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**Information and communication technology mediated writing
strategy: Scaffolding mother tongue Chinese composition writing
in Primary 4 classrooms**

**Thesis submitted by
Tzemin Chung, B.A., MA., M.DE.
In 2012**

for the degree of
Doctor of Philosophy/Doctor of Education
in the School of Education, James Cook University

DECLARATION ON ETHICS

The research presented and reported in this thesis was conducted within the guidelines for research ethics outlined in the *National Statement on Ethics Conduct in Research Involving Human* (1999), the *Joint NHMRC/AVCC Statement and Guidelines on Research Practice* (1997), the *James Cook University Policy on Experimentation Ethics. Standard Practices and Guidelines* (2001), and the *James Cook University Statement and Guidelines on Research Practice* (2001). The proposed research methodology received clearance from the James Cook University Experimentation Ethics Review Committee (approval number H3116)

Date

STATEMENT ON THE CONTRIBUTION OF OTHERS

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ABSTRACT

It is not an easy task for Chinese students in Singapore to learn to write in their mother tongue as there is no need to use Chinese in everyday life. When the environment for using the language is almost non-existent, there is not much motivation to learn the language. This situation is reflected in schools where students in general, are weak in Chinese. Schools introduce different programs to raise their interest in learning. Unfortunately, these programs are usually short-term and not research-based. With the booming economy in China, there is now a pressing need for evidence-based research to enhance the learning and teaching of the Chinese language.

My study, which was built on the social constructivism framework, aimed at finding effective ways to help teachers scaffold their students to write, as well as finding out if these scaffolds can be implemented via information and communications technologies (ICT). To achieve these ends, different instructional strategies were chosen: A language game was built to motivate students to learn basic language skills. Micro-writing strategies (e.g., strategies to write action chains, feeling chains) were adopted to improve students' composition writing ability. An online collaborative environment was created to simulate an immersive environment in which the collaborative mind maps were used to brainstorm synonyms, peer editing software to allow students to edit one another's work and the teacher to provide immediate feedback. Composition templates of varying difficulty levels were created to scaffold students of different Chinese language ability.

A case study research method was employed to analyze and explain the complex process and outcome. It was done through observation, student and teacher interviews, analysis of artifacts, and statistical analysis of exam scores. Results were triangulated to lend confidence to the findings.

Findings indicated that students could be scaffolded to write with micro-writing skills. They were also very enthusiastic in writing in the ICT-mediated environment. Peers gradually learned to help one another via ICT. From the findings, I have derived several principles in how to scaffold the writing of Chinese compositions. First, implement ICT-mediated strategies on an integrated (seamless) platform to immerse students and use online portfolios to keep track of their learning processes; Second, emphasize collaborative work in the ICT-mediated platform; Third, create scaffolds with varying degrees of difficulty to suit different ability students; Fourth, use well-designed games to motivate weaker students to acquire basic writing skills; Fifth, scaffold small chunks of writing skills at a time, building up to a complex set of skills over time.

Keywords: social constructivism, scaffolding primary school students, real world Singapore school writing instruction, collaborative learning, information and communication technologies (ICT), Chinese composition writing strategies, peer editing, micro-writing skills, integrated software platform

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Chapter I Introduction

This study investigated the development of an effective writing model that can be adopted in curriculum time for Primary 4 students in Singaporean neighborhood schools. The emergence of China as a super economic power has prompted the country as a whole to recognize the importance communicating in Chinese. It is therefore necessary for schools to adjust their Chinese language curriculum to embrace this opportunity to develop closer links with and understanding of China. As there is only one subject in school that is taught in Chinese and it is not necessary to use Chinese in our daily lives, students need scaffolding, especially in writing (Moyer, 2004).

It is a trend for the Ministry of Education (MOE) to adopt information and communication technologies (ICT) to enhance learning. This applies to the teaching of Chinese too. The use of ICT can motivate students to spend more time communicating in the Chinese language. As my pilot study showed, students were excited and enthusiastic when they worked on computers. This study therefore includes the design and implementation of an ICT-mediated writing program that is effective in engaging students to write in Chinese and to enable them to learn collaboratively. The writing model was designed based on writing research findings in which the constructivism paradigm was the underlying theoretical framework. With this theoretical underpinning, the scaffolding strategy plays a prominent role in their writing instruction design, although some of the basic skill-building elements such as the Chinese game also have behaviorist underpinnings. Social constructivist underpinnings, however, are dominant and are reflected in the design of the current writing model. It also takes into account findings from the pilot study that commenced in August 2007.

The current study adopted the case study research method. It tracked the writing instruction in a Primary 4 classroom of a neighborhood school for the academic year of 2009. The Chinese teacher, who has come onboard since the pilot project, implemented the writing model. The process, effects, and outcomes were documented and analyzed. Then, suggestions to refine the writing model were offered.

The following sections introduce broadly how Chinese is taught in the East Asian region and then focuses on the unique factors influencing Singaporean students. They include their living environment, writing training in Singapore schools, and their resulting characteristics.

Background

Writing instruction in China.

According to Hans (2005), until recently, writing instruction in China was geared towards the sole purpose of passing exams (Hans, 2005). In the late Qing Dynasty (around 1900), it was taught to pass the Imperial Civil Service Examinations, and later, school exams. The teaching of writing as a mother tongue for the purpose of taking examinations persisted despite the call by early writers and educators to scaffold students to write in a non-threatening environment. These educators advised that writing should be taught with guidance and that students should be allowed to refine their work. However, in practice, the teaching of writing took place in large classes. The teacher would assign a topic, the students would write the composition under the teacher's direction, the teacher would then grade it and discuss the mistakes in class. Compositions in the textbook were models to be followed closely. As such, writing was divorced from reality and lacked individuality. In recent years, this worrying trend prompted a reform agenda for schools to cultivate students'

observational and imaginative skills, for students to learn to express their feelings in writing, and for teachers to teach according to individuals' aptitudes.

In China, Chinese is also taught as a second language for minority groups who live in their own communities, e.g., the Korean community in the Yanbian Korean Autonomous Prefecture (Zhao, Xu, and Zhu, 2005). When the prefecture was established in the 1950s, Korean education flourished and the teaching of Chinese took a backseat. Teaching of Chinese concentrated on reading, which enabled students to read simple Chinese articles. But, their Chinese standard was so low that they were not able to pass the college entrance examinations and find jobs. This was not desirable and therefore, in the 1960s, the teaching of Chinese was revived. At about the same time, educators found that there was a strong relationship between speaking and writing (Tan, Spinks, Eden, Perfetti, & Siok, 2005). The findings caused educators to take a holistic view in the teaching of Chinese. In the 1990s, educators made a brave move to create an environment to train all four language skills, listening, reading, speaking and writing. The aim of this was to enlarge vocabulary, perform intensive training in reading and to increase the frequency of writing. The instructional style consisted of lecturing and modeling. The activities included 5-minute before and after class dialogues, play, and storytelling. Teachers also organized contests including dictionary consultation, knowledge on vocabulary and idioms. In recent times, writing instruction has also included independent courses that last two hours a week. These courses are taught by teachers specialized in writing. Multimedia technology is also used to aid writing instruction. The courseware includes audiovisual materials, drills, writing procedures, and model writing. Diary writing is encouraged to train students to express their feelings. However, general problems still remain: students lack language sense. They are not able to use proper

words in appropriate places. This is probably due to the large class size where one-on-one conferencing is not possible and the entire class is required to write in a similar manner. Besides the Korean community in China, there is another large community that learns the standard Chinese as a second language.

Another second language learning community is in Hong Kong, a special administrative region of China. Tse, Loh, Cheung, and Kwan's study (2005) reported on Chinese learning in Hong Kong. The Hong Kong people speak Cantonese and write in Modern Standard Written Chinese (MSWC). Though the two are similar, many of the colloquialisms in speech and in the popular culture cannot be translated into the standard written Chinese. Students are caught in a situation where they speak one language but are required to write in another. Moreover, the teaching of writing in Hong Kong has long been pragmatic. Students are trained to write in well-practiced strings of expressions and phrases to prepare for school exams. The emphasis is on error-free syntax and writing is one-off. An authentic writing environment is lacking. As such, Tse, Loh, Cheung, and Kwan concluded that many students have reduced interest in writing, and are only competent in a narrow range of grammatical rules. A writing environment that engages students to experiment in writing, to express themselves freely, and to do successive refinements to hone their writing skills is badly needed.

In 2000, Tse, Loh, Cheung, and Kwan (2005) started experimenting with creating a dedicated writing program to actively engage students to express their thoughts, write to communicate, and write by trial and errors. Students were also evaluated in a non-threatening manner with the aim to help them towards mastery. In a separate study, Shum (2005) investigated the effects of four evaluation methods including detailed evaluation by teacher, evaluation by teacher using symbolic codes

inserted beside the writing errors, evaluation by peers using a checklist, and self-evaluation using a checklist. He found that the students in the peer evaluation (checklist) method took the initiative to do rewriting; they performed better, and had improved writing habits. It seems that the training of writing is moving towards an engaging environment where peer editing is an important component. This brings us to the Singaporean context.

The Singaporean context.

As compared to the minority groups and the students in China, Chinese is neither required in the daily life of Singaporeans nor for admission into higher learning institutions. There is hardly any motivation for learning Chinese. Pakir (2008) reported that Singapore has adopted English as the medium of instruction and the “first school language” (p. 191). The bilingual education is based on the policy that privileges English and in which English is the major language. English is the sole medium of instruction for primary, secondary, and junior college education and the main language for higher learning (Dickson, 2005). Chinese is the second school language for ethnic Chinese and is referred to as a “Mother Tongue” language in the education system in Singapore. Although mother tongue is defined as the language learned by children and passed from one generation to the next (wordnet.princeton.edu/perl/webwn), it is not necessarily so in Singapore. Mother tongue may not be the students’ home language (Dixon, 2005). Many children do not speak or learn to speak Chinese anymore. Chinese speaking families of Primary One pupils have declined from 90% in 1980 (Ministry of Education Survey) to 47.2% in 2005 (Pakir, 2008). In 2005, in more affluent families such as those who live in private condominiums and landed properties, 93% of the residents speak English or a mix of English and Chinese at home as compared to only about 60% of the residents

living in 3-room government housing board flats (Zhao, Liu, & Goh, 2007). School children lack the environment to learn Chinese. This situation is not made better in school.

Dixon (2005) pointed out that the teaching of English and Chinese is not based on the idea that one can reinforce the other. The subjects are separately designed for fear of one interfering with the other. Since 1984, the Chinese language has been reduced to the only examinable subject that is taught in Chinese. It is taught for no more than five hours a week in primary schools (Pakir, 1999; Wong, Gao, Chai, Chua, Chung, Seow, 2006). There is no need to use Chinese outside the Chinese curriculum time. In Pakir's (1999) words:

English-knowing bilinguals govern the country, walk the corridors of power, preside at boardroom meetings, teach in schools, and rule in the courts of law. The overall effect on their offspring and others can be seen in a discernible shift to English speaking and writing practices. (p. 344)

In such a context, one of the most significant factors influencing literacy proficiency is absent - informal contact with native speakers, especially peers and family (Moyer, 2004).

Owing to the long-term uneven development of bilingual education that favors English (Pakir, 2008), educators are wrestling with the declining Chinese language literacy issue (Liang, 2000). Pakir believes that this issue has become more pressing with the emergence of China as a powerful economic entity. In her view, this has prompted pragmatic parents to recognize the importance of the Chinese language and therefore it is likely to result in changes in the bilingual education policy. Bilingual education will be reshaped into balanced English and Mandarin Education instead of the current "lop-sided bilingualism" (p. 202).

However, this is an uphill battle. Sim (2005) reported that students have insufficient vocabulary and lack basic sentence formation skills. They also lack observation abilities and creative thinking skills. In addition, the vocabulary, grammatical and sentence structures of Singaporean children were influenced by Chinese dialects, English, Malay, and Tamil (Lu, Zhang, Qian, 2002). Zhao, Liu, and Goh (2007) analyzed spoken Mandarin of 600 pre-schoolers and found that students also lack skills to revise their work. They only responded to surface errors (Lam, 1992). It is therefore necessary to help students improve vocabulary and language skills, learn revision strategies, and raise their interest in the language so that they are motivated to write. The method used for assessment should also be revamped. Sim advocated doing away with detailed marking by teachers for the whole class and focus on marking on selected representative scripts as well as adopt peer-evaluation or self-evaluation.

In a nation-wide scale, the Ministry of Education incorporated information and technology (ICT) tools such as e-dictionaries, Chinese character input systems, and the Internet into the Chinese curriculum to raise the interest in learning Chinese. As indicated in an interview with a curriculum planning and development officer in June 25, 2007, the MOE plans to go beyond these efforts to implement a complete ICT-mediated writing program:

It is worth to put in effort to come up with an entire writing pedagogy on ICT. I think a writing package is the most needed in primary school.

...scaffolding should be a viable approach, teachers can go into the software and customize scaffolds for the students.

Can we develop writing software? Is it possible? We also should look into companies to develop software and promote it in school.

Peer-critique through some software... Game-based or reward-based software... I think we can look into it.

How to make Chinese a part of the pupils' life? Using ICT may achieve that.

In a nutshell, the MOE Curriculum Planning and Development Division for Chinese language is exploring means to incorporate a technology platform into the Chinese language curriculum that can support a comprehensive writing strategy, building of scaffolds, peer-critique, educational games, rewards, and lifelong learning.

The Singapore school context.

The rise of China as an economic superpower has motivated education authorities and schools to improve students' standard of Chinese. Moreover, as the MOE stresses the importance of incorporating ICT into the curriculum, schools are therefore keen to adopt ICT-mediated instruction. However, classes in neighborhood schools are not organized in a way that will promote effective teaching of Chinese. Challenges schools face are:

- Students in class are of mixed Chinese ability. In Singapore schools, students in Chinese language classes are not grouped by their Chinese language ability but by their performance in first language subjects, e.g., English, Mathematics, and Science. The language ability in the class can vary greatly. Moreover, classes are large with about 30 students in each class. Because students only study one subject in Chinese, their language ability is generally weak. Such a learning environment is hardly conducive for students to learn to write.

Research indicates that for emergent writers to become independent writers, the support provided in writing tasks should be adjusted according to the past experience and the current needs of the student (Butler, 1998). As the learners become more capable, the support can gradually be reduced until the learner

can write independently (Bodrova & Leong, 1998). This process, which is known as scaffolding, is not easy to be carried out in a large mixed-ability class where students have different levels of language ability and needs (Tabak, 2004).

- Very limited curriculum time set aside for writing instruction: Chinese is taught no more than five hours a week in class. In total, about 30 hours in a year are devoted to learning to write Chinese composition. Due to the limited teaching hours, class teaching is a one-size fits all model. Personal scaffolding is limited to providing vocabulary, translating words from English or transcribing Chinese characters when requested.
- The examination format for composition writing affects the use of ICT in writing instruction. In composition exams, students are given four pictures to write a composition with minimum 80 characters. Students have to *handwrite* the composition. This poses much difficulty in using technology for writing instruction. The instruction will not be aligned with the exam if students are trained on the computer and are subsequently tested using pen and paper. Teachers in general double students' work by giving them two sets of composition to do, one on the computer and the other, pen-based. This puts additional strain on the teachers and the very limited time for writing instruction. It also means that the ICT-mediated composition writing may not take place during curriculum time. Furthermore, students are given only 40 minutes to write their composition in the exam. This has implication on the strategies and technique taught. They have to be easy to learn (e.g., the “where”, “when”, “what”, “why” (WWWW) mnemonic) and deploy, and it

requires much reinforcing so that the students can internalize the strategies and techniques.

- Teacher-designed writing programs lack standardization and are not informed by writing research: While the Ministry of Education has specified the exam format and assessment rubric, there is no writing instructional materials. Teachers have the flexibility in developing their own writing instruction with various teaching methods (e.g., direct teaching, modeling, teacher guidance, language activities, diary writing, and adopting multimedia technologies). However, teachers in general do not access research work to assist in the systematic design of writing instruction. They are more comfortable with a bottom up process in which they model their efforts on fellow teachers' interventions or adopt the latest technology in their teaching, hoping that the effect claimed will also take place in their students. The effort is usually short-term and piecemeal in nature. It shifts with what their peers are doing or with the latest technology. A systematic training program that is consistent, repeatable, properly assessed and informed by research findings is needed.
- Teachers lack expertise and resources in designing technology-mediated writing instruction: Although integrating technologies into the curriculum is part of the Ministry of Education Master Plan, expert guidance has yet to disseminate to individual school or teacher level. Individuals are most likely to adopt the latest technology such as blogging. However, adopting a single application is vastly different from systematically implementing a long-term technology plan. Teachers have to be familiarized with an effective writing model before they know how to select pedagogically sound software applications to scaffold students in their writing. In addition, it is also

necessary for teachers to know what essential features required for scaffolding students towards better composition writing are. In addition, these applications should be seamlessly integrated into a platform which allows for the tracking of long-term performance, provide writing supports and allow for a gradual fading process. This poses enormous challenges for language teachers to implement technology-based instruction.

- Teachers in Singapore have a heavy workload. A Chinese teacher has to teach two to three class levels (e.g., one class each of primary 2, 4, and 5). The teaching periods for lower primary will be longer as they sometimes have three periods of 30 minutes each per day compared to two periods for the upper primary classes. For the upper primary classes, although the teaching periods are fewer, the marking load is heavier, e.g., there is composition writing for Primary 3 and above. In addition to classroom teaching, all teachers have to be in charge of school events, activities and remedial classes. They may take up all afternoons of the week and Saturday mornings.

To implement writing instruction in schools, educators have to work around the constraints. Moreover, teachers are unlikely to rely on family or societal support. An effective writing program has to be able to engage students without much outside support. The teacher alone is not able to provide extended and individualized support to the entire class of students. As such, ICT takes on an important role. A virtual environment can be built to engage students. ICT can also sustain students' interest for a long period of time. Writing instruction will likely to be both teacher- and ICT-mediated. It has to:

- Incorporate writing research findings
- Provide differentiated training for mixed ability students

- Include writing strategies that are fast to learn and provide much practice for the students to internalize them
- Allow for pen-and-paper composition writing
- Include ICT-mediated learning activities. These learning activities ideally should be built on a technology platform that can track long-term performance, integrate useful applications seamlessly, be able to engage students, and allow peers to help one another.

Writing instruction needs to be informed by research findings. It is therefore important for us to be familiarized with past studies done in this area. I will present a literature review of writing research in the next section.

Chapter II Literature Review

During the 1980s, writing was viewed as a cognitive activity. According to Becker (2006), writing researchers then aimed to discover the thought patterns in the writing process. For example, writing researchers such as Flower and Hayes (1981) proposed a process model which grouped cognitive actions into three main components: “the task environment, the writer’s long-term memory, and the writing processes,” (p. 369). It is hoped that by creating a cognitive model that describes the steps and thinking process when an individual writes will enable the development of effective writing instruction to help novices improve in their writing.

Writing research gradually shifted to the study of writing as a combination of cognitive *and* affective processes. (Englert, 1992). The affective component mainly refers to self-efficacy in writing. The more students believe they can write well, the more they will persist in writing. Self-efficacy is found to be an important predictor of the writing effectiveness (Pajares & Valiante, 2006). Furthermore, research indicates that improving writing skills and knowledge can raise self-efficacy. In writing research, both the cognitive and affective processes are important but the focus of this thesis is on the cognitive aspect of writing. In my thesis, constructivist theory underpins the cognitive aspect of writing.

Underpinning Theoretical Framework – Constructivism

Composition writing is a process of constructing a story. It is therefore appropriate to adopt a constructivist theoretical framework for my research. In this framework, the active role a learner plays in the writing process is emphasized. To quickly grasp what constructivism is, let us compare the behaviorist theory and the constructivist theories. According to Thomas and Blacker (2008), behaviorists presuppose that the learner's mind is a black box. The learner behaves in response to

environmental stimuli. Language learning is due to reinforcements of the correct utterances. It can be inferred that language generation is passive, cued by the environment. In this paradigm, behaviorist theory has its place in reinforcing students to acquire basic language skills, e.g., through software games that reward students when they can recognize or arrange words in the correct order. However, this type of training is not adequate for the training of writing. Students have to perform novel writing tasks on their own. It requires them to actively construct the intended piece of writing. This brings us into the study of constructivism.

Constructivist theorists focus on the role of mental structure and processes in learning. It is because, as suggested by Chomsky, there is too large a number of sentences to be learned through reinforcement (Baars, 1986). Language could not be explained without recourse to mental constructs (Parkin, 2002), which is a relatively stable rule-based structure that represents observable events (Baars, 1986). Baars further indicated that rules are symbolic or abstract and they enable the generation of a large amount of sentences to represent varying events. Sets of rules make up mental structures known as knowledge structures. As opposed to structure, there are also rules that operate on incoming information, on information in the memory, and on plans for controlling actions. These rules are known as processes. Structure and processes are both essential components in generating language. Language generation is therefore active in nature and this ability could be in-born.

Chomsky (2000) posits that children are born with the ability to acquire language with a language acquisition device (LAD). The device is like a language organ, an expression of the gene. It contains linguistic rules to enable a child to interpret what he or she hears according to the innate grammatical structure, or, universal grammar. This structure is not particular to a particular language. It is the

basis on which all languages are built (Mason, 2002). Chomsky further elaborated that language is the product of two interplaying factors: the initial state which is the in-born LAD and an individual's life experience. Experiences a child obtains from his or her environment would be processed by LAD and outputted as language. If we study the experiences of the learners and the language output, we can find out how language is mediated.

While cognitive theorists argue that the learner's primary role is to assimilate environmental information into the human faculty of language (Atherton, 2005; Thomas & Blacker, 2008), constructivists go one step further by suggesting that the learner plays a more active role than assimilating information from the environment. He or she is actively involved in creating (constructing) new meanings within himself or herself from environmental stimuli. Constructivist learning is also self-directed where the learner is motivated to learn and has the ability to learn. The teacher's role is to guide the learner along. Constructivism is not a unitary theoretical stance (Doolittle, 1999). The various constructivist positions include cognitive constructivism which is about how a learner creates meaning in various developmental stages (Doolittle, 1999); social constructivism, which is about how meaning and understanding arises from interaction with the social environment (Atherton, 2005); and constructionism, which is where cognitive restructuring takes place in situ when the learner is engaged in constructing something he or she is interested in (Ackermann, 2001).

Cognitive constructivism (also known as endogenous constructivism).

Piaget's ideas formed the foundation for cognitive constructivist theorists. Glasersfeld (1997) points out that although Piaget proposed his work as a developmental theory, it is also a cognitive theory as it aims at discovering the

functioning of the human mind. Piaget's theory underpins the theoretical framework for much of the classroom research (Clemons, 2006). At the time when Piaget proposed his theory, most philosophers considered knowledge as something out there to be discovered. Piaget went counter to this prevalent view by theorizing that knowledge is constructed or generated by individuals (Clemons, 2006; Glaserfeld, 1997). Piaget proposed that science is not a true representation of the external world. What we considered knowledge is “the products of active knowers who shape their thinking to fit the constraints they experience” (Glaserfeld, 1997, p. 3). Piaget (1971) argued that the functions of the mind include “understanding and inventing, in other words, in building up structures by structuring reality” (p. 27). How, then, do individuals structure reality in their minds?

When individuals experience events that are inconsistent with their mental representations, they go through a process of adjustment to reach internal coherence. This process involves internalization and reconstruction of their representation of external reality. Through the cognitive effort of adapting to the environment, individuals learn (Doolittle, 1999). Adaptation consists of two processes: assimilation and accommodation (Atherton, 2005; Kearsley, 2008). In assimilation, external events are interpreted within existing cognitive structure. They are incorporated into the internal world without modifying the structure of the internal world. In accommodation, an individual has to change, or add to, the internal structure to make sense of the external world. Although the two processes have different functions, they are inseparable.

