Chinese more meaningful to you, and do they help you when you are doing your homework and/or tests?
Wei Lai

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