Piaget further argues that the existence of basic cognitive functions come before social interaction. His idea coincided with Chomsky's view that the basic language structure is innate. Piaget considered abilities such as being able to organize

immediate experience and replace concrete things with symbols as innate. Language develops to symbolize the observable events and therefore does not precede cognitive development (David, 2004). Glasersfeld (1997) indicated that although Piaget was aware of the importance of social interaction such as collaboration and coercion, the main focus of his theory was still on the construction of knowledge that happens in the mind. Piaget believed that an individual could acquire a great deal of knowledge independently, such as the discovery of scientific theorems.

Piaget's theory has implications for education. Kearsley (2008) points out that teachers can promote learning by involving or challenging learners in activities that require adaptation. However, activities should be suitable to the developmental stage the learner is in. Hinze-Hoare (2006) opined that constructivism based on Piaget's ideas, is particularly suitable for technology-mediated education. Hinze-Hoare illustrated how "mass individualization" (p. 24) can be achieved with constructivism and learning technologies. Each learner, with their learning style, past learning history, and goals, can be matched with the appropriate materials and support provided by software agents. He viewed individualized learning instruction as the *best solution* learning technologies can provide. Learning becomes more effective and enjoyable because it is adapted to the learner's needs and ability.

In this mindset, individualized learning, or mass individualization, is one of the goals in building an effective writing model. It is hoped that technology can provide mixed-ability students with differentiated writing training to make their learning meaningful, instead of providing a one-size fits all solution. To achieve this end, the technology platform has to be able to provide suitable activities that involve, or even challenge the learners. Suitable activities are derived based on the learning history of individual students. The implication is that the technology platform has to

be able to preserve and retrieve, on demand, the learning history of the students and artifacts done by the students. Based on these, learning activities can be adaptively provided.

Social constructivism (also known as dialectical constructivism).

While Piaget stressed the internalization and modification of mental structure to produce knowledge, Vygotsky focused on learning mediated by more knowledgeable others in the immediate environment (Dahms, et al., 2007). Vygotsky's ideas formed the foundation for social constructivism. His theory has a strong social slant in which mental representations, including cultural and historical symbols such as tools, language, and complex concepts, are developed from scratch through the guidance of more experienced adults and interaction with peers (Ackermann, 2001; Dahms, et al., 2007). Learning, therefore, is a process of internalizing external experiences and such internalization is mediated through speech and language (Feden & Vogel, 2002). This process takes place from birth on (Luria, 1974). Since birth, the child comes into contact with many people. Learning begins with interactions with these people. Vygotsky states that:

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 (1978, p. 57).

Luria (1974) further explains that in the learning process children learn through remembering. They live in a social world and learn to communicate with others with the help of their elders. When children interact with elders who are highly developed in memory skills, they begin to remember through this socially elaborated

learning. For example, when they are taught the word “watch”, they remember it and internalize it into the system that is related to “time”. Children develop through memory and reorganization of mental representations. They learn a variety of language skills when others talk to them, tell them stories, ask them questions, show them objects, play and share with them. As such, children’s learning depends very much on what they experience in their social lives. The richer the learning activities their mentor offers, the more they will learn. Learning takes place when they assimilate language which mediates higher mental functions (e.g., analysis or generalization, and encodes experience). Therefore, for classroom language teaching, the teacher must provide an environment with broad and diverse language activities as well as identify meaningful tasks that will improve students’ language performance. When students are able to apply the language they have learned to communicate with their peers or the teacher, they have internalized what they have learned from their social environment. Through enriched social learning, according to Vygotsky, children can fully develop their cognitive potential (Ackermann, 2001).

Bruner (1978) further suggests that for learning to take place, a social interactional structure should be present in the environment to guide the learner. This structure can be provided by a caregiver or a teacher. In 1976, Wood, Bruner, and Ross adopted the term “scaffolding” metaphorically to mean interactional support, often in the form of leading or probing questions which is especially conducive to helping children learn (Foley, 1994). In language learning, adults have different language behavior when talking to a child. This is known as child-directed speech. Child-directed speech is a form of scaffolding that is adapted to help children acquire language. Bruner calls this Language Acquisition Support System (LASS) in response to Chomsky’s Language Acquisition Device (LAD) (Thomas & Blacker, 2008).

Scaffolding is gradually removed when the learner increasingly gain mastery of the learning task.

Guidance, however, should only operate within the child's learning potential, beyond which it will not help. Vygotsky (1978) called this a learner's zone of proximal development (ZPD). It is “the distance between the [child’s] 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” (p. 86). Interacting with more experienced others helps the learner perform at a higher level than their mental age. According to Vygotsky (1986), the aim of education is to always help the student perform something slightly more challenging than what she can do by herself. In Bruner’s view, learning occurs when the learner can perform autonomously when help (scaffold) is removed. Success leads to confidence to pursue even more challenging tasks.

Social constructivism has underpinned important instructional paradigm such as cognitive apprenticeship, Computer Supported Collaborative Work (CSCW), and community of practice. In cognitive apprenticeship, Collins, Brown, & Holum (1991) argues that the teacher first models a task to the learners, then scaffolds or coaches them through a wide range of activities towards mastery. The teacher chooses the tasks, scaffolds the learners, evaluates the work, provides feedback and encouragements, hints and tips, work on the weakness until mastery is attained in the field of training. In Computer Supported Collaborative Work (CSCW), Hinze-Hoare (2006) explained that it is essentially applying cognitive apprenticeship in distance learning where learners can join a community electronically and in some cases, a software agent takes up the role of the teacher. Some software agents scaffold the

learner by request and some do so unsolicited (Jackson, Krajcik, & Soloway, 1999). In a community of practice, students or students and teachers come together to explore and apply the course materials. They discuss and actively work on creating something new. They integrate what they have just learned from their peers into their existing mental representations or they have to modify what they thought was correct (Goodsell, Maher, Tinto, Smith, & MacGregor, 1992). In a community of practice, “members engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other” (Wenger, 2006).

In my research, scaffolding is the method adopted in helping students acquire language and writing skills as it involves a feedback process that allow the students to gradually improve and achieve mastery in writing.

Constructionism.

Constructionism is closely related to constructivism and it provides the rationale for adopting technologies to engage students in writing instruction. Papert, who worked with Piaget in Geneva, proposes the constructionist learning paradigm which is derived from cognitive constructivism. Therefore, his work on constructionism has its basis in Piaget’s constructivist theory. He shared Piaget's view that knowledge is progressively built through internalizing actions (Papert & Harel, 1991). Papert further added that learning is more effective when learners are engaged in creating or constructing something they like such as drawing, building sandcastles, working with Lego robotics, or building a theory of the universe. The construction of objects or tools allows the learner to convert intangible feelings and ideas to sharable objects. This in turn sharpens the learner's ideas. This is an iterative process. Ideas

transform the external world through construction, and in turn, transform the mind (Ackermann, 2001).

Papert and Harel (1991) thought that personal construction is mind enriching as personal construction for each learner is unique. Each learner's mental representation is different, Papert and Harel call this a learner's intellectual style. Constructionism is a framework that allows the expression of a full range of intellectual styles in learning, ranging from abstract/formal, where the learners distance themselves from the concrete objects, to being closely engaged in the work as it proceeds. Furthermore, construction activities are very much influenced by the context the learner is in, thus he calls his construction *situating constructionism*. The learning context is often within the contemporary cultural settings, e.g., new technologies. Such settings provide learning activities a quality of richness that goes far beyond the immediate skills learned. For example, one can add new elements to LEGO construction kits to construct "active" models (p. 5) such as an energy saving house.

The process through which constructionism can be achieved is through what Papert fondly called the "soap-sculpture" (Papert & Harel, 1991, p.3) learning. He uses Mathematics as an example to show how the process of learning math should be similar to sculpting soap. In his own words, learning should be a process of creating, self-expression, reflection, and experimentation:

... but what each student carved came from wherever fancy is bred and the project was not done and dropped but continued for many weeks. It allowed time to think, to dream, to gaze, to get a new idea and try it and drop it or persist, time to talk, to see other people's work and their reaction to yours--not unlike mathematics as it is for the mathematician, but quite unlike math as it is in junior high school. (p. 3)

Educational implications from constructionism theory are that the learning environment should allow self-expression by letting the learners create something themselves. Learning is also very much influenced by the cultural context.

Technology is a form of contemporary culture that can allow the learners to express themselves and enrich their learning.

Singapore schools embrace technology and students are excited about ICT-mediated learning. The challenge is to select the appropriate technologies to allow students to express themselves by creating something they like. Based on the constructionist theory, an environment is built for writing instruction in which students write to express themselves based on selected topics. They can share their expressed ideas as well as and respond to what their peers write.

Moshman (1982) points out that the theories of cognitive constructivism, social constructivism, and constructionism overlap and complement one another, for example, all of them recognize the role of social and cultural context in learning. When do we apply the theory depends on the learning context. In terms of writing development, instruction focusing on individual adaptation, internalization, and reflective thoughts and insights are the domain of cognitive constructivism. Use of social interaction and collaboration to support and consolidate learning and to acquire cultural practices fall into the domain of socio-constructivism. Nurturing self-expression, creativity, and encouraging deep learning by creating artefacts are the emphasis of constructionism. At times, two theories may be integrated to achieve higher-level learning. In my writing program, the aim is to help each learner acquire strategies, language and writing skills, and then scaffold them within their zones of proximal development. This will develop and modify their cognitive structure and processes for writing. At the novice stage, social constructivism and scaffolding is

therefore at play. In the case of high ability writers, cognitive constructivism and constructionism take over when the teacher creates space for students to reflect and nurture creative thinking by providing them with cultural artifacts to write for self-expression.

The influence of these three theories goes far beyond the scope of designing writing instruction for Primary 4 students. They can guide educators to develop a lifelong writing model. In the next section, I will review research studies that are based on the constructivist theories.

A Review of Research Studies in Writing Instruction.

Writing instruction research in the 70s and 80s was based on the constructivist approach to help novice writers improve their writing through activities such as brainstorming, journal writing, and writing multiple drafts. Smith (2000) in his comments on the changing views on writing instructions for the past 30 years indicated that writing instruction was dominated by the product approach in the 60s and gradually developed into the process approach in the 70s. The process approach attempts to identify what an expert writers do so that teachers can help students modify their cognitive structure and processes to mimic that of the expert writer's (Applebee, 1986). He maintained that this view persisted into the 80s. Writing instruction researchers believed that the first step to improving student writing was to sketch out the cognitive profiles of both the novice and expert writer. When educators know what the novices lack, they can guide them to become expert by bridging the gap between the two (Scardamalia & Bereiter, 1983). As such, during the 80s, writing instruction placed great emphasis on teacher intervention during the writing process.

As writing instruction had a cognitive/constructive slant in the 80s, scaffolding thus played a crucial role in writing instruction (Applebee, 1986). According to

Applebee, scaffolding could be embedded in instructional materials or through teacher-student interaction. Smith (2000) indicated that in the 80s, writing instruction began to place more emphasis on scaffolding writing strategy to help students write in novel situations. Writing was viewed as problem solving and learning writing strategies would help students write increasingly challenging assignments. From 1990s onwards, writing instruction shifted its focus on the social aspects of writing, including culture, technology, and linguistics and how these cultural artifacts interact to influence the writing process.

Let us begin with writing models proposed during the 80s. In the 80s, writing theories focused on postulating the mental structure of the writing process (Hayes & Flower, 1980), and the differences in cognitive processes between novice and expert writers (Scardamalia & Bereiter, 1983). These models attempted to explain how text passages were constructed in the writer's mind when they were writing.

The Hayes and Flower Model.

This model elaborates mental structure and processes in writing. It is the most widely cited writing model and the terminology use in the model has become standard vocabulary used in describing the writing process (Scardamalia & Bereiter, 1983). The model focuses on the cognitive aspect of writing, namely, writing as a problem-solving process (Hayes & Flower, 1980; Bruer, 1994; Pea & Kurland, 1987; Graham, 2006a). Unlike tasks that can be solved by applying standard procedures, writing is an ill-defined problem. The problem solving process for ill-defined problems should be goal-directed. This places many cognitive demands on the writer as the goal can only be achieved by engaging in sub-processes that are hierarchically organized.

Based on the analysis of "think aloud" data from adults while composing, Hayes and Flower (1980) constructed a model on how to represent these complex

cognitive processes. The heart of the composing process is the planning, translating, and reviewing sub-processes (see Figure 2.1). In the planning process, writing ideas are generated for translating into text. The written text will then be evaluated and revised. During writing, knowledge about the topic, audience, and writing plan in the long-term memory is retrieved to aid in developing the plan for translation. The strength of this model is the postulation of an executive structure that monitors and governs the deployment of the sub-processes that allows any sub-process to incorporate any other sub-process to handle a large array of mental events during composing. For example, the planning sub-process can be requested during editing. As the writer is free to combine sub-processes to write effectively instead of following a rigid step-by-step model, the Hayes and Flower model is also known as a recursion model.

While the processes are cognitive in nature, McCuthen (2005) pointed out that the task environment proposed in the model such as the instructional context, audience, and collaborators is social in nature. In 1996, Hayes revised their cognitive model to include motivational and affective components such as beliefs, goals, and attitudes (Graham, 2006). They have also included linguistic and genre knowledge, e.g., writing techniques, key point, purpose, audience, text convention, etc, as well as task schemas, e.g., schema for writing a business letter (Bruer,1994). The inclusion of these additional factors indicates the shift of focus away from adopting the cognitive processes as the sole factor in explaining writing development.

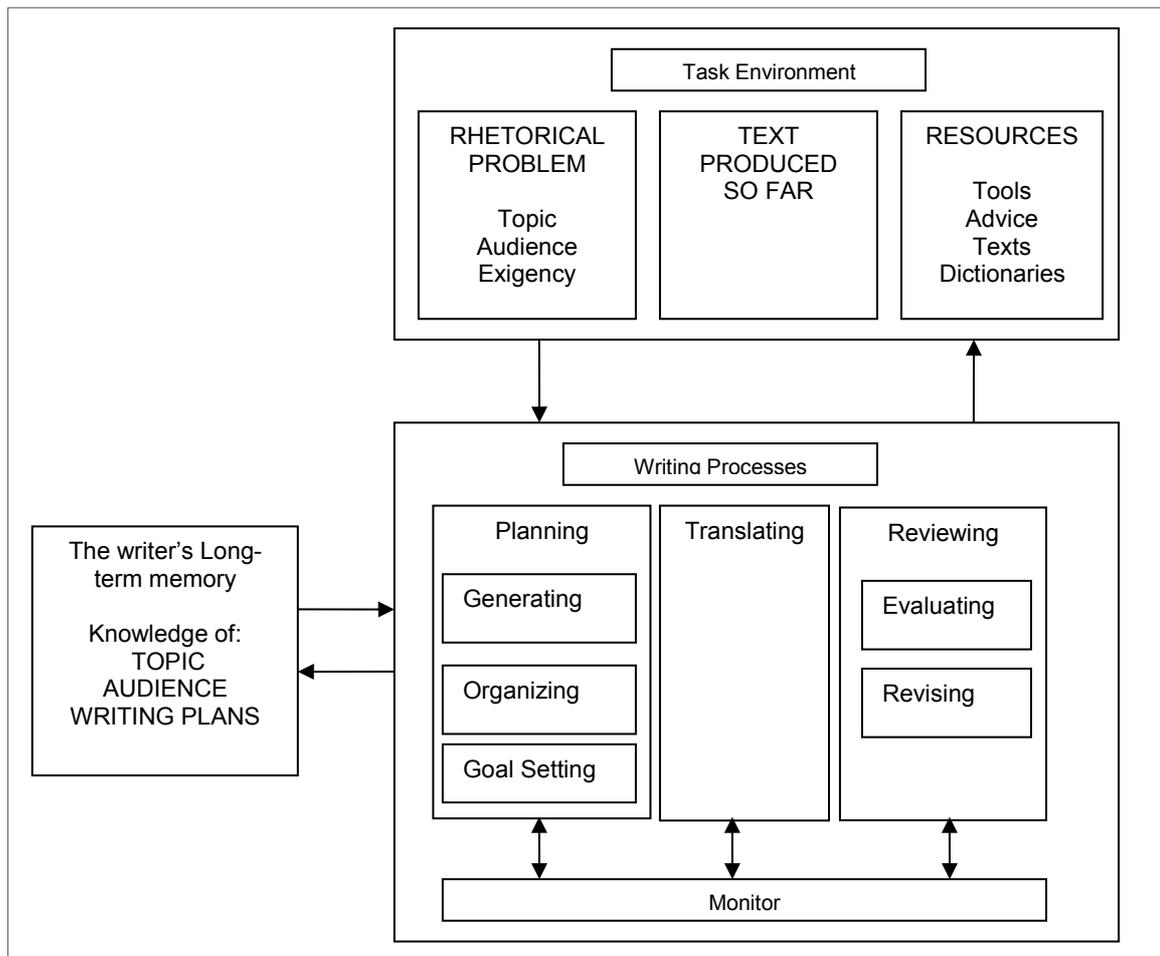


Figure 2.1. Cognitive processes of the writing model (adapted from Pea & Kurland, 1987).

The Scardamalia and Bereiter Model.

This model focuses on differences between expert and novice writers. It emphasizes helping children modify and adapt their mental representations to resemble that of the expert writers' (Lave & Wenger, 1991). The model delineates the differences between the expert and novice writers. Novice writers do not necessary process information and write in the manner suggested by Hayes and Flower's model. Scardamalia and Bereiter (1983) suggest that expert writers have mental representations of the writing task and possible solutions. They can apply writing strategies that involve high-level planning, take into account who their audience is,

solve specific writing problems, and diagnose one's own weaknesses. (Zellermayer, Salomon, Globerson, Givon, 1991). With such strategies, they are able to free up their cognitive capacity to work out more challenging problems. Children as novice writers, constrained by their mental load, cope with writing tasks by using a simplified version of text generation. Scardamalia and Bereiter term this strategy "knowledge telling", which refers to "converting all writing tasks into tasks of telling what one knows about a topic" (p. 792). The text is "linearly exposing one's knowledge", as opposed to knowledge transforming which is "subordinating knowledge to a rhetorical goal" (Boscolo, 2007, p. 300).

In addition, novice writers are not familiar with the writing process. They are guided either by what they know about the topic (use topic as a cue) or the genre cue (once upon a time...). They will then scan the memory for information related to the cue and retrieve the content as text (McCutchen, 2005). The cognitive issues novice writers faced are that children are not proficient in the formulations of the plans and important details of their writing, therefore affecting their ability to generate content. Their limited skills in written language production further impede them in the writing process (Scardamalia & Bereiter, 1986). Also, they do not have the ability to evaluate and revise their own text (Zellermayer, Salomon, Globerson, Givon, 1991), and they are very much influenced by spoken language as it is the language they know best (Hård Af Segerstad & Sofkova Hashemi, 2005).

Since knowledge telling is a subset of the knowledge transforming model, by providing training to acquire a higher order writing structure, the performance of novice writers in planning and revising should, overtime, approach that of the experts'. Scardamalia and Bereiter (1986) therefore advocated training children to acquire an effective cognitive load reduction method so that they can have excess mental

capacity to plan and strategize. They argued that students' writing ability will improve if the instructor can help them construct a mental structure of an expert writer.

Effective instruction can achieve the above by lessening resource demands in the working memory through explicitly scaffolding components of the writing process (McCutchen, 2005).

Bereiter and Scardamalia (1982) concentrated their research on cultivating an executive procedure through an intervention called procedural facilitation. Procedural facilitation is a process in which the teacher employs prompts, questions, or simple outlines of important learning structures on a daily basis to remind students of the strategic steps they can use to plan, monitor, or revise their writing. These tools provide students with cognitive support to bypass immature functions, influence the direction of attention during composing, ease the mental load, as well as help simulate an expert's mental processes required for the writing process – planning, transcribing, evaluating, and revising. When the students' executive demands for writing are reduced, they can make fuller use of the knowledge and skills they have learned (Baker, Gersten, & Scanlon, 2002; Bereiter & Scardamalia, 1982; Englert, Mariage, & Dunsmore, 2006; Scardamalia & Bereiter, 1986; Zellermayer, Salomon, Globerson, & Givon, 1991).

Bereiter and Scardamalia (1982) pointed out that different types of prompts could be adopted to help learners in the entire writing process. These prompts can be simply prompts to say more, or the more elaborate ones such as teaching children the procedure for priming relevant memory nodes, sensitize them to possible communication problems; provide a final sentence that composition must lead up to; provide openers, model syntactic variations; teach simplified routines for switching

between text generation and text evaluation and train the students to limit re-use of words.

Scardamalia and Bereiter (1983) followed up by experimenting with various types of prompts such as prompts to come up with vocabulary that children can use in a composition. This is a way to activate metacognitive processes for children. Results indicated that with such a prompt, students could write longer text and with more varied content. Another type of prompt was to provide an ending sentence for children to work up to facilitate goal-directed writing. In addition, a prompt that tells students to switch between writing a sentence and evaluating it during composing cultivates the ability to evaluate objectively. Other prompts studied included the use of cue cards to prompt reflection during planning in the composing process (Scardamalia & Bereiter, 1994), use of organizers, and inserting prompts to aid students in writing (Scardamalia & Bereiter, 1984). In particular, Scardamalia and Bereiter (1983) emphasized the importance of the prompts that can help learners accomplish the goal in their writing task. They found that children who write in the knowledge telling mode lack explicit planning to pursue a goal. If they had a goal in mind, they will more likely to make an effort to achieve it. The results from the study conducted by Graham, Schwartz and MacArthur (1995) confirmed Scardamalia and Bereiter's argument.

Graham, Schwartz and MacArthur (1995) studied the effect of specific revision goals as opposed to general goals on text revision. One group of students were asked to think about what they wanted to change or add in the story they had written, make notes about these changes on their first draft, and rewrite it according to their notes on a new piece of paper. A second group of students were told to add *three* things to their papers to make them better. They were told that adding information

(e.g., things that happened, description of things, or details) to their papers would make them better. As in the general-goal condition, they were directed to think about what they wanted to add, to note these changes on their first draft, and to rewrite their story incorporating the intended revisions. Results indicated that the second group made almost four times more meaning-changing revisions than students assigned a general revising goal. The results indicated that prompts that help students complete meaningful writing tasks significantly improved writing quality.

While Scardamalia & Bereiter studied the effectiveness in different types of prompts in enhancing writing qualities, Rosenshire, Meister, and Chapman (1996) conducted a meta-analysis of the effectiveness of story-genre prompts in 26 studies. In the studies, students were taught how to generate question prompts on the text they had read. They investigated the effectiveness of five types of prompts, namely, a) signal words. They are beginning words of questions such as what, when, who, where, why, and how; b) generic question stems and generic questions such as “what is the main idea of the story?”, “what is learned from the story?”, “Why is it important that...?”, “what are the key vocabulary words”, “what special thing does the story make me think about?”; c) main idea of a passage, e.g., asking students to paraphrase a concept in the paragraph, or provide another instance of an example; d) question types. Students were taught to generate questions based on three categories of questions, namely, text-explicit, questions whose answer can be found in a single sentence, text-implicit, questions that require the understanding of a few lines of text, or schema-based, questions that require the use of background knowledge or mental representation of the text, and e) story grammar categories, i.e., setting, main character, character’s goal, and obstacles. The prompts are, for example, “who is the

leading character?”, “What action does the character initiate?”, “What do you learn about the character from this action?”

All of the studies resulted in some gains in comprehension although experimenter devised tests yielded much higher effects than standardized tests. The researchers found signal words and generic question stems to be most effective in helping students perform in comprehension tests. Main idea and story grammar obtained medium effect size. When compared generic question stem prompts with signal word prompts, students who received and practiced with the question stem prompts performed better in comprehension test. There was also no difference found in teaching styles, be it regular instruction or reciprocal teaching.

From the meta-analysis results, Rosenshine, Meister, and Chapman (1996) found that effective prompts should be easy to teach and apply. They were concrete and provide specific directions. Features of generic questions (e.g., what is the main idea of the story?), signal words (e.g., when, where, what), and questions about story grammar (e.g., who is the main character?) fitted these criteria. They were easy to use, directed students' attention to the appropriate areas of composing and were not cognitively demanding. Furthermore, generic question prompts allowed learners to probe at a deeper level and provided more direction than signal word prompts.

Recently, there was renewed interest in the study of prompts. Berthold, Nuckles and Renkl (2007) compared the effectiveness of cognitive prompts, metacognitive prompts, and a combination of cognitive and metacognitive prompts to stimulate organizational and elaboration strategies. Metacognition refers to the knowledge and awareness of one's own cognitive processes and the ability to actively control and manage those processes. An example that prompts the metacognitive process would be “Which main points haven't I understood yet?” On the other hand,

organizational strategies refer to working with new contents that include the identification of main ideas and their interrelations, the highlighting of central concepts, and the structuring of the contents. Students have to organize learning contents in a meaningful way by constructing internal links that relate relevant aspects of the new material to each other. An example of prompts that stimulate this strategy would be “How can you best organize the structure of the learning content?”

While organizational strategies help learners organize new materials in their mind, elaboration strategies help them construct external links that relate the new material to the learner’s prior knowledge. The generation of examples, the use of analogies, and the critical discussion of issues are commonly regarded as elaboration strategies. Such strategies assist the learner in going beyond the given knowledge by creating links between her prior knowledge and the new information. An example that prompts the elaboration strategy would be “Which examples can you think of that illustrate, confirm or conflict with the learning contents?”

The findings indicated that prompts could stimulate the elicitation of cognitive and metacognitive learning strategies. The provision of purely metacognitive prompts neither improved learning outcomes, nor assisted the learner in producing an accurate self-assessment of their learning outcomes. Only the group which was provided with cognitive or a combination of cognitive and metacognitive prompts learned more than the control group. The results implied that cognitive prompts and metacognitive strategies are not independent of each other but are complementary.

In summary, writing researchers such as Bereiter and Scardamalia (1982) advocated the use of procedural facilitators (PF) to help children develop writing skills. PF include questions, prompts, and outlines. Effective prompts should be easy to teach and apply. They should also be concrete and provide specific information

(e.g., signal words and main points of the story). They should also be explicit in helping students accomplish meaningful goals (e.g., add *three* things to make the story better). They should consist of a combination of cognitive and metacognitive prompts instead of metacognitive prompts alone to help students organize newly acquired information and link new information to prior knowledge. PF are effective because they can stimulate a simple version of the expert's writing process in students by reminding them to plan, write, monitor, evaluate, and revise their work (De La Paz, 2002). They can reduce the demand for running executive routines so that the novice's attention can be placed in higher level functioning. Furthermore, it reduces the choices for the novice and helps them to bypass their immature tendencies. It provides labels to tacit knowledge so that the writing process can be discussed. Prompts also can be scaled up and down to cater for the novice's capability.

Boscolo (2007) pointed out that when using procedural facilitation, the teacher should model the complex executive processes involved so that students will be less likely to use a superficial writing system. In the following model, Graham and his associates described this process in detail (2006b, 2005, 1989). In their model, they taught a self-regulatory strategy to help students manage their writing. The teacher also modeled the writing process and scaffolded students towards their writing goals.

The Graham and Harris Model.

This model focuses on self-regulated strategy development (SRSD) with the goal to manage the writing process. This is a social constructive writing model as it emphasizes the importance of having an expert to scaffold novice writers. This model involves systematic teaching of essential writing skills and knowledge followed by scaffolding individual learners to achieve mastery. As opposed to procedural facilitation where the physical structures such as prompts and organizers play a

prominent role in the training, the scaffolding process in Graham and Harris' model takes center stage. In addition, this model also includes meta-cognitive skill training to help students monitor their writing behavior and apply writing skills. It also looked into the effectiveness of peer support and brainstorming in the learning of writing.

Graham (2006a) pointed out that novice writers differ from expert writers in various ways. Novice writers fall short in self-regulatory behaviors, writing skills, knowledge, and motivation. The model therefore emphasizes explicit and systematic instruction for students to acquire the necessary skills and knowledge in writing, in particular, self-regulatory strategies. The range of strategies include goal setting (e.g., establishing writing goals to include story elements, interesting vocabulary), planning (e.g., ways to achieve them), self-instructions (e.g., what comes next?), self-monitoring (e.g., checking to see if the goals are attained), reviewing (e.g., checking work completed so far), self-evaluation (e.g., assessing the standard of text), revising (e.g., improve text written), and self-reinforcement (e.g., I really like that part!). These strategies help students plan, revise, and edit text.

Furthermore, meta-cognitive skills have to be developed so that the children can monitor their own writing. Lienemann, Graham, Leader-Janssen, and Reid (2006) experimented on training children to monitor their own writing. The teacher actually showed students how to keep track of their performance to foster motivation in writing. The students graphed their performance between the pre-instructional level and the current level and monitored whether they had attained the goals they set.

Besides the above writing strategies, students were also taught genre-specific knowledge and brainstorm vocabulary (Harris, Graham, & Mason, 2006). The purpose was to help students create a mental model of what a good composition is through discussion and modeling, e.g., they learned to ask themselves a series of

genre specific questions such as “who are the main characters?”, and “what do they want to do?” to help them write a good story. They were also taught to brainstorm for vocabulary and select the interesting ones to make the composition more interesting.

In addition, Harris and Graham (2006) investigated peer assistance in learning to write. It involved a pair of students working together outside of the self-regulated strategy development sessions. They helped each other by identifying where and when they could employ the self-regulated strategy, how the strategy could be modified to suit their learning situations, and they reminded each other to apply the strategy and help each other with applying the strategy. Harris and Graham found that although the students did not do better in peer support condition as compared to the self-regulated strategy development conditions, they did significantly better than the comparison group. The peer support group wrote longer and qualitatively better posttest stories; they also included more basic elements in their persuasive papers and generalization to the classroom condition and to two uninstructed genres were observed.

Graham (2006b) also investigated other studies involving peer assistance. Peer assistance included peers helping each other revise or edit text, providing feedback on writing, or collaboratively writing on the word-processor. Peer assistance in planning, drafting, and revising compositions yielded large positive effect on writing quality. Children working collaboratively on one or more aspects of their writing had a large impact on writing quality (Graham and Perin, 2007). In terms of peer collaboration in revision as compared to individual carried out revision, Rouiller (2004) also found that there was higher quality revision in the collaborative task including more revision in textualization as opposed to surface features such as spelling, more optional revision and less incorrect revisions. The results led Rouiller to conjecture that peer

collaboration influence metacognitive regulation and consequently, better revision or text transformation. Palmquist (1997) indicated that students in the computer classroom interacted more with their peers than in the traditional classroom. Also, the interaction in the computer classroom focused on writing issues, rather than social issues as in the traditional classroom.

Graham and Perin (2007) elaborated on the guiding principles in the training of writing: first, set clear and specific goals for learners to achieve such as to identify the purpose of the writing and what to achieve as a final product. Then, let learners plan, draft, revise, and edit their compositions collaboratively. This will improve the quality of writing. Third, teach learners to write increasingly rich sentences. Fourth, let learners write on a word processor. Fifth, involve learners in observation and inquiry pre-writing activities such as observing peer's actions and describe the actions, ask them the reason for their actions, reflect on the actions and write about them in the composition. The learners can also be encouraged to gather information, develop a mental representation of the idea before commencing to write. Sixth, let learners model after good text or compositions. Analyze these texts for them, and encourage them to model after the significant components in the texts.

Students who have been trained on writing strategies and self-checking skills should have similar levels of performance. However, Graham found that some students persist in learning to write, even in the face of difficulty. To explain this phenomenon, one has to look into self-efficacy and motivation to write in the novice writer. Pajares and Valiante (2006) pointed out that motivation to write is underpinned by self-efficacy – self-belief about one's own competence in independently constructing knowledge to attain a writing goal. Writing competence, in turn, arises out of knowledge and skills (Boscolo, 2007; Graham, 2006a; Harris,

Graham, & Mason, 2006). How can educators help students acquire these writing knowledge and skills? Recent research has started looking into adopting deliberate practice to achieve automaticity in writing skills. This will free up the working memory to allow for higher level functioning. This model is described in the following paragraphs.

The Kellogg Model.

This model focuses on adopting deliberate practice to acquire writing knowledge and skills. When students are autonomous in applying writing knowledge and skills, it will reduce their cognitive load, thereby freeing up mental resources for higher-level writing (e.g., writing richer sentences, adding more details, planning a more interesting story). Kellogg's model (2008) is very similar to Graham's SRSD model. The difference was that Kellogg stressed the role of repetition in helping students gain automaticity. These are the steps to implement the deliberate practice strategy: (a) observe how a model performs, (b) emulate the behavior of the model and receiving, preferably, individual feedback from mentor and peers, (c) deliberate and repetitive practice with feedback. Automaticity entails two abilities: first, convert declarative knowledge into procedural knowledge (e.g., in sentence combination, (i) circle all the relevant words, (ii) cross out repetitive words, (iii) combine all the circled words into phrases, (iv) number the phrases in order of importance, and (v) create a new sentence with the most important phrase and link up other phrases using linking words such as "and", "but"); and second, retrieve relevant information from long term memory, a large store for knowledge and skills.

In deliberate practice, Kellogg and Raulerson (2007) advocated the use of spaced rather than massed practice. Massed practice such as writing in a binge or in a marathon session may frustrate the writers. The learning gain achieved from massed

practice is shown to not transfer well into long-term performance. Spaced practice, that is, consistent long-term practice on a regular basis provides better training performance in the long run. The success of the writing instruction is conceived in terms of whether the writer can achieve automaticity in applying writing knowledge and skills. If the writer is able to do so, he or she will have excess mental capacity to engage in high-level writing activities.

Effective writing instruction requires the teaching of strategies and deliberate practice. First, the teacher has to conduct direct teaching of knowledge and skills that are necessary for good writing. Then, he or she must scaffold novices to practice and internalize the knowledge and skills taught (Graham & Perin, 2007). More advanced strategies can be scaffolded once the student has demonstrated success in applying the basic strategies. In this learning process, teachers collaborate with students to help them solve writing problems. Students can be increasingly independent when they master new procedures and strategies. Last but not least, knowledge and skills have to be practiced till they become automatic (Kellogg, 2008).

Scaffolding is a major training strategy in the above writing models. However, these models have not discussed issues teachers encountered when they scaffold students in a classroom. The following section will discuss issues encountered in instructional scaffolding. It will also lead us to the discussion of the use of computer technologies in scaffolding writing. With the advent of information technology, ICT can now provide much support for writing, including a certain amount of adaptive scaffolding for individual learners. As ICT can lighten the scaffolding load of teachers, it is viewed as a possible solution for instructional scaffolding.

Scaffolding

Scaffolding was first introduced in a learning context by Wood, Bruner and Ross (1976). They started their investigation on how children learn in mother-child dyads and later moved on to larger groups of three to five year old children. Scaffolding refers to the interactive help that an adult provides to a child to enable him or her to perform a task that he or she would otherwise not be able to accomplish without assistance. When scaffolding is available, the child will gradually learn more advanced knowledge and skills that he or she would otherwise not be able to do without assistance. When the child can perform a task independently, the temporary scaffolding framework will be removed. Scaffolding, in a nutshell, is a “joint but necessarily uneven engagement in a valued activity, with a gradual shift in responsibility for the activity. Central to this image is the notions of affective engagement, intersubjectivity or shared understandings, graduated assistance, and transfer of responsibility” (Biemiller & Meichenbaum, 1998, p. 365). The word *scaffolding*, argues Pea (2004), is both a verb and a noun. It is a noun when it refers to a temporary structure put up, based on the current ability of a child to help him or her achieve a behavioral goal. The structure will be removed when the child can independently perform the behavior. Scaffolding becomes a verb when it refers to a process in which a learner can develop his or her potential gradually with the assistance from parents, mentors, and peers. Scaffolding is both a structure and a social interaction process to help children internalize external cultural, social, and historical concepts that will result in behavioral transformation. The implication of Pea’s argument is that when educators design learning models, they have to look into both the scaffolding process and the support. This is especially important when ICT is adopted to scaffold learning. Using appropriate ICT-mediated support will enable

students achieve effective learning. This topic will be addressed in the “Calibrated Support and Adoption of Technologies” subsection.

Scaffolding procedure.

Specifically, how do we scaffold? Pea (2004) stresses two aspects: first, channeling and focusing; second, modeling the solution. In the scaffolding process, the tutor has to a) capture the attention of the tutee, b) calibrate or select the easier part of the task to suit the level of the tutee, c) maintain the interest of the tutee throughout learning, d) highlight the essential features of the task and the correct procedure, e) help reduce stress, f) demonstrate the process of completing the task for the tutee to imitate (Langer & Applebee, 1986). Stone (1998) pointed out that effective scaffolding would help the child achieve an understanding of the task at the conceptual level and allow the child to complete the task with a proper sequence of steps. During the scaffolding process, the learner must be taught a series of steps to perform a new skill to complement the learning of domain specific knowledge as well as gain experience in applying this skill in novel situations. Scaffolding is only successful when a child can solve problem independently in novel situations (Biemiller & Meichenbaum, 1998; Bodrova & Leong, 1998).

Scaffolding in the classroom.

Cazden (1988) extended the use of the metaphor to teacher-student interactions in classroom settings via repeated question-answer sequences that she referred to as scaffolds. Stone (1998) reported that the early scaffolding studies in the classroom were observational in nature and that the researchers attempted to find parallels between interactions in dialectical and classroom scaffolding. Speaker (1999) in his reflections on Cazden identified the essential features for scaffolds in her writing: learners are introduced to and students work on the mature task right at the

beginning, instead of working on a simplified version. The teacher provides calibrated support to the learners and such support is temporary. Through working on the mature task, the problem solving process is gradually internalized by the learners. There is also a process to assess student gain. The implication of classroom instruction is that the classroom discourse may start in the “same physical space-time” but the children may end up in “very different places”. Scaffolding in the classroom context, as well as in dialectical situations, is temporary. How then, do teachers scaffold in a classroom?

Langer and Applebee (1986) who were also pioneers in applying the scaffolding metaphor in the classroom, identified five essential components in classroom scaffolding. First, the students must have some sense of ownership of the task. When they find purpose in learning something, it will provide them with a direction. They will see the training as a coherent whole, not units of unrelated activities. Second, the teacher should provide instruction that is appropriate to the levels of the students. The teacher has to work within a child’s zone of proximal development (ZPD) (Lajoie, 2005), in other words, draw upon prior knowledge of the students rather than assuming they have the knowledge where in fact they do not, or assuming they do not have the knowledge where in fact they have. For the former, important foundational instruction will be missed out and the latter, every element of a task will be taught from scratch. Both are undesirable. Third, teachers should structure instructional tasks to guide the students through a process that they can apply in similar context. This ensures that the students internalize the process as a routine. The components have to be taught within a context and not as isolated skills. Otherwise, they may be regarded as irrelevant. In addition, the instruction should “produce a natural sequence of thought and language” (p. 186). Fourth, the teacher’s

role is to collaborate with students through different types of scaffolds such as telling, questioning, correcting, praising, and modeling. The teacher should not regard themselves as evaluators. The teacher should work with the students to help them arrive at where they want to be. Fifth, teachers should fade the scaffolds when the students are able to perform the task independently.

The instructional scaffolding process in the writing classroom is illustrated by Englert, Mariage, and Dunsmore (2006). The teacher first modeled good writing process by thinking aloud which would expose his or her inner thinking. Then, the teacher jointly constructed the text with students to gradually transfer the control to the students. Language tools, symbols, think sheet and graphic organizers were employed to support writing. In the joint construction phase, the students engaged in dialogues with the teachers and peers to “collaborate, inform, question, think aloud, self-correct, challenge, and construct meaning together” (Gould, as cited in Englert, Mariage, and Dunsmore, p. 211). As a result, the students did better than the comparison group in terms of organizing their text and conforming to the requirements of the genre.

What are the differences, then, in instructional scaffolding as opposed to scaffolding an individual? The scaffolding metaphor has come a long way since it was first proposed by in 1976 by Wood, Bruner, and Ross to mean interactional support provided by teachers, often in the form of leading or probing questions, to help children learn (Foley, 1994). However, in instructional scaffolds, the metaphor has to be extended to address what, when, how to scaffold and when to fade scaffolding (Lajoie, 2005). Davis and Miyake (2004) highlighted a range of issues such as: the teacher needs to perform just in time assessments for each learner in the classroom and to provide calibrated support based on the assessments. This is not an easy task in

a classroom situation. Furthermore, in a classroom, the scaffolder is not limited only to the teacher. It may also include computers, peers, and online experts. It is important to consider how the scaffolding responsibilities are distributed among them. It is also important to consider how to create an authentic learning environment for the learners to practice solving problems. Scaffolding researchers have pointed out that in order for scaffolding to be successful, teachers must train learners in problem-solving strategies that they will encounter in novel situations (Bodrova & Leong, 1998). Thus, Biemiller and Meichenbaum (1998) emphasizes that the learning environment has to support two types of learning, domain knowledge and a strategy for the learners to adapt the task to new situations. Biemiller and Meichenbaum continued to point out that this, however, is not typical training in educational programs. School environments often stress structured skill acquisition instead of solving ill-structured tasks. The application of the scaffolding metaphor in the classroom context necessitates the modification of the existing learning environment to allow for constructing or adapting tasks to solve novel problems. Similarly, Applebee (2002) reiterated the importance of highlighting the real problem and how the activities taught can be applied to solving the problem. Otherwise, the activities will become meaningless to the learners. To solve real problems, problem-solving strategies need to be practiced in the learning environment. Meta-analysis has shown that teaching and supporting strategies within the scaffolding metaphor that students would otherwise not be able to employ on their own without this training increased writing performance by a few folds (Hillocks, 1986; Graham & Perin, 2007). Fading is an important component in scaffolding. How do teachers know when to fade a scaffold in the classroom when there are different zones of proximal development? Pean(2004)

article reminded researchers to pay attention to that this core aspect of scaffolding and that there was a need to report it more frequently.

The above school scaffolding issues were discussed extensively. We now look at each issue in greater detail.

Calibrated support and adoption of technologies.

The first issue is about the calibration of support for a community of learners. With the advent of computer technologies, calibrated support can be partially offloaded from the teacher through adopting computer technologies. For example, student profiles can be generated in e-portfolios that capture the learning history of the students. However, the computer may not be able to accurately diagnose the abilities or performance standards of the learners just in time to provide accurate supports or scaffolds (Davis & Miyake, 2004). To fully grasp this issue, Pea (2004) introduced two axes in the description of technology-mediated learning process. One axis is social, which is how responsive the technology is in assessing the ability of the learner and providing necessary support. The other axis is technology, which are learning artifacts built into the system. When we consider how ICT can simulate the role of the tutor, we can look at where these technologies are located in relation to the two axes. A non-responsive system may contain artifacts for learners to choose from when they require them but the system is low in the social axis. It does not respond to the needs of the learners, e.g., an electronic book, a word processor. These systems aim at reducing the cognitive load of the learners so they can focus on higher-level learning. In writing, this refers more to offloading the foundation skills of writing such as transcription and spelling through, for example, the use of word processors and e-dictionaries. At this level, help given by the computer may not be considered scaffolding as there is no need to fade the scaffold, except during exams. The next

level up is for the computer to guide students to write at a higher level by providing anticipated help. These systems are still relatively low in the social axis. If help is standard and only fades at the learner's request, it will also not be considered scaffolding. The third, which taps the potential of the computing technology, is adaptive scaffolding. Different ability students can be placed in the same class but the scaffolding they receive can be automatically customized to their abilities. Such customization requires automated assessment of students' work in order to provide just-in-time support. These systems will be high in the social axis. The following sections discuss briefly the three levels of help provided by ICT.

In level one, computer technologies can reduce cognitive load and free up memory for higher-level writing. The cognitive and linguistic demands on writing exceed the novice writers' processing capacity (Boscolo, 2007). At the basic language level, Graham, Berninger, Abbott, Abbott, & Whitaker, (1997) found that handwriting speed accounts for 66% of the variance in writing fluency, in other words, length of the composition, in the writing of primary school children. Graham and Weintraub (1996) explained that because of the slow speed of writing, the children could not write as they think. As a result, they forgot what they intended to write. It may also cause them to develop frustration in writing. Graham et al. (1997) also reported that spelling achievement accounted for 41% of the variance in writing fluency in primary school children. As such, transcription and spelling skills were found to be the best predictor of writing fluency in children. Offloading transcription and spelling skills will likely improve the length of the written text (MacArthur, Graham, Schwartz, & Schafer, 1995). Providing an e-dictionary and writing on a word processor offer such help. Graham and Perin (2007) reported in their meta-analysis that writing on a word processor has a consistent positive effect size of .55 on improving writing quality

between grade 4 and 12 students. This represents a medium effect on writing performance.

Level two is adaptable scaffold. Pre-programmed tools are included in the system to guide higher level functioning in writing. These tools include question prompts, rubrics and goal statements, models, organizers, and peer collaborative tools (Yelland & Masters, 2007). These tools are anticipated, that is, they are programmed into the system to provide standard support for typical problems (Clay, 2005). If the learners have options to choose a level of scaffolding, the scaffolding is also known as adaptable scaffolding. Adaptable scaffolds are evoked by students and therefore train them to be autonomous and reflective in their learning (Jackson, Krajcik, and Soloway, 1998; Randoll & Kali, 2002). This type of scaffold can act as an intermediary between an open-ended problem and the teacher's supporting response. It opens up a space for the students to engage in some initial thinking (Brush & Saye, 2002). However, these scaffolds cannot assess students' performance in real time and therefore, they cannot provide appropriate support to individual students.

The third level scaffolding is adaptive help. Inherent in the meaning of scaffolding is its ability to provide help adaptively such as automated evaluative feedback for each learner (MacArthur, 2005; Pea, 2004). This type of scaffold is known as soft scaffold as it is contextual (Brush & Saye, 2002) or adaptive (Randoll & Kali, 2002). It adapts to the learner's needs. MacArthur advised that this is one of the areas research should look into to provide useful procedural facilitation tools. Stone (1998), Pea (2004), and Rieser (2004) further explained the mechanism of adaptive scaffolding. The core of the issue lies in dynamic assessment. The software should be able to perform just-in-time assessment of the learner's needs and provide support for him or her to accomplish the task. The support provided is not anticipated

but generated based on the assessment. It is therefore situation-specific. When the learner has progressed to a high-level of performance, it is possible to fade lower level support and prompts for even higher-level performance. The dynamic nature of scaffolding is dependent on its ability to assess the learner repeatedly and deliver just-in-time support. Genuine adaptive scaffolding provided by technology should be likened to a knowledgeable adult or peer who can provide procedural facilitation whenever the learner requires it. Pea and Kurland (1987), therefore, envision that an adaptive writing tool should provide constructive comments, guide during the writing process, and be a responsive audience or collaborator. They further pointed out that development efforts of adaptive writing tools are advancing along two complimentary paths: making feedback more intelligent and making tools more personalizable to bridge the gap between thinking and writing.

Pea (2004) further distinguishes between intelligent tutoring systems (ITS) and adaptive scaffolding systems. The strength of ITS lies in the area of supporting the learning of procedural knowledge such as algebraic or geometric problem solving steps. It does attempt to prompt the learner when learning needs arises and provides support for the following step. However, it remains in the control of the learner to explore other assistance available in the system or if the learner wishes to work around the system's prompts. When measured against the three necessary conditions for automated scaffolding to take place, ITS provides timely and one-time adaptive support but it does not prompt for or support higher levels of performance. Moreover, procedural knowledge such as geometric proof is universal. It is not situation-specific like writing compositions.

Pea (2004) stated that the field of learning sciences simply does not have adequate design knowledge to implement just-in-time assessment for complex

cognitive tasks. Jackson, Krajcik, and Soloway (1998) pointed out that adaptive scaffolding is difficult to implement in an open-ended domain. Educators can only resort to adaptable scaffold. For future research, a combination of adaptive and adaptable techniques may be the appropriate direction. It is the unavoidable trend to adopt several scaffolders in the classroom, how much responsibility does each scaffolder has to take on to scaffold students?

Sharing of responsibilities among scaffolders.

The second issue in instructional scaffolding is related to shared responsibilities in instructional scaffolding. What is the difference between scaffolding performed by humans and scaffolding performed by the teacher, computer software, and peers? To address this issue, Tabak (2004) introduced the concepts of distributed and extended scaffolding. She argued that as acquisition of knowledge is a long and complex process, support is likely to be multifaceted. In particular, the abilities of students in the classroom vary from one person to another (multiple zones of proximal development), different scaffolding tools may be required. Support should not be just coming from the teacher alone. Cultural tools, a variety of materials and social means can be integrated into classroom learning to provide arrays of scaffolding. Tabak highlighted three types of scaffolding, namely, differentiated scaffolds, redundant scaffolds, and synergistic scaffolds. Differentiated scaffolds address the complexity in learning. In today's classroom, learning requires many different supports. Many scaffolds are devised and each scaffold supports a different need. Redundant scaffolds basically provide multiple scaffolds to support the same need. This is to help students who have different learning needs with respect to a learning goal, e.g., if the student cannot benefit from one scaffold, he or she can rely on the support of another type of scaffold to achieve the learning goal.

Synergistic scaffolds is different from the above two types of scaffolds. They are different scaffolds that complement one another to help students achieve a goal. For example, software scaffolds alone may not be able to explain the rationale behind certain procedures or strategies. The teacher has to instruct the students before they use the software scaffold and also, the teacher needs to provide dynamic reasoning while the students are using the scaffold. If only software scaffolds are used in the instructional process, the students may not interpret the scaffold in the culturally appropriate way. To harness the synergy in the design of distributed scaffolds, Tabak (2004) therefore advised us to follow two principles. First, create a coherent whole in the distributed scaffolds with common framework, task structure, and language. Second, let the teacher integrate the scaffolds to create a system of learning.

However, Pea (2004) cautioned us that there is a difference between a human role model and a computer scaffold: a human role model embodies culture, language, care, and values such as faith, trust, responsibility that the student can aspire to be like. It may be very different to work within a nonhuman scaffolding framework.

Researchers have begun to realize that in instructional scaffolding, it is not enough to scaffold students to perform a task. It is necessary for students to learn strategies to perform similar tasks in novel situations. These strategies involve the learning of how to self-regulate and self-monitor one's work so that one can be an autonomous performer.

Training of strategy development in the classroom.

The third issue in instructional scaffolding involves the design of an environment that not only imparts domain knowledge but also strategies for the students to solve problems in novel situations. Tabak (2004) pointed out that inherent in the scaffolding process is to help the child develop a strategy to solve problems,

e.g., in assembling a puzzle, the mother will guide the child to find the location of a piece of a puzzle in the model picture and find its corresponding location in the actual puzzle. The mother does it by showing, questioning such as asking the child where should the piece be in the model picture. Gradually, the child is able to go through this process of locating a piece of puzzle in the model picture and locating it in corresponding location of the puzzle without needing the help of the mother. Tabak describes this process as moving from other-regulated to self-regulated. When a strategy is successfully learned, a child will self-regulate to perform the strategy. In the modern classroom, in addition to learning domain knowledge, emphasis should also be placed on learning strategies. Teachers need to scaffold the use of these strategies so that the students will become self-regulated in using them.

McMahon (2002) describes self-regulation as “the process whereby students activate and sustain cognition, behaviors, and affects, which are systematically oriented toward attainment of their goals” (p. 458). The definition McMahon proposes encompasses three aspects of learning cognitive strategies, including the internalization of a strategy, behavioral, self-regulated use of the strategy to accomplish a goal, and affective, the motivation to work towards a goal. He further points out that self-regulatory behavior includes self-test and self-observation to monitor one’s own progress towards a goal. To train and support the development of self-regulatory behavior, learning has to take place in a supportive environment. In this environment, the teacher not only teaches the domain knowledge, the teacher has to model, directly instruct, and scaffold the use of strategies. The students have to enact the strategies until they have attained self-regulation. Collins, Brown, & Holum (1991) illustrated scaffolding self-regulated behaviors in the teaching of writing. They adopted the process of modeling, coaching, scaffolding, and fading to help students

acquire writing strategies: The teacher commences the writing process by modeling how to use the prompts that are written on cue cards to plan a topic. Then the students will each be asked to use the same method to plan a new topic. This gives each student an opportunity to practice planning independently. The teacher and the peers will give feedback and problem solutions if the student cannot solve the planning problem.

Graham and his associates have done extensive research in the area of imparting self-regulated behavior in writing. In their Self-regulated Strategy Development (SRSD) model, the exact procedures to conduct the effective writing skills and knowledge are discussed in detailed. We use strategy instruction as an example to illustrate the pedagogy advocated in the model. As direct instruction of strategies is emphasized, Graham & Perin (2007) have set criteria for what is considered strategy instruction. First, students have to be taught at least one strategy in planning, revising, or editing text. Second, the teacher has to show the students how to use the strategy, that is, the teacher has to model the strategy. Third, there should be at least three days of instruction. Fourth, the instruction has to gradually guide students to use the strategy independently.

Graham and his associates have specified five stages of instruction that will effectively guide the students towards independent use of strategies (Graham, Harris, & MacArthur, 2006; Graham & Perin, 2007):

1. Develop background knowledge that will help them to use the strategy effectively.
2. Discuss the strategy. It includes the purpose and benefits of using it. Mnemonic can be introduced at this stage.
3. Model the strategy, that is, show the students how to use it.

4. Support or scaffold students towards mastery of the strategy.
5. Independent use. This is the stage when the students can write a story without any help.

The exact procedure in training the students to write a story (Lienemann, Graham, Leader-Janssen, & Reid, 2006) is detailed as follows. The strategies to be internalized were (a) a mnemonic POW on how to plan and organize a story (“**P**ick my ideas” i.e., decide what to write about, “**O**rganize my notes” i.e., develop a writing plan, “**W**rite and say more”, i.e., elaborate on the plan while writing); (b) the 7-part story element mnemonic (Who, When, Where, What, What, How, How):

1. Describe the strategies. The teacher would explain why it is important to learn the POW mnemonic and what each letter stands for in the mnemonic. Then they discuss what each letter stood for and the importance of each step until the children could identify the parts and convey their importance. The teacher would also highlight the strategy by asking the attributes of a good story are (e.g., a good story makes sense, is fun to read, has interesting vocabulary, and includes the seven story elements). Then, the students would be given a story to identify these attributes. As the students named the attributes, the teacher wrote each of them down in a chart. The teacher would continue the training with additional stories until the students could accurately name all the attributes. The teacher would then help the students to set a goal to use these attributes in their upcoming composition. In subsequent lessons, a few minutes were used to allow the students to rehearse the mnemonics.
2. Discuss the strategies. In this stage, students needed to understand why the strategies were required in writing stories. The teacher reinforced such understanding by having class discussion. Also, it is important to help the

students in performing self-monitoring. This can be achieved by analyzing a previously written story to find out how many elements have been included in it. Then, the students would graph the result by coloring the corresponding number of segments in a picture with seven segments. The teacher then asked the students to name the elements not included. Also, the teacher would tell the students that they could expand or improve on the parts that were included. The teacher would discuss with the students again on the importance of using the strategies to improve writing.

3. Model the strategies, that is, show the students how to use them. In this stage, the teacher would also introduce the concept of self-instructions (what to do when one is stuck). The teacher first discussed the goal of writing a story with the students that acted as a reminder. The teacher then modeled how to use the strategies. This process was conducted by talking aloud. The students would help the teachers in generating ideas for each element of a good story. Additional ideas were welcome during the writing process. The teacher would also model how to solve problems during the writing process by the use of self-instructions, that is, to identify where one is in terms of the two mnemonics (e.g., What do I have to do here?), planning ahead (e.g., What comes next?), self-evaluation (e.g., Does that make sense), self-reinforcement (e.g., I really like that part!), and coping (e.g., I'm almost finished!). When the story was complete, the teacher would discuss the different types of self-statements. The teacher would encourage the students to pick at least three self-instructions that they would use for their own writing. They then recorded the self-instructions in their chart. The teacher would let the students identify

all the seven elements of a good story by highlighting them and graph the results.

4. Support or scaffold students towards mastery of the strategies. This is a collaborative process and involves the following steps: (a) the teacher and the students set a goal to include all the seven elements of a good story for the potential story the students were going to write, (b) they planned the story together using the strategy they had learned for planning, organizing, and expanding a story. They fill out the graphic organizer that was designed to remind them of the seven elements of a good story. The students also recorded their own contributions to the story. (c) The students wrote the story with the notes they had jointly generated. (d) The students looked for each story element by highlighting it. They could also find out whether they have attained their goal by graphing the result. (e) The teacher discussed with the students on how the strategies helped them write a better story.
5. In subsequent composition lessons, the teacher would gradually fade the support provided in the first composition lesson. For example, the graphic organizer would be gradually removed and the teacher would explain to the students that there might not be a graphic organizer they could use all the time. They could write the seven parts of the mnemonic on their composition page. The teacher would continue to encourage the students and provide necessary support but the level of assistance would gradually lessen.
6. Independent use. This is the stage when the students can plan and write a story with the 7-part story elements without any help.
7. Strategy instruction consistently resulted in large improvements in writing quality, schematic structure and revisions across different types of students

(Graham & Perin, 2007). Randoll and Kali (2002) advised on the design principles for the use of scaffolds. While there are various types of scaffolds such as functional, process, content, metacognitive, interpersonal, the design principles remain the same. First, the designer should scaffold learners in the context of use. Second, they should fit scaffolds to a variety of student needs and third, they should design content together with scaffolds.

When students have acquired the strategies to self-regulate and self-monitor, and when they can perform tasks independently, the teacher will fade the scaffolds. In instructional scaffolding, when to fade the scaffold becomes a serious issue. However, very little has been done in this area.

Fading of scaffold.

This is the fourth issue to be addressed in instructional scaffolding. Fading over time is seldom addressed in research and very little empirical reports have been made on the issue (Pea, 2004). Pea further suggests that the fading is more of a concern when software scaffolds are used as some software (e.g., e-dictionaries) may require learners to continue using them to achieve the desired level of achievement. This type of scaffold, Pea argues, is known as distributed intelligence and not scaffolds-with-fading. Pea points out that a fading process needs to be implemented to lead learners to independent performance. Such proof must be furnished for *each* learner, not only for selected groups or learners.

Findings from three decades of writing research indicate when designing a writing model, it is important to: (a) adopt concrete, easy-to-understand cognitive prompts to provide directions for learners to successfully perform a task. Prompts can lessen students' cognitive load in performing standard operations (e.g., inputting text via a word-processor instead of transcribing to avoid the struggle to handwrite

unfamiliar words); (b) adopt multiple training strategies (e.g., direct teaching, instructional scaffolding within the technology-mediated environment, and deliberate practice) to effectively train composition writing; (c) teach self-regulated strategies so that students can write in novel situations independently; (d) adopt synergistic scaffold which combines supports from multiple scaffolders (e.g., the teacher, outside experts, ICT-mediated supports, peer support). These supports complement one another to help students accomplish their writing goals; (e) design adaptable/adaptable ICT-mediated scaffolds. They should be appropriate to students' learning histories and their potential zones of development; (f) employ deliberate practice consistently and regularly over a long period to consolidate learning.

Furthermore, there are also issues related to operationalizing research findings. Graham and Perin (2007) point out that first, research in writing pedagogies have adopted diverse treatments and with varying student populations, with each condition having different effect size. Second, effective treatments usually require extensive teacher training. Third, there are no specific recommendations on how to combine the different treatments to result in effective training program. Fourth, there are no guidelines on the directions for adopting technologies.

Bearing the theoretical and operationalization issues in mind, the following chapter explores the writing environment in a typical Singapore school. The findings from this school will inform the creation of a writing model that aims to bridge the gap between research and operationalization of research findings.

Chapter III The Pilot Study and Research Questions

The School Context

The Primary 4 class in this study was selected from a neighborhood school through convenience sampling. The following section provides some background about how Chinese writing was taught in that school:

Limited resources.

The school was a typical Singaporean school. It was a young school with limited resources. The school had three computer laboratories but only one had the Chinese input capability. All the Primary 4 mother tongue lessons were scheduled to take place at the same time slot. This is a common arrangement in Singapore neighborhood schools. As such, the demand for the laboratory during Chinese lessons was very high. Moreover, the students were not from affluent families. Although all of them had computers at home, only half of the students had Internet access and less than half had installed a Chinese word-processor. This put much strain on the teacher as she had to look for resources for students to complete their work during or outside curriculum time in school.

Hurdle in inputting Chinese.

It was necessary for students to know pinyin to input Chinese characters onto the computer. Pinyin is “the standard system of romanized spelling for transliterating Chinese” (<http://oxforddictionaries.com/definition/Pinyin>). Pinyin input is a common input method. It is available in all input systems, including Microsoft Windows IME. In Singapore, students are taught pinyin in Primary 1 and 2 (Grade 1 and 2). When they reach Primary 4 and 5, they would have forgotten a large amount of pinyin. Students who are weak in pinyin will face great difficulties in inputting Chinese

characters on the computer. They need to relearn pinyin and that will take up time outside the regular Chinese lessons.

Writing instruction lacked proper design and consistent implementation.

Composition is a major writing activity in the Singaporean Primary 4 curriculum. Students are required to write nine different picture compositions throughout the year. However, there is no specific writing curriculum from the MOE. Each school designs their own writing instruction. In my intervention class, the teacher would give students a worksheet that consisted of a set of four pictures and ten helping words in a composition lesson. She would then conduct a class discussion to introduce some writing skills, for example, tell students how to write introductions and conclusions, identify the theme of the composition, discuss the main points of the composition, and highlight the vocabulary. Students would then complete a composition based on the pictures and the discussion. If they were not sure how to transcribe certain words, they would ask the teacher for help. The teaching, discussion, and writing usually take place in about an hour and half. Sometimes, students were also assigned to post some blog entries and do journal writing. But it was not regular and did not persist over time. It depended much on individual teachers.

The school usually introduced a different intervention each year, for example, conducting a series of mass lectures. During these lectures, all the Primary 4 students gathered in the hall and one teacher taught writing skills for that particular lecture. The skills were, e.g., different types of introductions and conclusions, how to grasp the main points for the body and introducing descriptive vocabulary to the pupils. However, there were no data collection and analysis so the effects on students' writing performance were not known.

The Pilot

From the beginning of the pilot, it was understood that the training should be conducted within the curriculum time so that it could be adopted right away for different grade levels. It should not be regarded as an after-school enrichment program. This created much stress in the teachers as the pilot program had become the real writing program with which she had to prepare students to take composition exams. The teachers faced a dilemma right away as they had to train students to input Chinese characters onto the computer and yet the exams were hand-written. The curriculum planning and development officers from the MOE who came to observe the ICT classes were also torn between using ICT to input Chinese or handwriting it. They finally advised on a mix of both.

The software platform.

The software platform developed for this study is an e-portfolio called FolioStar (see Figure 3.1). It was developed for its ease of use and flexibility in customizing scaffolding templates and assigning writing tasks to individual students (see Figure 3.2). It was a platform for constructivist learning which integrates customized learning with social learning by enabling:

1. Adaptable scaffolds to be assigned to individual student.
2. Reflection for deep learning.
3. Collaborative learning through:
 - a. Peer-, teacher- and self-ratings.
 - b. Peer reviews and comments.
 - c. Outside expert mentoring.
 - d. Showcase model work.
 - e. Publish in pin-up board or in blogs.

4. Tracking of students' performance. This is done through keeping students' learning histories (artifacts) and analyzing their performance overtime.

In addition, FolioStar allowed teachers to share teaching resources (scaffolds, multimedia resources, and teachers' reflections) to reduce their workload.



Figure 3.1. Features of e-portfolio.

6. 坏事(2) 被谁看见了? 你认为他们为什么没有阻止他? >

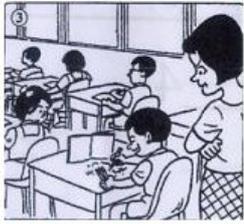
这时, 小华的动作被他的铜学看见了, 但是他们并没有告诉老师因为他们都怕被小华揍。

提示: 同班同学

7. 看了 图(3), 用两三句话写出他所做的坏事(3)。 >

上华文课的时候, 小华不专心听课, 拿出彩色笔来涂颜色。

提示: 桌子、彩色笔



8. 主角做了坏事(3)后, 被谁发现了? >

老师刚好经过, 看见小华上课时涂颜色。

9. 老师有什么反应? 她怎么教训主角? >

老师看见了很生气, 便带小华去见主任。

提示: 生气、责骂、爱护公物

10. 看了 图(4), 你认为主角被老师责备后, 有什么感受? >

小华北主任骂了之后, 他对主任说“对不起, 我一定会改过的。”

提示: 红着脸、非常惭愧、不会再这么做了



Figure 3.2. A scaffold with question prompts and helping words on the right.

The pilot study was conducted from August 2007 to November 2008 to identify the needs of student and to provide an evidence-based platform for the main study.

Major milestones and findings.

August 2007 – November 2007 General scaffolding.

In this phase, there were 39 Primary 4 students (10 years old). The class consisted of mixed-ability students and they were in general, weak in all areas. The students started off with filling out a pre-trial questionnaire. The aim was to find out their preferences for ICT-mediated learning and interests in the Chinese language, especially, writing in Chinese.

The regular composition lessons were transferred to the computer lab. The students wrote altogether three compositions and attended a mini-lesson on micro-writing skill. The composition scaffolds consisted of four pictures that form a complete story. When they wrote compositions, students were also given question prompts to cue them on the development of the story. Each prompt was associated with a few helping words. Students could complete the entire composition by answering the question prompts (see Figure 3.2). It was found that:

- Students enjoyed ICT-mediated classes tremendously, even though the content might be similar to their writing composition period in the classroom.
- Improvement in writing did not last beyond the trial. Writing performance had improved at the end of the trial. However, the improvement had not transferred across to the final exam. It was probably because students were very weak in their vocabulary and sentence construction and they received much help in the ICT-mediated scaffold. The weakest students could simply copy and paste helping words to answer the prompts. This might account for the improvement in composition scores during the trial but not otherwise.

Moreover, students were given ample time to write their composition on the e-portfolio. They could get help from their teacher or peers. In the exam, the time limit was 40 minutes and students were only given four pictures and ten helping words to form a story. Also, there were no question prompts in the exam and the helping words were not associated with the pictures. In the exam, students must handwrite their compositions. It was a big hurdle for them. They must know how to handwrite the characters whereas they need only to know how to pronounce the characters in order to enter them onto the computer.

- There were too many question prompts for composition writing. It was found that the more question prompts were included, the more difficult it was for the writing to flow well as the teacher could not predict what the students' answer would be and therefore could not prompt based on their previous answer. An adaptable scaffold does not seem to work in the case of open-ended problem solving such as writing compositions. In future, questions prompts will be reduced to one or two per picture and it will be a generic question such as "what is this picture about?"
- It was not suitable to use cloze passages (fill in the blanks) to scaffold students to complete their compositions. Students were given a text passage with blanks to fill in. They could write as many words as they wanted in the blanks. However, it was observed that cloze passages were actually limiting students in their imagination and writing. This ran counter to the belief that it would help students focus on the essential parts of the composition so that they could write with more focus and ease. This method of writing will not be used in future writing programs.
- Weak in word input skills which impeded actual writing: Some students were weak in their pinyin skills (phonetic skills) which was necessary for inputting Chinese characters onto the computer. In future, it will be necessary for students to acquire pinyin skills before the ICT-mediated writing activities. Future trials will commence with pinyin training.
- Students' compositions were plain. Students were experiencing difficulties in descriptive writing and structuring the compositions. Letting students write more compositions would not help. They needed to be scaffolded to develop writing skills. Systematic efforts such as the use of short assignments to

develop their descriptive writing skills, help them organize the flow of their compositions were needed. Hence, mini-lessons such as how to describe appearance, expression, dialogues, and structuring the story will be included in future trials.

Based on the findings, the direction was clearer in the second phase of the pilot. It commenced in the academic year of 2008. In this phase, the focus was on training pinyin skills and micro-writing skills such as how to describe actions, feelings and expression. Question prompts had been kept to a minimum. Cloze passages were not used.

January 2008 – May 2008 Refinements of the writing instruction.

After the research team had gained more knowledge as a result of the findings from the first pilot phase, the writing program was refined and introduced to a new class of students. In order to keep track of students' performance, assessment criteria were developed.

1. Development of Rubrics. Two rubrics were developed. The first assessed the structure of the composition such as whether the introduction and conclusion were included, if the sentences had smooth flow, and if the composition was complete.

The second rubric assesses basic language abilities and the writing skills. It included language abilities assessment such as vocabulary, sentence structure, length, number of sentences in a paragraphs as well as vividness assessment such as whether students could describe a person, an action, an event, and whether dialogues/monologues were included with the appropriate feelings and tones of voice.

2. Pinyin Enrichment – Students weak in pinyin were trained an hour a week in inputting Chinese text outside the curriculum time. They were given a piece of text, usually taken from their textbook, to input onto the computer. They were trained for one semester.
3. Scaffolding for the development of Micro-writing Skills (MWS) – They were a writing strategy that aimed at developing students' skills for vivid description of people and events in their writing. MWS included Big Four, action chain, and feeling chain (feeling linked with expression, action, or tone of voice).

Again, students' performance did not improve in the mid-year exam.

Therefore, a review was conducted to find out possible reasons. It was found that:

1. Higher ability students did not apply the writing skills in writing the exam composition even though these students could write elaborate action chains during the trial. A causal check with these students indicated that they could say the characters but not handwrite them. In future trials, some compositions would have to be handwritten.
2. The rest of the students remained weak in vocabulary and sentence construction, even though some would like to apply MWS skills, e.g., action chain, they did not have the vocabulary to do so. It became very clear at this point that there was a need to improve language ability before training the students to write vividly. Furthermore, for the rest of the year, students would practice writing skills they had learned so far. New skills would not be taught. Although the over-riding learning theory utilized was constructivism, some activities using a more behaviourist approach were

planned for, such as: dictation, intensive reading, and a series of game drills.

3. Some students' compositions had little flow in their descriptions. A writing strategy labeled as Circling was introduced in order to help students prepare for exams. Students would be trained to circle important events and people in each picture, sequence the circles and then, write a sentence for each circle.

July 2008 – October 2008 Introduction of the circling strategy.

It was found that student missed events in their story, especially when these events were not depicted in the pictures. Hence, there was a need to help students identify relevant events in their story. As such, students were taught the circling strategy so that they could identify and sequence events quickly for their composition. Then, they would write according to the sequence. The circling strategy was designed with the exam in mind. Students had to be able deploy this strategy quickly in the exam as they were only given 40 minutes to write their composition. According to the teacher, although students improved in their writing performance during the trial, results did not transfer to the final composition exam. It was likely that students had not internalized the circling strategy. In future, the circling strategy will be taught from the beginning of the year so that students have more time to practice using it.

October 2008 Introduction of the Chinese language game

After the final exam, there was ample time before the school holidays. A Chinese language game was introduced to help students improve in their pinyin as well as learn more new words. It was a drilling game with 900 Chinese characters for students to learn (see Appendix A). They enjoyed the game tremendously. In the

coming year, the game would replace the pinyin training in which students were asked to type in passages from their textbook.

November 2008 Introduction of collaborative learning.

After students played the Chinese Language game, the teacher would like to find out their reaction on collaborative learning. Some of the learning activities that involved peers were as follows:

1. Peer-evaluation and editing in groups: Groups of four students were assigned to evaluate a composition written by their peer. Students were given a rubric to evaluate their peers. The purpose was for the class to learn from one another. Based on the peer evaluation, group members would edit the composition collaboratively. Though no significant difference was found between the before and after compositions, the groups were engaged in their discussion. In future, the student rubric can be simplified to make it easier for students to do rating.
2. Collaborative mind map: There was plan for students to brainstorm for synonyms or ideas using this shared mind map in the e-portfolio. The students could each edit the same mind map from his or her computer and the change would be updated on every group member's computer right away. The aim was to create an environment for them to work in groups so that they could learn from each other. It was mainly planned for use in the training of MWS e.g., to help students write an action chain, they can brainstorm for closely related actions. However, there was not enough time to carry out this intervention so it was saved for the study in 2009.

In addition to the above student activities, some changes were made to prepare for the study in the New Year. First, I decided to adopt the MOE composition

assessment rubrics (see Appendix B). After assessing the compositions with the two rubrics developed in phase 2 of the pilot for a year, I found that there should be consistencies between my assessment of students' performance and the teacher's. As such, the MOE rubric was adopted for use in the academic year 2009. Next, I developed a new survey based on literature review in the area of writing research (see Appendix C). It aimed to find out students' perception of the Chinese language, writing environment, writing intervention activities, and self-efficacy in writing. The items in the survey were derived from writing literature. Before it was administered, a group of experts including Professor Neil Anderson, my thesis supervisor, Chinese teachers, Ministry of Education curriculum planning officers, and a statistician reviewed it. Just before the holidays, it was administered to 87 Primary 4 students. Factor analysis was conducted to find out the number of question clusters in the survey. The extraction method was Principal Components and Rotation Method was Direct. Nine factors were extracted but only three were relevant. They corresponded to the purpose of the survey, namely, perceived writing ability, interests in writing, and perceived effectiveness of the various writing strategies.

January 2009 – April 2009 Commencement of research study.

This year, the teacher would spend more time in building the basic writing abilities of the students e.g., giving spelling tests and letting students work on sentence construction exercises. She also started the outlining and circling strategies early on in the year.

Findings for and issues identified in the pilot study since August 2007.

Positive effects were ICT related.

1. Students enjoyed the ICT-mediated writing environment tremendously. The two teachers involved in the pilot study frequently commented that students

were excited about writing Chinese on the computer. They frequently requested the teachers to bring them to the computer lab to work on assignments that they normally detested doing (Teacher's comment, March 9, 2009).

2. Students improved in attitude and behavior when ICT was used as an incentive. In an email interview with the teacher (March 21, 2009), she indicated that students used to hate writing compositions but after using ICT to complete compositions, they would look forward to composition lessons. In addition, students were also more motivated to do their work properly, especially for ICT-mediated assignments. It also appeared that behavior in class improved as they knew that if they behaved, the teacher would bring them to the computer-lab.
3. The positive effects found in using ICT were not novelty effects. It was sustained over the entire year. This might be due to the engaging, immediate feedback nature of ICT. Students were especially excited about the Chinese Language game that helped them improve their pinyin and built up basic skills that provided a platform for the higher level tasks and peer collaboration.
4. Eighty percent of the students indicated that they valued the ICT-mediated writing environment. They said that it increased their confidence in writing and provided them with help such as prompts and more helping words.

Challenges.

There were also challenges to be resolved in the actual study. Students felt that they did not have the required language abilities, e.g., 64% indicated that they did not have adequate vocabulary to write composition and 62% thought their sentence structure was not good enough. In addition, 46% thought they should write faster to

complete the composition within the time limit. These findings coincided with the comments given by the teachers. They observed the following challenges in the pilot study:

1. Students had limited vocabulary. They only had one word for a description and they used it for all occasions, e.g., they only use simple descriptions such as happy (高兴, 开心) instead of the more vivid or precise descriptions such as excited, high-spirited (兴奋, 兴高采烈). It was necessary for the teacher to provide them with a list of helping words for each question prompt to help them write with more varied and interesting vocabulary.
2. Students could not transcribe characters on paper, even though they knew how to say them (or knew their pinyin). This was not uncommon in students of graphical languages. They could recognize the word but could not transcribe it. Feedback from students indicated that in exams, they would either use a replacement word or simply avoid writing what's in their mind.
3. There was problem with constructing sentences. All except one student who was originally from China needed training to improve their sentence structure. The teacher indicated that they could not write grammatically correct sentences. One common problem was they translated the sentences literally from English such as 我要吃饭在这里 (I want to eat here) instead of the grammatically correct sentence 我要在这里吃饭 (I want here eat).
4. Writing lacked fluency. It took some students an hour to write four sentences, one main point for each picture (Teacher's comment, March 9, 2009).
5. Writing did not flow. The teachers found three weaknesses in how students flow their sentences. First, they had problems linking sentences to describe an event, although some were able to verbalize it. This seemed to indicate

cognitive overload in translating from verbal to written words. Second, students did not know how to make use of linking words such as *meanwhile* and *after*. They wrote in short sentences. This caused the breakdown of flow in the composition. Third, there were gaps in the description. They missed out certain important events in the picture. They also did not describe what happened between two pictures. They could not see what caused an event to happen, e.g., in one picture there was a boy searching for his lost bag. In the following picture, the cleaner showed him his bag. In the composition, the student missed out asking the cleaner if she had seen a bag. This seemed to indicate that students could not write from their audience' perspective.

6. The compositions were plain and usually contained scant descriptions of the four pictures. They lacked feelings, description of events, and character portrayal. It was clear that students did not have adequate vocabulary and they lacked composition-writing skills. For the weaker students, writing compositions simply means completing the number of words (80) required. Frequent counting of the words by weaker students was observed.

It appeared that the weak language and writing skills could be attributed to:

- a. Students had difficulties transcribing words. Teachers and students frequently commented they could say what's in their mind but could not write out what they said. They had problem transcribing Chinese characters.
- b. Vocabulary and sentence structuring abilities had not reached minimum level required for Primary 4 composition writing.
- c. Lack of immersion. Only one subject in the school was conducted in Chinese. Students could not be proficient with so little contact with the

language. Statistics indicated that half of the students did not speak Chinese at home. For those who stated that Chinese was their home language, the tendency was that they listened in Chinese and responded in English. In students' compositions, some sentences were clearly literal translations from English and almost the entire class made the same mistake.

- d. Lack of imaginative description. Students simply wrote what's in the picture.
- e. Lack of composition writing skills. In addition to training then in micro-writing skills, e.g., writing action chains, the teacher let students model after good compositions so that they know what it means to be a good piece of writing.

Based on the findings from the pilot study, students must improve in basic writing skills such as transcribing, use of appropriate and interesting vocabulary, and write flowing sentences. They also must be able to apply composition writing skills to write vividly. Furthermore, results have given a strong positive indication about the value of adopting ICT to enhance writing skills. Students enjoyed learning in an ICT-mediated environment and being given a technology platform for learning. Teachers can leverage on their interest and design adaptable scaffolds to provide help to mixed ability students. Technologies can provide two types of scaffolds: First, adaptable scaffolds with different prompts and helping words to cater for different ability students in the e-portfolio to help them write compositions. The prompts reminded students to include main points of the pictures and make use of the acquired micro-writing skills such as Big Four in their writing. The e-portfolio enables students to write in a non-threatening environment and with appropriate help; secondly,

collaborative writing activities, e.g., peer edit to immerse students in a Chinese environment in which they can share experience and learn from their peers.

The above interventions were identified to resolve issues arising from the pilot study. The pilot study not only provided insights into what to include in designing the writing model and what software to select for effective writing instruction, it also helped us better understand writing research findings and how they should be modified to suit the Singapore environment. For example, Pea (2004) cautions that scaffolds need to be faded for each student, not a particular group. However, it is not easy to operationalise this in the local context. In Singapore, the writing program had to prepare students to take exams. With such a constraint, there were implications in fading the scaffolds. All scaffolds had to be faded before the exam regardless of whether independent performance was achieved. One solution would be to pick strategies that were easy to learn and fast to apply. Another solution would be to ensure the teacher completes his/her training long before the final exams so that she could conduct deliberate practice to help students achieve autonomous writing. The advantages of employing the deliberate practice strategy were that it allowed the teacher to manage time effectively and continually assessed students' understanding (Huitt, 1999). This was also a high scoring model which prepared the learners for achievement tests (Bereiter, 1981). Moreover, it was an instructional model that was required to engage students in learning activities, especially basic concepts that would lead them to acquire higher cognitive skills such as using the concepts learned to solve problems (Cohen, 2008).

Writing research indicated that it was necessary to design an overarching strategy for writing instruction. Within this strategy, the teacher would employ various instructional strategies, e.g., direct instruction to impart domain knowledge

and skills, with the emphasis on making them meaningful and purposeful for students (Tobin, 2003) as well as providing them with objectives and establishing expectations for them; scaffolding strategy to help students acquire the knowledge and skills taught by using organizers and prompts; self-monitoring strategies to monitor one's performance; and deliberate practice to consolidate learning. Research findings also indicated ICT is an effective strategy to engage students and mediate collaborative learning. It would reduce the cognitive load in writing and also direct students to higher-level processes (MacArthur, 2005; MacArthur, Graham, Schwartz, & Schafer, 1995).

Combining lessons learned from the prior research studies and the pilot studies, a writing model for the Singaporean neighborhood school was beginning to emerge. Since teachers have the flexibility to design their own writing instruction, they should focus on two areas. First, they could build up the students' language skills through deliberate practice. Second, they could teach writing strategies in a collaborative environment. As students are relatively weak in Chinese, teachers should instruct simple strategies that are well encapsulated. This is to enable fast and easy learning. There should be strategies to improve help students write complete compositions, e.g., the circling strategy, or strategies to improve vividness in compositions, e.g., adopting micro-writing skills. An example of micro-writing skills will be the application of Big Four namely "where", "when", "who", "why" in writing an introduction. Moreover, teachers also need to create an engaging environment for the students to perform deliberate practice and to collaborate. This environment should be adaptable to students' needs, able to excite students, and record the learning history of individual students. It is therefore necessary to adopt ICT to mediate such an environment. The

writing model will give rise to the writing program to be adopted in the Primary 4 classroom in the experimental school.

In operationalizing the writing program in school, we have to work within the constraints of the curriculum of the Chinese subject and composition exam format set by the Ministry of Education. Prior writing researchers did not have to consider them. For example, teachers have to teach classes with large sizes which has pedagogic and resource implications. Furthermore, it is necessary for teachers to prepare students to take composition exams. Harris and Graham (2006) have questioned if their experimental design can suit the school situation in which high-stake testing is emphasized. In the current case study, teachers have to work within these constraints and this becomes part of the context for the study. It is necessary to be flexible in applying the writing model in the school. The following were questions I attempted to answer with experience and findings obtained from the study that was conducted in the following academic year:

Research Questions

Based on findings from prior writing researchers and the pilot study, I asked the following questions in my study:

1. What were the appropriate strategies for teaching writing for mid-level classes in a Singapore neighborhood school? In answering this question, I identified the Ministry of Education assessment criteria for composition and introduced an intervention that helped to improve the corresponding performance. In the findings of the pilot study, I had identified areas to be improved upon and possible strategies to improve them. In my current study, the focus was on using these skills and strategies to scaffold students towards writing better compositions. During the study, artifacts, the teacher's and students'

comments were collected for analysis. Comparison of pre- and post-test scores (composition exam results) were conducted. At the end of the study, a student survey and a semi-structured interview were conducted to find out what they perceived to be effective writing interventions. In addition, students' self-efficacy would be assessed. The teacher was also interviewed. Results from the survey and interviews, the composition scores, and the analysis of compositions were triangulated to derive a set of effective strategies to help students write better compositions.

2. What was an appropriate and effective software technology platform based on the writing program? To answer this question, an e-portfolio platform was adopted to keep track of students' performance. For ease of use, software applications, e.g., mind map, peer-editing, and the Chinese Language game were incorporated into the platform for the current study. By doing so, there was only one entry point into the entire system. The outcome of the teacher-to-peer and peer-to-peer interaction, as well as students' work were analyzed.
3. How could scaffolding be effectively incorporated and used through the software technology platform? In this study, software scaffolds would be limited to adaptable scaffolds, i.e., pre-constructed scaffolds. In the long term, adaptive scaffolds would gradually be incorporated as a large database consisting of good sentences and paragraphs is required for constructing adaptive scaffolds. It will take time to accumulate these artifacts.

Chapter IV The Writing Model and its Elements for a Primary 4 Neighborhood School

I have designed a writing model for implementation in a neighbourhood school. The writing model I have adopted has been informed by past research findings and issues faced by teachers of Chinese language in neighborhood schools and by findings from the pilot study. The appropriate design of a writing program for mid level classes in a Singapore neighborhood school would have to formalize the teaching of writing skills in the yearly teaching plan within the constraints of the school curriculum. The following is a detailed description of the writing program that would be implemented in the intervention class.

Guidance from Previous Research Findings

The current writing model was designed based on methods or models that have been shown to be effective in the past. The following is a description of how my writing model was influenced by past research findings:

1. Careful use of procedural facilitation. Although various types of procedural facilitations have been researched, they were effective only under certain conditions. First, students must understand the subject matter and concepts of the topic to be able to benefit from the hints and prompts provided by the teacher (Rosenshine, Meister, & Chapman, 1996). Second, there was a tendency to over-prompt. If students were provided with a wealth of information, they did not have to engage in any 'thinking'. Internal representations could not develop (Rosenshine, Meister, & Chapman, 1996). This defeated the purpose of reducing the routine processing from the working memory to free up mental resources for high-level processing. Third, Graham and Perin (2007) pointed out that the type of procedural facilitation used was

dependent on the subject matter taught and therefore, difficult to generalize its effectiveness. In addition, researchers had experimented with a large variety of them (e.g. cue cards and checklist). Graham and Perin could not come to a conclusion regarding their effectiveness due to the large variations of methods employed in studies. In my writing model, I addressed these three points by designing a two-stage model where students would have to improve in their basic writing skills (e.g., the ability to transcribe characters, writing with proper sentence structures) before embarking on the learning of composition writing skills. This would ensure students were able to write in grammatically sound Chinese before adopting skills to write vividly. Also, procedural facilitation would be limited to question prompts, instruction prompts and helping words. They would be adopted in ICT-mediated scaffolds to free up teachers so that they could help out weaker students in class. Prompts would be concrete and easy-to-understand (e.g., “what happened?”, “what was the accident?”). The number of question prompts would be small in order not to over-prompt.

2. Employ multiple instructional strategies. The training of writing would be a complex process. It would require students to learn skills (e.g., how to write an action chain) and attempt to write the entire composition applying the skills learned. According to Graham and Perin (2007), to train writing effectively, multiple strategies were required. For example, while explicit teaching would be necessary to train students to acquire procedural knowledge in a step-by-step manner, scaffolding would be suitable for assisting students achieve their learning goals over time by providing them with feedback on how they perform in relation to their goals. Graham and Perin advocated that

scaffolding could be “integral components of explicit-teaching procedures” (p. 451). Following Graham and Perin’s guidance, I had designed my writing model to include explicit teaching, scaffolding, and deliberate practice strategies. Students would first be taught explicitly strategies or process (e.g., how to fill out an action chain template), then they would be scaffolded to gradually acquire the skills (e.g., writing action chain). It would followed by a deliberate practice phase to consolidate the newly acquire skills so that they could write autonomously.

3. Incorporate collaborative learning. Strong and positive effect size for peer assistance was found in the meta-analysis conducted by Graham and Perin (2007). When peers worked collaboratively, the writing quality of the students improved substantially. In the Singaporean context, ICT-mediated learning could enable collaboration in a big class with 25 students. With the help of ICT, I would be able to incorporate this effective scaffolding process into the writing model.
4. Standardized a model for systematic training over time and across classes. To operationalize writing instruction in the longer term and for it to be adopted by the entire cohort, a systematic training program would be necessary. According to Graham, Harris, and MacArthur (2006), a model of writing instruction would specify stages of training, each with its own goals to attain. These stages could be reorder according to the progress of students and they could be adopted recursively. A model would employ a pedagogy, that is, the combination use of instructive strategies (e.g., scaffolding, collaboration) to train students in writing compositions. It would also standardize on how a lesson should be planned and conducted. A writing model would orientate

both teachers and students in the training process. I will discuss the design of my writing model next.

Pedagogic Foundation of the Writing Model

The pedagogical design of my writing model was derived from Graham's Self-regulated Strategy Development (SRSD) Model (Lienemann, Graham, Leader-Janssen, & Reid, 2006). SRSD model has its roots in social constructivism. In SRSD model, the teacher would help students understand the goals of writing tasks, and scaffold them towards learning and acquiring skills to perform writing tasks. In the training process, the teacher would employ several teaching strategies, e.g., direct instruction, modeling and scaffolding. In direct instruction, the teacher would explain the targeted task and the importance of completing it. Then, the teacher would model how to perform the task. Finally, she would scaffold them in their writing. She would continually assess individual students' performance while providing them with appropriate support until they could independently perform the writing task autonomously.

The key components in my writing model would therefore be similar to Graham's: (a) writing tasks for students to accomplish; (b) teacher as a scaffolder who would guide students in acquiring the abilities to achieve specific aspects of writing; (c) strategies taught to students to help them acquire those writing abilities; (d) supports or scaffolds to help students acquire the ability; (e) scaffolding, a process that would guide students gradually to acquire the ability to write on their own; (f) fading of scaffolds when students achieve autonomy in writing. The following paragraphs discuss the aims of the writing model and instructional stages. In addition, my model included an ICT component which enabled more scaffolders in the classroom, e.g., ICT-mediated peer collaboration that allowed better-ability peers to

help weaker-ability peers. Also, part of the scaffolding process could be done on the computer, e.g., teachers could create adaptable composition writing scaffolds for students of different needs. As an instructional strategy, ICT played an important role in the model (see Figure 4.3).

Writing Model Goals and Instructional Stages

My writing model aims to rectify two weaknesses in Primary 4 students' writing. They are basic writing skills and composition writing skills (see Figure 4.1).

Basic writing skills are related to their ability to transcribe intended characters from students' mind to paper, use suitable vocabulary, and write grammatically correct Chinese. Writing composition skills, on the other hand, are related to the skills applied to write complete stories and enriched descriptions of events, actors, and actions. Moreover, their sentences must flow smoothly. These two areas of weakness would be scaffolded to change in two stages. The first stage would scaffold students in basic writing skills and the second, in composition writing skills. To achieve the two goals in the two instructional stages, I propose specific strategies.

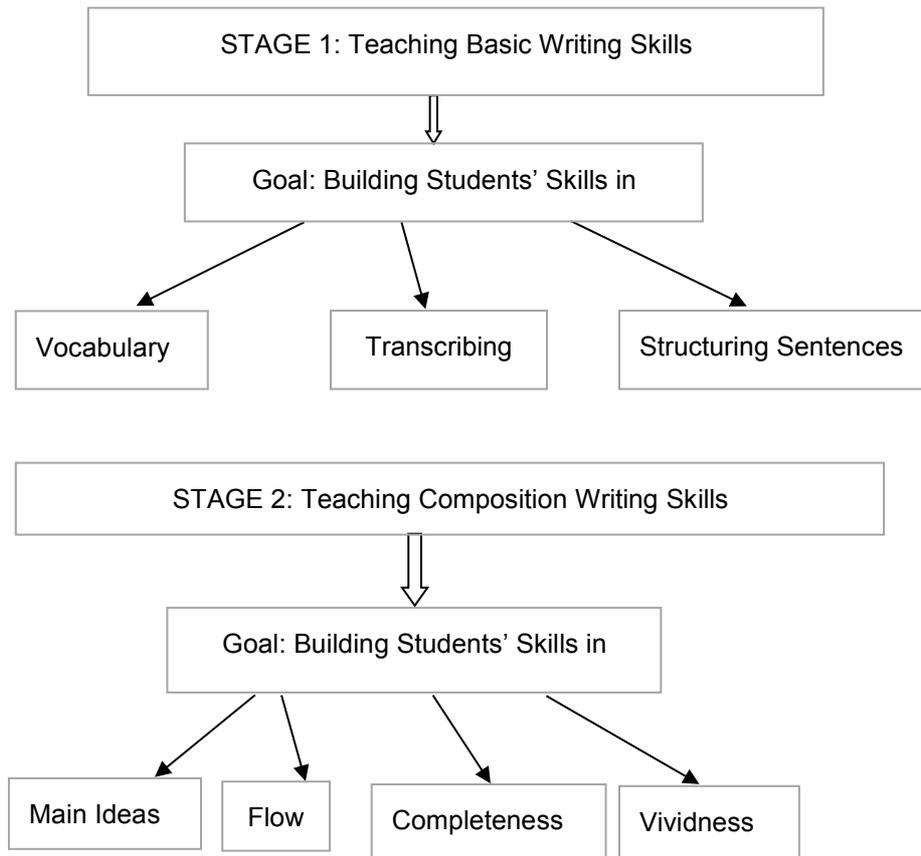


Figure 4.1. The two-stage writing model and goals of each stage.

Strategies Employed in the Writing Model

Similar to Graham's writing model, I had adopted direct instruction, teacher modeling, and scaffolding strategies to improve students' writing performance. The instructional process would be first; the teacher would directly instruct students on the importance of learning certain writing skills as they could help them achieve their writing goals. Then, she would demonstrate and model applying the skills to achieve the writing goal. Finally, she would scaffold them through face-to-face interaction or through learning supports (or scaffolds), e.g., workbook exercises, video clips, examples and further resources. The teacher would continue to scaffold students until they acquired the necessary knowledge and skills to write autonomously. The detail instructional process is depicted in Figure 4.2.

Another important strategy I adopted was the use of ICT to scaffold students (see Figure 4.3).

In the following paragraphs, I will discuss each stage of the writing instructional process in detail.

Stage 1 – Basic Writing Skills Instruction

Goals and strategies.

Basic writing skills help students write in good Chinese. In the past, hindrances to good composition writing were students' inability to transcribe words, had limited vocabulary, and wrote poor sentence. The goal of this stage would be to increase students' skill levels to transcribe characters, use appropriate vocabulary and write in correct sentence structure. The teacher would employ several strategies to teach these skills, including direct instruction, modeling, and scaffolding. The teacher would scaffold students face-to-face or via ICT. ICT-mediated scaffolds could be in the forms of games, Chinese word-processing, and collaborative work (see Figure 4.3). In the following paragraph, I will first discuss how to help students transcribe better (see Figure 4.4).

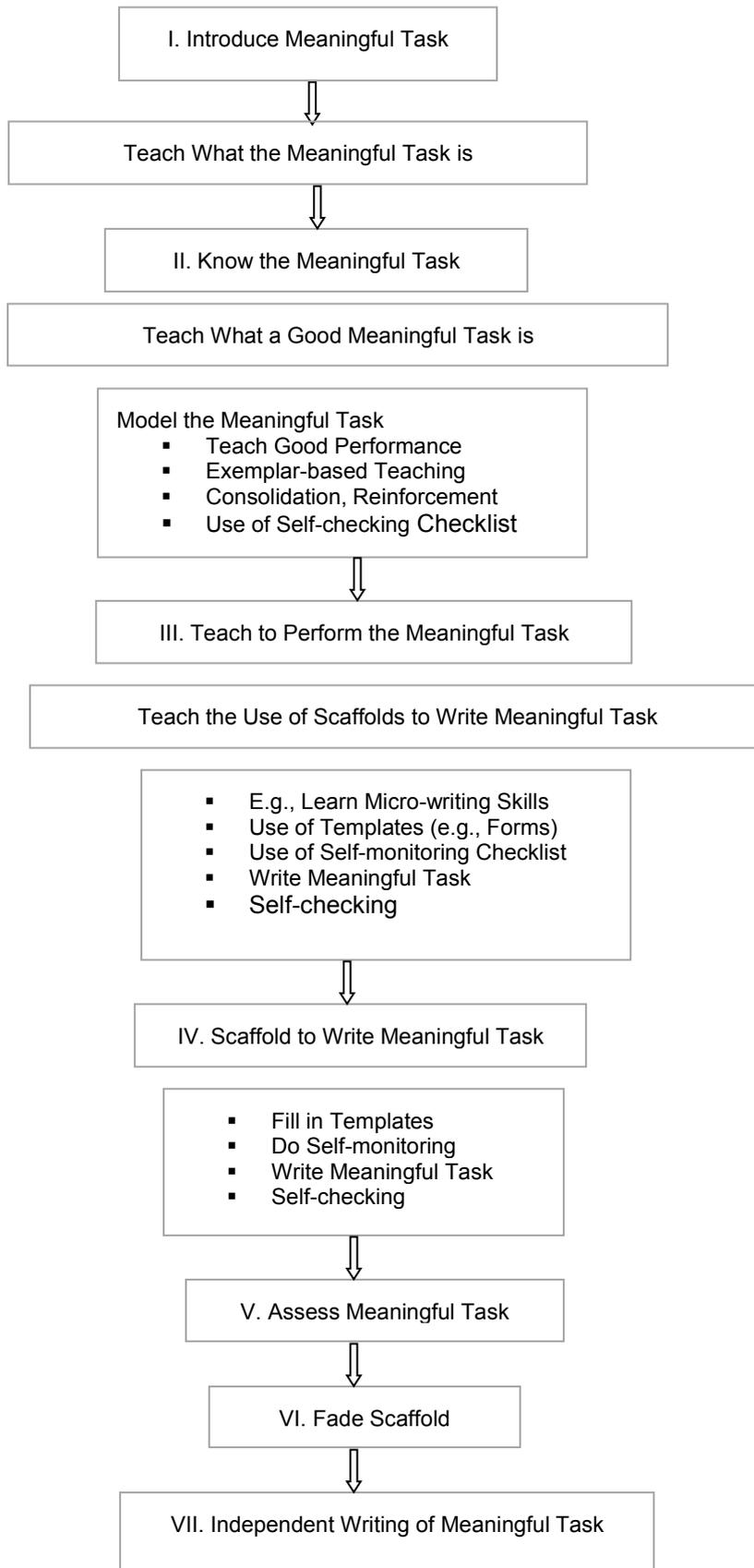


Figure 4.2. Pedagogical model for the proposed writing model.

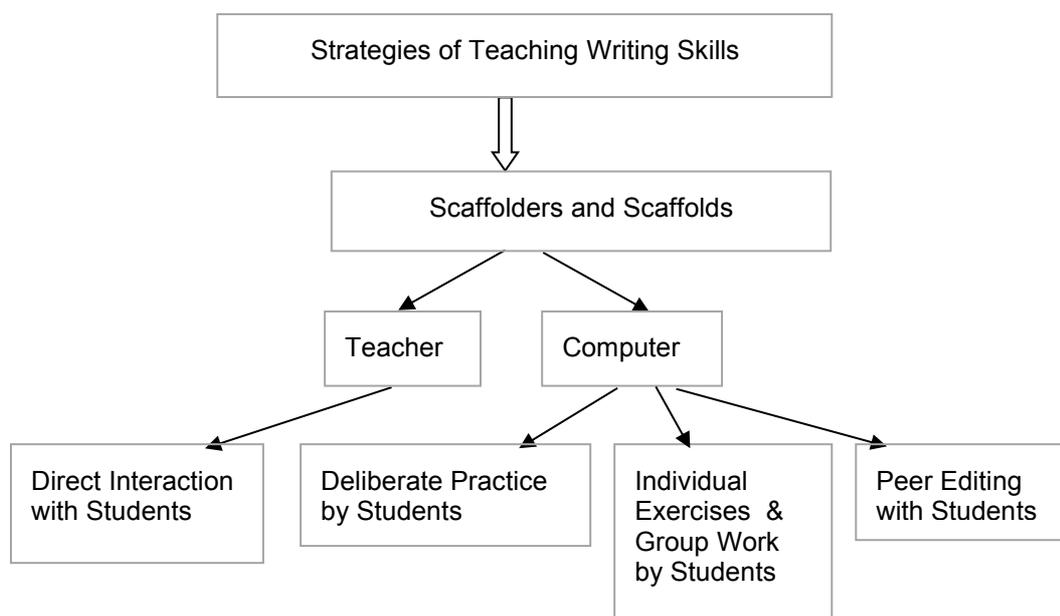


Figure 4.3. Scaffolders and processes in the strategies of teaching writing skills.

Teaching of transcribing.

In teaching transcribing, the teacher would begin with selecting new words from her regular Chinese lessons or words that the students need for writing compositions. She would first explain the word, and write it slowly on the whiteboard to show students how to transcribe it. Students would practice by writing the word in their exercise book. At home, students would have to learn these assigned words to prepare for spelling tests. In addition, the teacher would employ the Chinese language game to help students recognize common sight words. To play the game, students would have to type in correct phonetic transcriptions of words onto the computer. If they matched the phonetic transcriptions of the dropping words on the screen, the students would gain scores. If not, the words and their phonetic transcriptions would appear on the screen. The game provided some adaptable scaffolding support to students, e.g., it would not proceed to the next level of difficulty if they were not ready. It also provided deliberate practice as it could engage students for a long period

of time due to its gaming nature. If students were engaged in the game for a period of time, they would more likely to remember the words. The next goal of the basic writing skills training is to enlarge students' vocabulary. It will be discussed in the next paragraph.

Teaching of new words.

To help students acquire a larger vocabulary, the teacher would select appropriate words and explain them. She would then involve students in collaborative brainstorming for synonyms to enlarge their vocabulary. The teacher would provide a seed word which the students would have already been familiar with for brainstorming. Learning of synonyms would enable students to enlarge their vocabulary quickly as they would be learning within the context of a familiar word. As shown in the pilot, in collaborative brainstorming, the teacher seemed to prefer small groups as she found them more effective since it allowed effective peer scaffolding where students could share experience and learn from one another (see Figure 4.4). The next goal in the basic writing skills stage would be the teaching of writing with good sentence structure.

Teaching of writing good sentence structure.

The third goal of improving students' basic writing skills was to help them write good sentences. The strategies the teacher employed would be similar to the teaching of transcribing and vocabulary. The teacher would highlight good sentence structure from the textbook. Then, she would ask students to write them in their exercise book. She would conduct dictation to ensure they have learned the sentences. She would further support their learning by assigning sentence construction and expansion exercises. If the exercises were conducted on the computer, the teacher would allow students to peer edit one another's work. Peer editing would enable peers

with higher ability in Chinese to provide some scaffolding to weaker peers (see Figure 4.4).

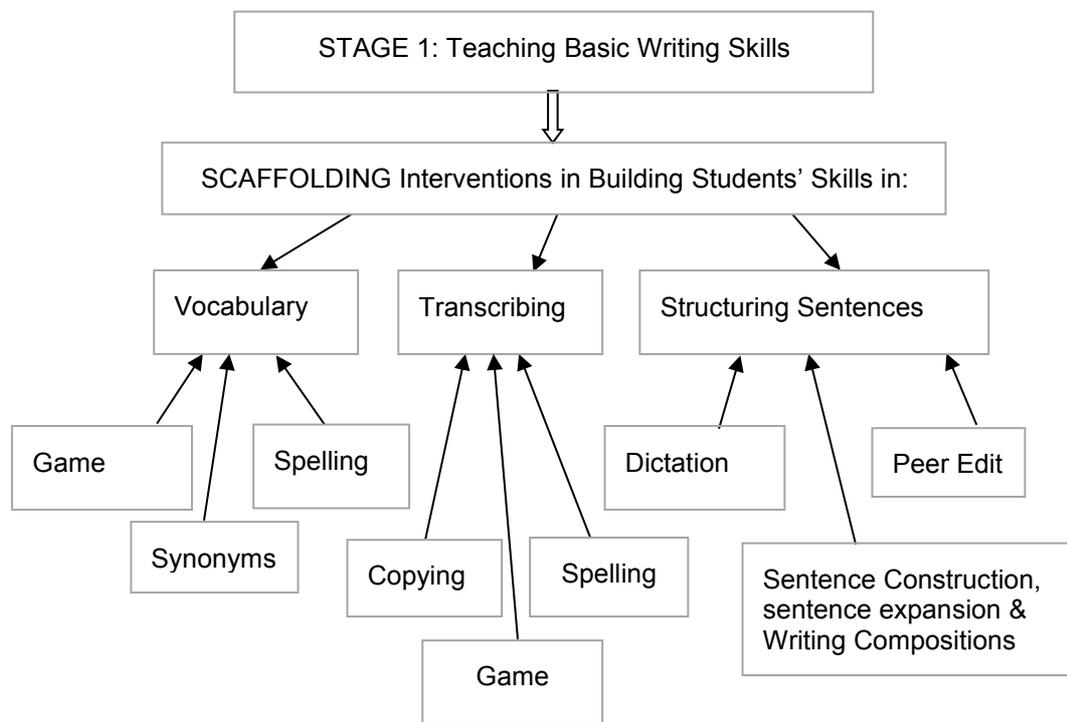


Figure 4.4. Scaffolding interventions for basic writing skills.

Stage 2 – Composition Writing Skills Training

Goals and strategies.

The goals of the composition writing skills training was to help students in a) flowing the sentences to avoid awkward writing, b) identify relevant events, both depicted in and implied from the pictures, so that the story is complete, c) write vividly (see Figure 4.5). The teacher would employ various strategies to achieve the goals, namely, directly interacting with students, adopt ICT-mediated learning activities, and allow peers to share experiences and help one another via the computer (see Figure 4.6). As compared to the basic writing skill stage, the scaffolding strategy took on a critical role in this composition writing stage. It was because in the previous stage, the teacher would be teaching mainly knowledge (e.g., transcribing, learning

new words) which she could rely more on direct instruction and deliberate practice to help students acquire them. In the composition writing stage, the teacher would be teaching writing skills (e.g., how to describe an action). She would have to guide students to gradually acquire the skills. She would need to first assess the ability of individual students so that she could provide learning activities commensurate with their abilities. Also, her feedback should ideally be just-in-time so that students could refine their writing without delay (see Figure 4.7). This process is precisely what the scaffolding strategy emphasizes. As such, scaffolding was selected to be the main training strategy in this stage. In the following paragraphs, I will discuss how the teacher can scaffold students to flow sentences.

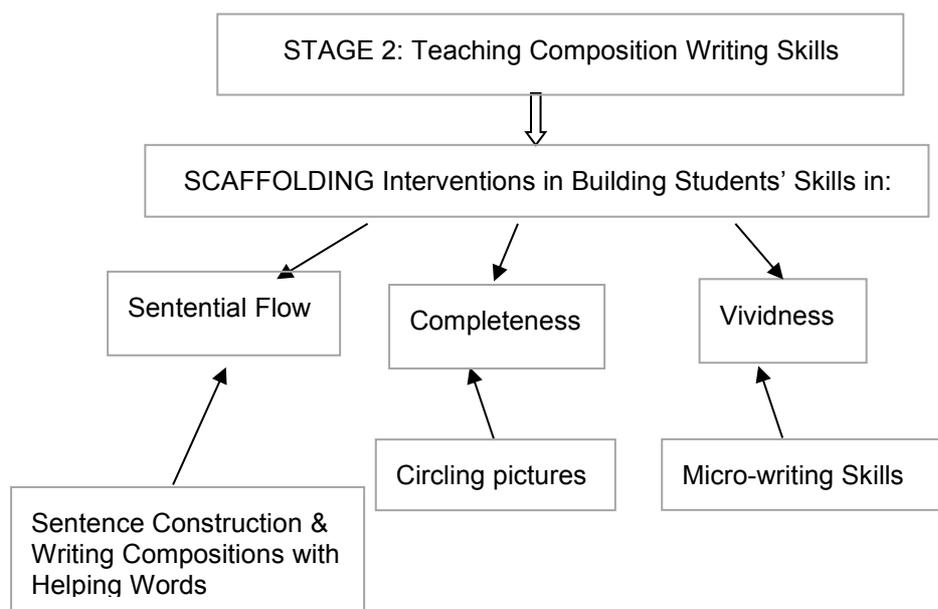


Figure 4.5. Scaffolding interventions for composition writing skills.

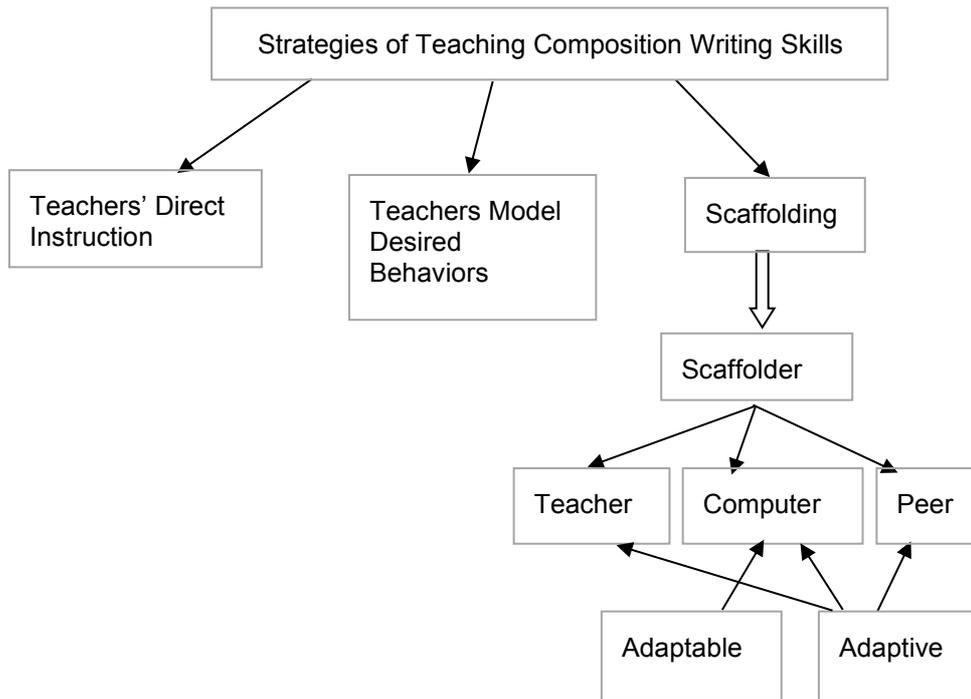


Figure 4.6. Scaffolders and processes in the strategies of teaching writing skills.

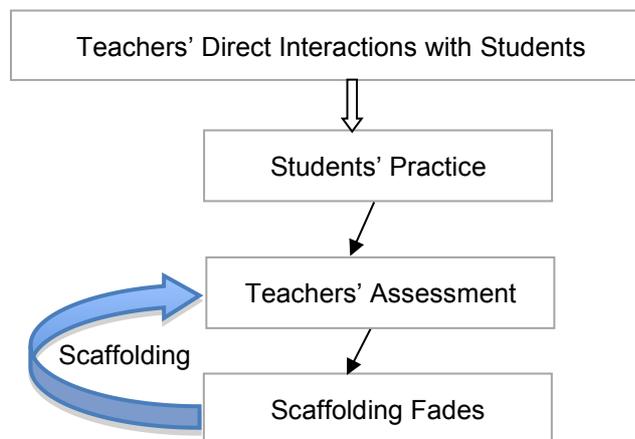


Figure 4.7. A model of the scaffolding strategy.

Teaching of sentential flow.

The goal would be for the students to learn the skills to link up sentences with either linking words (e.g., already, when) or phrases (e.g., “When he found out what happened, ...”). The teacher, who would be the scaffolder, would directly interact with the students as well as adopt ICT to help students acquire the skills. She would

first explain why it was important to write sentences that flow. She would identify good examples from the textbook to support her point. She would also identify bad examples to show students what it means by sentences that do not flow. Then, she would demonstrate how to link up two sentences with linking words and phrases. After the demonstration, she would scaffold the students to construct sentences with linking words or phrases. In the scaffolding process, she would help students by giving them immediate feedback on how to refine their sentences. Next, she would let students work on sentence construction exercises on the computer, followed by peer editing. The teacher would still interact with the students face-to-face and provide immediate feedback. However, she could also rely on the students to help one another so that she could work with weaker students. The teacher would conduct sentence construction exercises before the composition-writing lesson to let students practice writing flowing sentences that would be related to the scenario in the composition. Learning to flow sentences was one of the goals of this stage of training. The other goal would be to teach children how to write complete compositions.

Teaching of writing complete compositions.

Primary 4 students are given *four* related pictures to write a story. The goals of this training would be to teach students to identify all the relevant events in the pictures and describe them in the correct order. The teacher, who would be the scaffolder, would directly interact with the students as well as adopt ICT to help students acquire the skills. She would first explain why it was important to include relevant events in the composition. She would identify from past compositions the missed events to show how the story did not make sense if some relevant events were not included. Then, she would introduce a scaffold called the circling strategy to help students identify the relevant events. She would demonstrate circling the important

events and actors in the four pictures. Then, she would number the circles and write the composition following the order of the numbering. She would highlight to students that they should not just circle what were on the picture. They should also circle what were not depicted in the pictures (e.g., circle between two pictures, before the first picture, and after the last circle).

After the demonstration, she would scaffold students to do the circling, numbering, and writing. The teacher would always let students do the circling and numbering before they write a composition. It would be a form of deliberate practice which allowed students to strengthen the circling skill. Deliberate practice would be an important component of scaffolding that enabled the teacher to identify who had achieved the mastery level (see Figure 4.7). The teacher would then provide additional scaffolding to students who needed help. The third goal of teaching composition writing skills would be to help students write vividly. This will be discussed next.

Teaching of vivid writing.

It is important for students to know how to enrich their compositions by describing events in greater detail, include feelings and expressions in their descriptions, and include dialogues and monologues to make the composition interesting to read. The teacher would employ strategies of direct instruction, modeling, and the ICT to help students acquire the skills of writing vividly. These skills are the applications of a) Big Four, which would enable students to include information on when, who, where, and what about an event. It would provide the readers with greater understanding of the event; b) Action chain which would enable students to expand a single action into several closely related actions and describe each closely related action in a phrase; c) dialogues/monologues as well as describe

its tone with feeling and expression words; d) feeling chain to describe how an actor feels and why he/she has certain expression (see Figure 4.8).

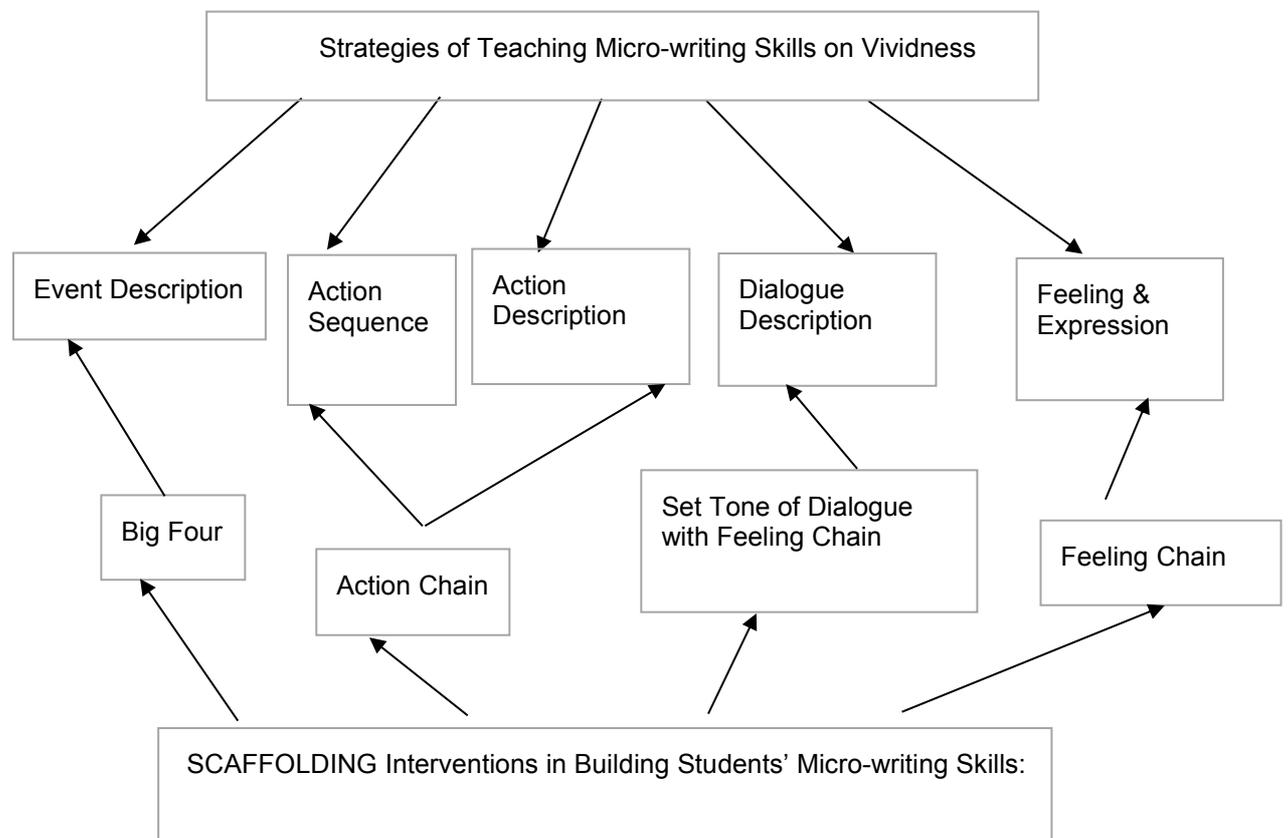


Figure 4.8. Strategies of scaffolding interventions in teaching vividness in Chinese composition writing for Primary 4 students.

The teacher would employ the micro-writing skills strategy to teach students how to apply Big Four, action chains, feeling chains, and setting tones of dialogues/monologues. The following paragraphs will discuss how to help student acquire each of these micro-writing skill (see Appendix E for detailed lesson plans in teaching each micro-writing skill).

Big Four micro-writing skill.

The Big Four skill would be taught first as it was considered an easy skill to learn and apply. It would help students write a complete introduction. The teacher would first tell students why it was important to write a complete introduction. Then

she would demonstrate how to identify When, Who, Where, What, namely the Big Four elements, in a paragraph of text or a picture. She would also demonstrate how to apply the Big Four writing skills to write a sentence that could become the introduction of a composition as in Primary 4. An introduction can be just a sentence. Then, she would let students work on exercises to identify the Big Four elements and write introductions based on the four elements. She would provide guidance to students who would have difficulties identifying or writing with the four elements. As this would be an easy skill to learn, it would be suffice for students to engage in pen and paper learning activities. The teacher would assess if students could write introduction with the four elements. If so, she would not provide any more scaffolding support.

Action chain micro-writing skill.

This micro-writing skill would help students write vivid actions by expanding an action into three closely related action sequences. Students would also learn how to describe each closely related action in a phrase. By doing so, they would be able to write much richer descriptions of actions. The teaching strategies would first include direct instruction on the significance of writing vivid actions, that is, it would improve students' performance in the composition exams. Then the teacher would demonstrate an action sequence in slow motion to enable students to see how an action could be consisted of several closely related actions. Then, she would fill in a form with three boxes. In each box, she would write a closely related action. Finally, she would write a sentence with the phrases in the three boxes.

In addition, the teacher would also show video clips to help students visualize action sequences. She would also ask students to perform actions in slow motion so that they could experience firsthand how an action would be consisted of closely

related actions. Then, she would let students work on action chain activities. She would give them an action and a form with three boxes. She would ask them to act out the action and fill out the boxes with three related actions. Then she would ask them to write a sentence with the three closely related actions.

As the teacher believed that the students would not be able to visualize the closely related actions and might lack the vocabulary to describe the actions, she required more scaffolding supports to teach the action chain micro-writing skill. The ICT-mediated strategy was therefore adopted to provide additional scaffolding. The first ICT-mediated scaffold will be brainstorming for closely related actions via the collaborative mind map application. The students would brainstorm in groups which would enable them to share experience and learn from their peers. The second scaffold would be a set of supports provided in the e-portfolio to help students write action chains in the composition. It would include helping words for students to write closely related actions and an instruction telling students where to insert the action chain in the composition. The teacher would remove these scaffolds when students were ready to apply the action chain micro-writing skill to write vivid actions. She would also require students to peer edit one another's action chain. Besides action chain, feeling chain would be another difficult micro-writing skill to apply in writing compositions as it would tap heavily on the knowledge of feeling and expression vocabulary.

Feeling chain micro-writing skill.

Feeling chain would be the final micro-writing skill the teacher would train the students to acquire. The goal would be to apply it to describe emotions and the resulting expressions. Again, the teacher would be the scaffolder. She would have to first stress the importance of describing the emotions of actors in the composition.

Then she would demonstrate how feelings and expressions could be linked, e.g., when someone is sad, she will weep. She would also demonstrate the writing of feeling chains, e.g., for a given picture, fill in the feeling and the resulting expression in a form, and write a sentence with these two words. After the demonstration, she would let students work on activities such as selecting a feeling from a list of feeling words to describe the people they see, tell the reason why they are feeling that way, and write feeling chains.

As the teacher thought that the feeling chain micro-writing skill would be a difficult skill to apply in writing composition, students would require more scaffolding. ICT-mediated scaffolds would therefore be adopted. Again, students would be grouped up to brainstorm for synonyms for feeling words via the collaborative mind map. It would enable them to share their knowledge of feeling words. When students write compositions in the e-portfolio, helping words related to feelings and expressions would also be provided. An instruction prompt would also be inserted at the appropriate place to remind them where to write a feeling chain. The teacher would assess students' performance continually to find out if it would be necessary for her to provide additional scaffolding.

Furthermore, the teacher would introduce applying the feeling chain to set the tone of a dialogue/monologue, e.g., Ming was so excited that he shouted at the top of his voice: "we made it!" (Underlining indicates feeling and expression words). However, the teacher believed that this would be beyond the potential development of Primary 4 students. As such, she would just highlight it and would continue the training in Primary 5.

The following section discusses how my writing model has to address the needs and constraints of students, teachers, and the school so that it can be adopted by the intervention class.

How would the Proposed Writing Model Fit into the School?

Writing instruction in neighborhood schools in general is not systematically designed. As the MOE does not provide a writing program for teaching composition writing, individual teachers create their own teaching programs. These programs are ad hoc and short-term in nature. Teachers are usually very keen to make use of the popular technology of the day without giving much thought as to whether it is an appropriate technology to use for teaching composition writing. Students' work on these technologies are not tracked and analyzed over time. Good artifacts that can serve as examples were not kept. Moreover, teachers are not trained in doing research and their programs are seldom informed by research findings. My proposed writing model attempted to develop and trial a more effective approach.

Including pedagogy to help teacher instruct students systematically.

My writing model was built on the social constructivist theoretical framework. As such, the pedagogy had a focus. The focus was on scaffolding by experts and peers. In scaffolding students, the writing model would provide students with different learning activities that would gradually scaffold them towards their writing goals. For example, in the training of writing 'feeling chains', there would be pen and paper learning activities to help students identify the different types of emotions and facial expressions. In addition, there would also be ICT-mediated activities for students to brainstorm for synonyms. Before they would actually write compositions online, the teacher would let students learn the synonyms from the brainstorming session. These would be words that they would use when they write feeling chains. She could also

schedule sentence-making activities for students to practice writing sentences that contain these words. If students wrote compositions online, there would also be prompts and helping words to guide them in writing feeling chains.

In engaging peers in social interactions, a simulated environment would be designed for them to interact in Chinese. Via ICT-mediated collaborative activities and peer editing, weaker students could learn from higher-ability peers. They could also share one-another's life experience, which would enrich their descriptions of events and actions in the composition. Furthermore, in my model, writing strategies were selected based on the needs of students.

Including strategies to cater for the needs of students.

Students' needs are central to the writing model. For example, the circling strategy was adopted in place of an outliner to help students identify relevant events quickly in the exam. This would help students include all the relevant events in their composition. To facilitate the writing of complete stories, a circling strategy was proposed. The students would be trained to circle all the important persons and objects in the given pictures, sequence the circles, and write a sentence for each circle in the sequence. By doing so, they would be less likely to miss out important events in the story. The use of circling strategy would fit well in the composition exam environment. During the exam, students would be given four pictures on a sheet of paper which they could quickly circle. Since they would have only 40 minutes to write the composition, they could not afford to spend time on complex strategies such as outlining the composition. Circling seemed to be a faster and easier method for them to employ during exams.

Besides the circling strategy, the adoption of the strategy of micro-writing skills (e.g., Big Four, feeling chains, and action chains) provided teachers with the

flexibility in adapting to students' abilities. To improve the vividness of the compositions, it would be necessary to teach composition writing skills. As students in Chinese language classes were of mixed abilities, the proposed writing skills had to be flexible enough to be customized into varying levels of difficulty. By doing so, weaker students could learn and adopt the simpler techniques while higher ability students could employ the more difficult ones. The advantages of teaching micro-writing skills would be: first, they were well encapsulated. They could be taught in small chunks and learning a new MWS would not depend on the learning of a previous skill; second, although the MWS seemed to be independent of one another, each could be made more complex by combining them to form a more difficult writing skill. High-ability students could be scaffolded to adopt a more complex writing skill. While my writing model would cater for the needs of students, it would also address constraints faced by the school.

Built in flexibility to adapt to the constraints in the school.

The writing model could be adapted to accommodate for time constraints in training writing instruction. Ideally, the training of basic writing skills (e.g., transcribing words, take spelling tests, or learning of new words) should precede the training of composition writing skills. However, due to the lack of immersion in the Singaporean environment, many students still lack basic writing skills when they reach Primary 4. At the Primary 4 level, there is inadequate time to train students in basic writing skills first. It is therefore necessary to implement the training of basic writing skills simultaneously with the training of composition writing skills. To improve basic writing skills, my writing model would be flexible enough for the instruction (e.g., sentence making activities, spelling tests) to take place in the teacher's regular Chinese lesson time. This would not take away time for composition

writing skill training. In addition to considering the needs of the students and the school, the writing model would also take into account teachers' needs.

Provided easy-to-use features in software platform to cater for the needs of teachers.

Teachers are overloaded with work and under much stress. They neither have the time nor the patience to learn to implement a complex writing program. It is necessary for the writing program to be easy to learn and the scaffolds have to be easy to create. From past experience, teachers could learn my writing model and the operation of the e-portfolio in about three hours. Moreover, scaffolds and learning materials could be shared amongst teachers as they were stored in the e-portfolio.

The following is an example lesson plan for teaching Big Four. It has incorporated the various instructional strategies (e.g., direct instruction, modeling, and scaffolding).

An Example Lesson Plan Created Based on the Proposed Writing Model

A set of lesson plans was drawn up (see Appendix E) following Graham's Self-regulated Strategy Development Model (Lienemann, Graham, Leader-Janssen, & Reid, 2006). A lesson plan consists of the direct instruction, scaffolding, enactment of strategies, fading of scaffolds, and scaffolds for higher ability students. The following is an example of the lesson plan for teaching Big Four:

Lesson Plan: How to Write a Good Introduction

Goal of the Instruction

Students should be able to write a good introduction to the composition they are going to write.

At the end of the lesson, the students will be able to:

1. Write a good introduction
2. Use the Big Four (BF) skill (who, what, when, where)

Checklists and Templates Required

Instructional materials

1. Checklist for attributes of a good Introduction
2. BF parts checklist for the students to monitor their progress
3. Big Four template (with four nodes. “Who” is the parent and the rest are child nodes. The words “who” “what” “where” “when” are one in each node). There should be space to write notes for each BF element.

Steps to Gradually Fade Scaffolds

1. Simplify the template (list of who what where when only)
2. Further simplify to just w w w w
3. Fade entirely

Pre-requisites

Learned “who” “what” “when” “where” vocabulary including phrases and idioms

Time required

2 hours

Direct Teaching of Domain Knowledge

Direct teaching of what a good introduction is:

1. Describe the goal of writing a good introduction: **to write better compositions.**
2. Describe what makes a **good basic** introduction:
 - (a) A good intro has “who”, “what”, “when”, “where” parts,
 - (b) fun to write and read,
 - (c) include exciting, colorful, and descriptive words (we can call it million dollar words),
 - (d) short and sweet (if you are not sure then write one sentence. If you are confident, write up to three sentences.)
 - (e) connect your readers with the main story.
3. Show a few good Intros and identify the attributes of a good introduction.
4. Show a few not so good Intros and ask the students to identify what’s missing and modify it.
5. Show a few Intros with irrelevant sentences and ask the students to point out sentences that do not connect with the main story. Then remove the sentences.

Teachers’ Direct Interactions with Students and Strategy of Scaffolding Big Four

6. Teach one way of writing an Intro by using Big Four (I will teach you **one way** to write an introduction. Big Four helps you to write the different parts of the Intro.)
7. Introduce the Big Four elements (WWWW) and what they stand for (a) **Who** is the main character; who else is in the Intro? (b) **What** is the main character doing? (c) **When** is he doing it? (d) **Where** is he doing it? Then they discuss what each letter stands for until they can recite the Big Four parts and what they stand for. Students then identify BF elements in existing stories and generate BF while looking at a picture. As the students identify a BF element, the teacher writes it in the appropriate place in the chart.
8. Practice finding BF elements and fill up the BF template.
9. Discuss why each element in BF is important to the intro: The Big Four in the intro prepares your readers for the main story... What happens if “who” is missing in the Intro? How about if “when” is missing? Etc.

Strategy of Scaffolding and Students' Self-regulation

Scaffolding writing of Introduction

10. Show how to use the template to write an introduction: a. look at the first picture (or circles), b. write Big Four reminder Who What When Where in the node, c. relax, d. fill up vocabulary for each node in the Big Four template, e. think about what makes a good intro, f. write the intro, g. ask themselves is this a good intro, h. why? Answer using the “Attributes of a good intro checklist”.
11. Practice writing introduction with the eight steps mentioned above.
12. **Peer support.** More practice (can be in group or individually) using the scaffold to write introductions. For example, in groups, the students direct the process and the teacher provides support as needed. There can also be peer support. From the template they generated, each student writes their own introduction. They then read their introduction to one another. They work together to improve one another's introduction. **Must** write and assess the introduction, not the template.
13. (Optional discussion) Can they remember what makes a good introduction? They should include all four parts, each part is well done, the Intro makes sense, and it should be fun to read.
14. Fade the scaffold (automaticity is achieved when the students continue to plan and write good introductions without the scaffold).
15. Exception to the rule: Tell the students these are rules that help them write better but rules can be broken. Sometimes, we don't have to include all the four parts and yet the Intro makes a lot of sense and is fun to read. Give example to show this point. (But, if you are not sure, write with the four parts.)

Scaffolding Higher Level Learning

Enhancements of the Big Four template for higher ability students:

10. Higher ability students or higher primary students can write advanced introductions with three levels of nodes. They can expand ideas and vocabulary on one or more nodes, e.g., “in a dark night” can be expanded to “in a dark and stormy night”.
11. Use collaborative mind map to help filling the advanced BF template. The collaborative mind map is used *as a template* and *for peer collaboration*. The student must still write the introduction *on his own*. This is the meaningful task.

Checklist for Attributes of a Good Introduction

- (1) The introduction has these parts:
 - a. who
 - b. what
 - c. when
 - d. where
- (2) Fun to write and read
- (3) Million dollar words
- (4) Short and sweet (if you are not sure then write one sentence. If you are confident, write up to three sentences.)
- (5) Connect your readers with the main story

Big Four Parts Checklist

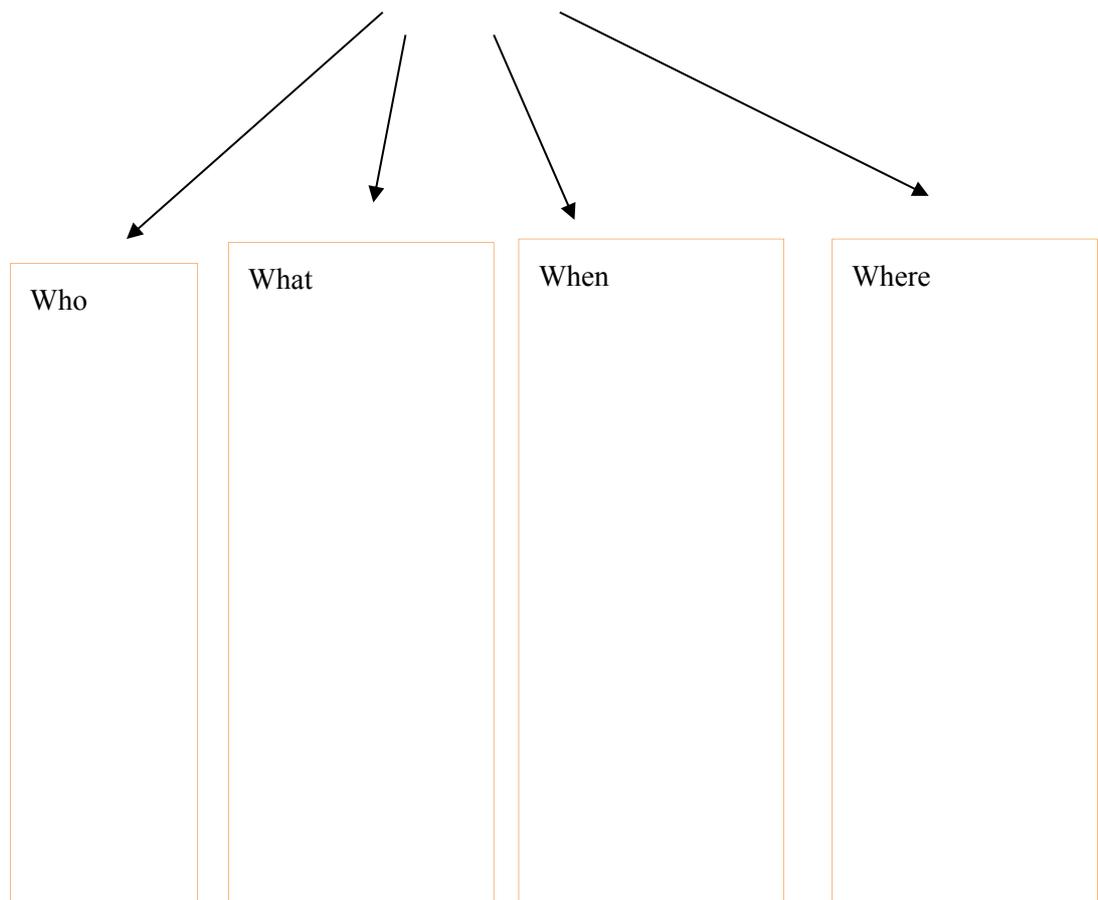
Tick the circle if you have the part in your Introduction

who

what

when

_____ where

Big Four Template (1)

Big Four Template (2)

1. W



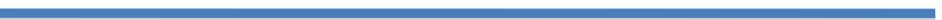
2. W



3. W



4. W



The ICT Strategy

The ICT strategy aimed at creating an environment for students to input Chinese, write compositions and work collaboratively. It was built on an e-portfolio platform which allowed seamless integration of various software applications to scaffold students towards better writing. It had *adaptable* prompts and helping words for composition writing, online track changes for teachers to provide feedback, online collaborative activities with peers, as well as peer rating and critique. A Chinese Language game was also created for students that need basic writing skill training (e.g., pinyin, vocabulary, phrasing) (see Appendix B). Teachers could also create lesson plans, exercises, rubrics (see Figures 4.9 and 4.10), upload resources, and assign exercises to individual students.

blocks

1. Original Version 090309 Do NOT Touch

- 当时：当时我看到警察来我家，我被吓呆了。
- 顺手：小偷顺手把那位小姐的皮包拿走了，警察到现在还找不到那位小偷。
- 放弃：小敏输了，但是她一直不放弃。
- 的确：你写的答案的确是对的。
- 连忙：妈妈打给我说奶奶跌倒了，现在在医院躺着。我听了这件消息后，我连忙跑去医院。
- 终于：我们想了又想，我们终于想到了一个办法。
- 虽然：虽然你生你父母的气，但是你不能对他们没礼貌。
- 吩咐：师父吩咐小亮每天画一幅画。
- 不断：他一直觉得自己不够好，所以他一直不断进步。

Supporting materials

- NO ITEMS FOUND -

Evaluation

Attach rubric Detach rubric

Rubric	Scores		
	Myself	Teachers	Peers
1. P3/4 Sentence-making rubric (for kids)	-	-	-
2. P3/4 Sentence-making rubric	-	-	-

Click the button(s) to self-rate your performance.

You can send a message to invite your teacher to rate you: [Email Teacher](#)

Reflections

Figure 4.9. Rubrics can be attached to each exercise.

Evaluation: P3/4 Sentence-making rubric (for kids)

Select the score for each item below. Enter any evaluation remarks. When complete, click [Submit].

Evaluation remarks (if any):

*NR: Not relevant.

Item						
Does the writer understand the meaning of the given words?	Most of the sentences are nonsensical.	Although the sentences are grammatically correct but I don't think the writer understands the given words.	Yes, the writer understands the meaning of the given words.			<input type="button" value="3"/>
Are the sentences well written?	I cannot understand most of the sentences.	I can figure out what the sentences say but they are written badly.	I can tell the sentences are direct translation from English or dialect.	Still not quite natural.	Good and natural.	<input type="button" value="5"/>
Are the sentences long and good?	No.	Yes.				<input type="button" value="2"/>
						0/0

Figure 4.10. Rubric for students to do rating.

The collaborative learning environment.

In Singapore, Chinese is not needed outside the Chinese classes in school. As such, one important factor in language acquisition, that is, informal contact with native speakers (Moyer, 2004), especially peers both within and outside school, is absent. ICT was proposed to remediate the situation. Interaction with peers would help students who were weak in Chinese to learn from their peers. Students who were good in Chinese would also benefit from correcting their peers' work. The e-portfolio

platform would integrate software applications to engage students in collaborative activities both in school and from home. The various collaborative software were: (a) the collaborative mind map software for group members to share experience and knowledge. Figure 4.11 depicted an exercise to scaffold students towards writing an action chain. Students had to first expand an action into closely related actions and then join the expanded actions to form a meaningful sentence. Students could insert each closely related action they came up in a new node on screen. Four to five students shared a mind map and they each worked on this action chain. All the nodes added by the group of students would appear on each group members' computer screen. The teacher encouraged students to obtain ideas from nodes added by their group members and incorporate them into their own sentence; (b) the text annotation software for peer editing. The students would first work on sentence construction or write a composition. Then group members would edit one another's sentences.

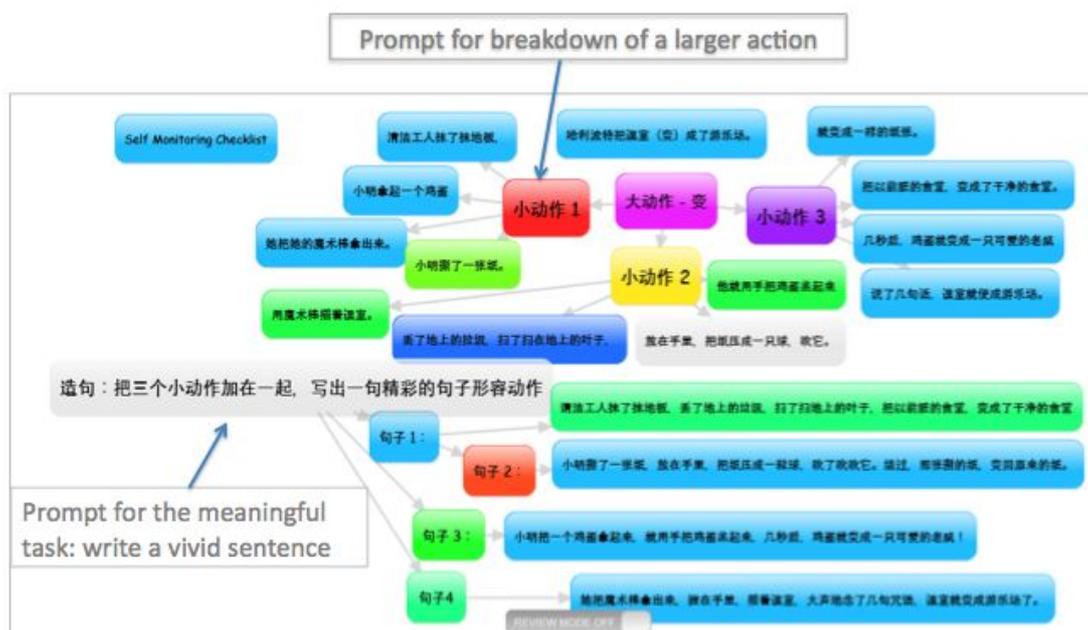


Figure 4.11. A collaborative mind map scaffold to help students write action chains.

In Figure 4.12, each peer-editing member was automatically assigned a color when they started to annotate their peer's work. The original text, edited text, name of the editor and the time stamp were displayed in the annotation textbox which could be switched on and off by the student. The student could also accept or reject suggested changes; (c) Online rubrics for student, peers, and teachers to do rating. Rubrics could be attached to each exercise (e.g., an action chain exercise could have a few an action chain rubrics, one for the student to do rating and another, the teacher (See Figure 10 & 11); (d) question prompts to help students identify the main points of a picture and helping words to help students write with ease (see Figure 4.13).

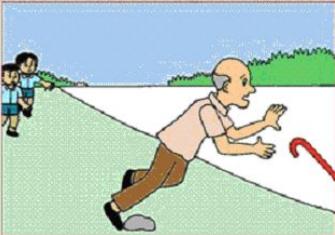
The screenshot displays a peer editing exercise titled "造句练习 (一) 第一, 二, 三课 090224". The interface includes a "Comments:0" indicator and a "Correction[OFF]" toggle. The main text area contains a list of nine sentences in Chinese, with various words highlighted in different colors (orange, purple, green, yellow). Several comment boxes are overlaid on the text, each containing the original text, the editor's name, the time, and a suggestion. The comment boxes are color-coded: orange, purple, green, and yellow. The text in the comment boxes is as follows:

- Comment 1 (Orange): Original Text: [同学]; Editor: TAN HUI YI Apr 03, 2009 2:46PM; Suggestion: [同学不小心]
- Comment 2 (Purple): Original Text: [哥伦布顺手拿起一个鸡蛋, 说: "你能不用任]; Editor: TAN HUI YI Apr 05, 2009 6:58PM; Suggestion: [虽然小明在比赛中跌倒了,
- Comment 3 (Orange): Original Text: [跌倒]; Editor: Choy Wai Yin Apr 11, 2009 3:24PM; Suggestion: [摔倒]
- Comment 4 (Green): Original Text: [有力]; Editor: SHEILA CHUA SHI LEI Apr 03, 2009 3:00PM; Suggestion: [强壮]

At the bottom left, there is a "blocks" button and a link to "1. Original Version 090309 Do NOT Touch »".

Figure 4.12. Annotated text in a peer editing exercise.

1. 图画：老人跌倒 ▶



1.1. 请你形容老人跌倒的情形（最少包括三个连环动作） ▶

一天早上，我和我的朋友，小青和小华在附近的公园跑步。我们看到了一位老伯伯踩到石头，一时失去平衡，往前扑，老伯伯跌倒了。他的拐杖飞掉了。老伯伯痛得说不出话。我们看到了快点跑过去。小青和我去扶老伯伯。

- 踩到
- 不小心跌倒
- 被石头绊倒
- 一时失去平衡
- 往前扑
- 跌坐
- 拐杖
- 掉落
- 脚擦伤
- 扭伤脚
- 膝盖划破
- 鲜血直流
- 痛得说不出话

Figure 4.13. Question prompts and helping words.

With the e-portfolio, all instructional activities, including the game, the collaborative mind map, and the composition-writing environment could be accessed from the e-portfolio. The teacher could assign instructional activities to her students and access all the students' artifacts from her e-portfolio. Each student could access all his or her previous work from his or her own e-portfolio. As such, future teachers were able to scaffold students based on their previous performance.

In conclusion, my study aimed to investigate the design of a writing model for Primary 4 students in a Singaporean neighborhood school. The writing model took into account the needs of the students, the teachers, and the resources available in the school. It was also underpinned by the constructivist theoretical framework which had given rise to the scaffolding strategy. The scaffolding strategy was incorporated to help students acquire skills to write complete, flowing, and more vivid compositions.

Chapter V Method of Research Study

I used a qualitative and quantitative case study design for this study since it would allow me to experience and document the teaching of Chinese composition writing in a local primary school under real world conditions. This design allowed me to follow the students as they learnt new writing strategies derived from my research design, and to follow and engage the teachers as they taught those strategies within the constraints and pressures of ensuring the extensive curriculum is fully covered and that students score well in school examinations.

According to Yin (2003), a case study is an in depth study of a real life phenomenon *in* its context. In such a context, there are many variables that influence the case, so it makes little sense to isolate and study them individually. As a case study is a study *in context*, it allows for close examination of the situation under study and how relevant variables play their parts in that situation but does not seek to control variables as in experimental design. According to Stake (1995), a case is “a specific, a complex, functioning thing”, “a bounded system”, as well as “an integrated system” (p. 87). Thus, a case focuses its study in people and programs. Following from Yin and Stake, my case study investigated the effectiveness of a Chinese writing program in a real life school environment. It comprised ICT-mediated writing strategies to help primary four students improve in writing Chinese compositions. In the investigation, the teacher’s and students’ perception of the program, how the writing strategies influenced students’ writing, and what difficulties teachers and students experienced were the main issues of study.

Types of Cases in My Study

Yin (2003) stated that the case study methodology is suited for exploratory work conducted with the intention to develop hypotheses and propositions for further

investigations. My research started with an exploratory pilot phase that asked general but probing questions to clarify the real world context such as “What were students’ writing challenges?” “Were students motivated to learn when ICT were introduced?” Findings from this phase served as a basis for further research in the second phase of the study. In this phase, writing strategies were introduced to improve students’ basic writing skills such as using the Big Four, that is, include information on “when”, “who”, “what”, and “where” to write introductions, conducting pinyin classes to help students acquire skills to input Chinese onto the computer to prepare for ICT-based writing, and so on. The main purpose was to find out if students could be motivated by ICT-based learning activities to improve their composition writing.

The case study method, according to Zucker (2009), allows researchers to study in depth the units of analysis (e.g., individuals or events) thus allowing richer and more comprehensive description and understanding about the units. Furthermore, Cavaye (1996) recommends the case study method as being well suited for investigating phenomena where the researchers do not have explicit control over context and variables (i.e., outside the laboratory). Also, Yin (2003) proposes the case study method for research aimed at finding out how a phenomenon unfolds over time. My research work looked for in-depth understanding to answer questions such as how to overcome time and resource constraints in the teaching of Chinese composition writing in the real world classroom. These types of questions cannot be adequately answered by relying on surveys, interviews, or archival studies alone. Hence, the case study method is uniquely appropriate for my studies of the writing model instruction that took place in a real primary school classroom over an entire academic year.

Although Yin (2003) argued that descriptive studies attempt to answer “what” questions and therefore could be answered by doing surveys, interviews, or to analyze

archival records, he did explain that if the “what” studies were not looking for “how many” or “how much”, in other words, frequency counts, then a case study method would be more appropriate. This is especially so when the researcher, in addition to focusing on “what”, is also interested in the “why” question. I therefore used the case study method to answer two of my “what” research questions, namely “What are appropriate strategies for teaching writing for mid-level classes in a Singapore neighborhood school?” and “What is an appropriate and effective software technology platform based on the writing program?” The case study method was essential in addressing these two questions as there was very little prior experience in systematically introducing an entire ICT-mediated writing program in a non-experimental context, i.e., with real world constraints, into schools. As these are complex issues that involved identifying a suite of writing strategies and software applications for effective writing instruction, an in-depth study that would investigate the effectiveness as well as the perceptions of various stakeholders was required.

Selection of Cases and Participants

In my study, a single case was adopted. According to Yin (2003), one of the rationale for selecting a single case is that the case is the typical or representative case. What will eventually be learned from this case can apply to an average organization. I was studying an average neighbourhood school which is common in Singapore. Spilchuk (2009) describes Singaporean neighbourhood schools as “government schools which are in lower socio-economic neighbourhoods, or within government housing developments that are apartment style rather than those government schools which are in ‘elite’ upper or middle class areas of the city where residents live in condominiums, terrace houses and individual homes” (para. 1). Typically, these schools lack resources and students in the Chinese classes were of mixed-ability. This

school is therefore a representative for the average Singaporean schools. Yin further pointed out that while results from multiple case studies would be more convincing, it might not be logistically feasible for an independent researcher or a single student to undertake a multiple case study. As such, the selection of a single case study was justified.

In addition, Stake (1995) argued that the most important criterion in selecting a case is to maximize what we can learn from it. The goal would be to explore deeply and understand in detail the cases we have selected. He further maintained that there might be perceived differences in cases and therefore researchers might reject them as examples. In selecting the case that enables us to learn the most, there are often still time and access (for fieldwork) constraints that researchers have to bear in mind. For example, we need to pick cases where we have sufficient access while working with partners who are eager, committed and who are willing to try new methods and provide us with information, comments and feedback.

The selection of my case was based on the access I was given to the writing program in the school as well as the very committed and active teacher who collaborated with me. The school was a neighborhood primary school, which is a typical school in Singapore. Although the teacher who implemented the writing program had only three years of teaching experience when we started, she was very keen in incorporating technologies into the Chinese composition-writing curriculum. She possessed leadership qualities such as she planned and organized research activities for her fellow teachers and was positive in her outlook. She was also very reliable and forthcoming with her observations, comments and advice. I had worked with her in previous projects and found that I could work at a professional level with her. She was the pioneer and later the leader of this project in her school. We started

with one class of thirty-nine Primary 4 students (10 years old) at the beginning of the pilot phase in August 2007. Then she recruited two more teachers and two more classes to participate in phase two of the pilot in 2008 with a total of eighty-nine Primary 4 students in the three classes. In the actual study carried out in 2009, the Head-of-Department, based on the results of the pilot, decided that all the Primary 4 students would participate in the writing program. Thus there were a total of seven classes with 178 students. However, for my study, I only analyzed the data collected from the pioneer teacher and her class. This was because there was insufficient computer lab space to have all the classes do ICT intensively. Hence priority was given to the pioneer teacher and only her class had full ICT artifacts.

Ensuring Findings from the Case Study were Trustworthy

According to Palmquist (1997), the case study method is not without its critics. The primary issue is the small number of cases being studied and as such, generality in findings can be called into question. To answer this criticism, Yin (2003) highlighted the vital role of having a theory “to which a study’s findings can be generalized” (p. 34). Yin called this analytical generalization. The case study research, especially in single case studies, has to be guided by a broader theoretical proposition. It guides the researcher to identify cases which findings can be generalized to an underlying theory. It also guides the data collection and analysis. Yin illustrated this process by giving an example of a case that studied neighborhood change. The theories of population transition have established a domain for the researcher to select the case which is the type of urban neighborhood in the midst of transition. As Yin says, the purpose of a case study is not to achieve statistical generalization which “enumerate frequencies” (p. 10).

In my research, social constructivism is the broader theoretical proposition. Its closely related construct, scaffolding, especially scaffolding in the classroom, guided the design of the writing program and the ICT-mediated platform. Scaffolding, the focus of the research was firmly established for the study. Writing instruction was geared towards scaffolding students in acquiring writing strategies, e.g., helping students build mental representations of the action chain writing strategy. Findings were discussed in the context of scaffolding, e.g., in my findings on students' improvement in writing skills, I inferred that they had constructed new mental representations or linked newly acquired concepts with existing concepts.

Yin (2003) also suggested another criticism which was that data from a case study is sometimes collected based on the subjective judgment of the observers and as such, could detract from construct validity. It would be a source of "potential investigator subjectivity" (Tellis, 1997). To address this criticism, Yin proposed collecting and triangulating multiple sources of evidence, e.g., from observations, interviews, and artifacts. This would encourage "converging lines of inquiry" (p. 98) which in turn, will ensure construct validity as "the multiple sources of evidence essentially provide multiple measures of the same phenomenon" (p. 98). There would be trustworthiness of results if multiple sources of information corroborate one another.

Hence, in my research, I collected different sources of data from students' artifacts, their composition scores, students' survey and interview, teacher's notes, and communication with the teacher via email. These were then triangulated to ensure validity in the research findings.

Data Collected

Students' artifacts.

There were two kinds of student artifacts – work done on paper and on the e-portfolio. Artifacts available for analysis that were done on paper included the pre-test compositions of the whole class, and the work of one high-ability student for the entire academic year. They consisted of sentence-making exercises, scaffolding exercises to learn writing skills such as identify Big 4 in a passage, and all the handwritten compositions. Handwritten artifacts were returned to the students at the end of the year. Artifacts done in the e-portfolio included game scores, sentence-making activities, collaborative mind map synonym generation activities, collaborative mind map action chain writing activities, compositions and peer editing activities. The artifacts on the e-portfolio were password protected, accessible by the respective student, the teacher and me. These artifacts indicated how students performed after they had been taught basic writing strategies and writing skills. In most cases, they were still being scaffolded. Even so, we were still able to see the potential of the students when we analyzed their work. In the thesis, students are referred to only by their initials.

Students' composition exam scores.

According to the teacher (May 4, 2010), there are four exams in a year, two continual assessments (CAs) and two semester assessments (SAs). These four exams, the CA1, SA1, CA2 and SA2 are conducted at the end of each term. CA1 and CA2 assess the respective term curriculum. SA1 assesses the first half of the curriculum and SA2 assesses the entire year's curriculum. CAs consist of only Paper 2 which assess comprehension, cloze passage, sentence and vocabulary. The total mark for the CA exams is 50. In the SAs, the pupils take the full exam which consists of

Composition (20 marks), Oral (20 marks), Listening Comprehension (10 marks) and Paper 2 (50 marks). Together, these papers will add up to 100 marks.

In my research, composition exam scores indicated students' independent performance. Statistical analyses (i.e., ANOVA) were performed on these composition exam results to compare students' performance over time.

Teacher's observation notes.

The teacher took detailed observation notes on students' responses when she implemented the various writing strategies (e.g., ICT-mediated activities, writing in the e-portfolio). Areas the teacher took notes on included students' performance, the difficulties she or students encountered in class, effectiveness of writing strategies, effectiveness of ICT strategies, effectiveness of group work and peer-editing, and the role of the teacher in an ICT-mediated classroom. The following guidance was provided for the teacher to write her observation notes:

1. What amazed the teacher in the class?
2. What the teacher thought could be improved?
3. What was effective?
4. What was difficult or disappointed the teacher?
5. What did the teacher need (including software features, resources) to make teaching more effective?
6. Comparison of the ICT-mediated and pen-paper based writing environment.
7. How did the teacher normally provide learning support?
 - a. Repeat what the teacher had said.
 - b. Recast - provide what students need at the point.
 - c. Elaborate - support the students at a more conceptual level.
8. Teacher's perception of the effectiveness of the various strategies:

- a. Strategies in writing (e.g., when to add vividness, how to monitor own performance, how to assess friends' work).
 - b. Techniques in writing such as Big Four, action chain.
 - c. Basic language ability (e.g., vocabulary, sentence making).
9. Teacher's perception of whether students were more independent in the computer lab.
10. How to effectively group students:
- a. In pairs or small groups?
 - b. Group high with low abilities?
11. In the lab, what did the students talk about (e.g., chatted about things unrelated to the work at hand, asked for help and provided help, or both parties groping in the dark not knowing how to solve the problem)
12. Peer-editing:
- a. Did it improve the quality (thinking, creativity, ideas, flow) of the work?
 - b. Did it improve the grammar (sentence structure) of the work?
 - c. Did it improve surface features (punctuation, less wrong words) of the work?
 - d. Did the improvements have lasting effect?
13. How did the teacher perceive the effectiveness of the ICT-mediated collaborative activities (e.g., peer editing)?
14. Other comments?

The teacher's observation notes were written in a blog in her e-portfolio. It is password-protected. Only the two of us have access to it.

Personal communication with teacher.

This was conducted via email whenever I needed to clarify issues with her, e.g., what areas were tested in the SA and CA exams, how did some of the students

perform in other subjects, her perception of the effectiveness of writing strategies, how did she conduct certain writing activities?

Students' survey.

A total of 47 students took a survey at the end of the study. They were from the two classes that have access to ICT. The survey was administered online in the computer lab. As it was after the final exam and very close to the end of the year, there were 15 absentees. The survey was created using Survey Monkey (see Appendix C). It assessed students' perception on the effectiveness of the writing strategies. The survey responses were analyzed according to the five themes as follows:

1. Perceived effectiveness on basic writing skills, the abilities to flow compositions, to write complete compositions, to write vividly, and perceived overall competence in writing;
2. Perceived effectiveness on ICT-mediated instruction. They included the Chinese language game, collaborative mind map activities, peer-editing activities, and writing compositions in the e-portfolio;
3. Perceived effectiveness on collaborative activities such as peer-editing, brainstorming for synonyms;
4. Main reason(s) for improvement;
5. What could help students further improve in composition writing?

Responses were analyzed as a whole as well as grouped into high-, medium-, and low-ability in Chinese categories.

There were 18 high-ability students, 15, medium-ability, and 20 low-ability students. Survey responses were stored in the hard disk of my computer. I am the only person who has access to them. A summary of the responses was sent to the teacher. She could not identify specific responses from the students.

Students' interview.

At the end of the study, ten students (two high-ability, six medium-ability, and two low-ability) were interviewed by the teacher. They were interviewed to find out more about their perception of the writing instruction intervention (see Appendix D for the interview questions). The interviews were semi-structured. The teacher would ask the students an open-ended question and let them respond. If the students could not answer, she would prompt them with options. The themes were the same as the survey. But, they were asked more in-depth questions (e.g., why did they like/dislike the Chinese language game, why were certain strategies useful or not useful for them, what specifically did they feel they needed to improve in).

In my study, I adopted the mixed quantitative and qualitative approach to analyze the data collected. While statistical analysis was conducted on composition exam scores, students' artifacts, teacher's notes and students' responses in surveys and interviews were analyzed qualitatively. The aim was to find out if different sources of evidence corroborate one another. If they did, there would be stronger support for the writing program.

Grouping of High-, Medium- and Low- ability Students

To attain greater granularity of results, I investigated the performance of different ability students. Student clusters were categorized according to their exam scores in curriculum material in the Continual Assessments (CA) 1 and 2 which included comprehension of text, learning of vocabulary, and sentence structure. These two exams did not have a composition component. As such, the grouping was based on the student's general Chinese language ability independent of their writing skills. The mean CA scores, which ranged from 11 to 48, were used to categorize students into high, medium, and low ability. Natural boundaries were identified at clear gaps in

the average scores. One gap occurred between 41.5 and 40 which I set as the boundary between high and medium ability students; another occurred between 35.25 and 30.5, which I set as the boundary between medium and low ability students. There were altogether 14 high ability students, ten medium ability students, and seven low ability students.

Chapter VI Basic Writing Skills Analysis and Discussion

From the pilot study in Chapter 2, I found that students had weak basic writing skills. These weaknesses were a) poor transcription skills, b) limited vocabulary and c) awkward sentence structure. Together they gave rise to poor performance in the language portion of the composition assessment in the exams. Language and content carry equal weighting, which is 10 marks each. They make up the total composition score in exams.

Recall from my two-stage writing model (Chapter 3) that these weaknesses were addressed as part of the basic writing skills program. I therefore worked together with the class teacher to create the necessary lesson plans to focus teaching (our intervention) in these areas. They were transcription skills, vocabulary, and sentence structure training. We now turn to the issue of poor transcription skills.

Poor transcription skills refer to the inability of the students to transcribe the words and ideas in their mind onto paper or into the computer. In my study, this issue was addressed with the deliberate practice strategy such as the traditional *ting xie* (spelling transcription). In addition, my study had also introduced ICT-mediated deliberate practice. They were: a pinyin game (which is part of the Chinese language game) as well as inputting compositions via the Chinese Word Processing software onto the software platform known as the e-portfolio in my study. Next, let us take a look at how vocabulary skills were strengthened.

The vocabulary problem was addressed using traditional methods such as spelling and sentence construction, and by employing ICT-mediated activities. ICT-mediated activities were: a) brainstorm for synonyms; b) exposing students to more words, 30 or so for each composition when they wrote online.

Sentence structure and construction was addressed again with traditional methods i.e., structuring a sentence from seed terms. I also introduced peer editing via the ICT platform.

In the following analysis of basic writing skills intervention, I will discuss first, each of these weaknesses in turn, to consider whether the basic writing skills have intrinsically improved; secondly, whether there was significant improvement in the language scores in the exams; and thirdly, whether there was significant improvement in their performance ability.

Transcription Skills

Transcription skill was taught mainly with the traditional method using *ting xie* (spelling). In view of the composition intervention, the teacher would include more words that the students were likely to use in their compositions. *Ting Xie* is a traditional method used in school and the teacher did not see the need to change it.

To verify the effectiveness of the traditional method, we can analyze three compositions for which we have the text, one handwritten (the pretest) and two on Compositions 5 and 9 that were written on the e-portfolio. The compositions were inputted using software which is pinyin (phonetic) based.

We compared the percentage of incorrect words (e.g., wrong transcriptions in the handwritten pre-test and the use of homophones in the e-portfolio) in the composition to normalize for composition length. However, when analyzing the compositions written on the computer, there were likely to be fewer incorrect transcriptions as the students need not handwrite the words. The pinyin input software allowed them to type the phonemes and select the correct homophone. The teacher's comment supported the claim: "the students can write a lot better with the help of the inputting software. Words they don't know how to write they can write them on the

computer” (November 16, 2010). Also, it was easier to get help from their peers on pinyin and get the correct character from the list of homophones. In the student interview, all except one student said that they told their friends the pinyin of words, especially if they were seated near them. The following paragraphs discuss statistical analysis of the effectiveness of the transcribing training.

Statistical analysis on performance in transcribing Chinese words.

To find out if the proportion of wrong words in the compositions had decreased over time, a repeated analysis of variance was performed to find out if percentage of wrong words differed in the three compositions, i.e., pre-test, Compositions 5 and 9. Sphericity was tested using the Mauchly’s Test, which determines if the hypothesized and the observed variance patterns were equivalent. The test was statistically significant, $W = .29$, $\chi^2(2) = 22.47$, $p = .00$, which indicated that the assumption of sphericity had been violated. Therefore, degrees of freedom would have to be corrected. In this case, the epsilon values from Mauchly’s test values are 0.58 and 0.60, both smaller than 0.75. As such, the Greenhouse-Geisser estimate of sphericity corrected value ($\epsilon = 0.58$) is used.

Results indicated a significant decrease in the amount of wrong words used in the three compositions, $F(1.17, 22.18) = 43.81$, $p = .00$, $\eta_p^2 = .70$ (see Table 6.1). Post hoc pairwise comparisons indicate that the students wrote significantly less wrong words in Compositions 5 and 9, as compared to the pre-test. The results answered the question that the traditional method of *ting xie* and inputting the compositions onto the computer had taken effect. In fact, in the student interview, they indicated their interest and found it useful to work on the eportfolio: “Give us more time on the computer to work on composition writing”. The students always enjoyed working on the computer and some felt that the pinyin game was very engaging. They were

motivated to get a higher score. Furthermore, when they enter characters via the wordprocessor, they could take advantage of the software features such as getting instant feedback when they entered characters. They could also copy and paste phrases from the helping words, and the teachers also provided many more helping words in the eportfolio than in the pen and paper composition writing.

Table 6.1

Statistics for Percentage of Wrong Words in Compositions and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Composition 5
Pre-test	3.38	.46		
Composition 5	.58	.23	.00*	
Composition 9	.56	.18	.00*	1.00

Note. N = 20. $\alpha = .05$, * = significant difference

One of the issues coming from ICT-mediated writing training program was that the students had to be competent in pinyin. However, most students had forgotten their pinyin as they were only taught in Primary 1 and 2. As the students were required to handwrite their assignments, there was no need for them to use pinyin to enter Chinese characters into the computer. By the time they reached Primary 4, their lack of practice in pinyin would render them unable to do phonetic transcriptions using the phonetic alphabet. Therefore, a pinyin game was designed and developed to help the students revise their pinyin skills.

Analysis of students' performance in the Chinese language game.

The game was designed to expose students to vocabulary and acquire the pinyin through repeated exposures. This behaviorist aspect of training, which emphasized rewards for one correct answer, and practice a skill at a gradually more

challenging level until mastery is achieved (Mayer, 2008), was necessary to consolidate skills.

The basic design of the game involves Chinese characters, idioms or phrases dropping from the top of the browser window. The player had to type in the correct pinyin before the character reached the bottom of the browser window (see Figure 6.1). When the player typed the correct pinyin, the character would disappear and the scores of the student will increase. If the player typed in the wrong pinyin or if the character reached the bottom of the screen before the pinyin was entered, then marks would be deducted. However, the correct pinyin would be displayed on the screen as feedback to reinforce learning.

Characters in phrases and idioms were jumbled and the learner had to unscramble them and type in the correct pinyin before the phrase touches the bottom of the screen. Bonus marks were given if the learner correctly identified the phrase and typed its pinyin at the first try. This improved their familiarity with common phrases and encourages them to learn phrases quickly.

The characters, phrases, and idioms were sight words (i.e., high frequency words) in children's literature, school textbooks, and the Internet. Currently, the game had three sets of content for learners at the Primary 2, 3, and 4 language abilities. It had 10 levels of complexity, starting from one character and then six-character phrases. Also, characters in the Primary 2 and 3 games descended slower than the Primary 4 game.

The game software brought students together: They talked about the words and even joked about their scores. The teacher commented:

I observe pupils normally interact after the game. When the full list of words appear at the end of the stage. They will discuss with their peers the words they got wrong and laugh at each other's score. During the game not much

interaction as the words are dropping down quite quickly. They cannot react in time, let alone ask their peers for help (March 4, 2011).

Interacting with the ICT-mediated game itself, the student wanted to beat the game. The game took on a social dimension. From a social constructivist point of view, the individual mental processes interact with a social agent, or, the social process, to co-construct knowledge (Palincsar, 1998). When the social agent was interactive and supportive by providing immediate feedback to the students, it encouraged the students to try harder to connect the correct pinyin with the characters. This indicated that the game had a social dimension, even though the game play has behaviorist underpinnings. They would try to improve in three areas: a) learn pinyin for new words, b) reinforce pinyin for vaguely familiar words, c) correct wrong pinyin (e.g., mix up s with sh, l with r). When they were motivated to persist over a long period of time such as when they reached a score of 1000 and above, they would have kept exercising the connections that were either newly constructed or has been weak previously. They would also have modified their mental connections for the wrong pinyin. Through repeated working out a connection, it became strengthened, resulting in internalization of a skill (Santrock, 2009). As such, the pinyin game acted as a powerful social change agent to help the students construct or modify mental structures of pinyin and vocabulary used in the game.

Similarly, when the students competed and tried to compete with each other on the high score board during the game, they were persistently motivated to score points. This led to an update or refinement of their mental structures as well as strengthening neural connections. Strengthening connections will result in internalization of the skills learned.

In addition, from the teacher's observation, the students would interact even after the game. They "discuss with their peers the words they got wrong and laugh at each other's score". By doing so, they created a social learning environment where connections were highlighted. This would create awareness for connections for the students who were new to the connections or refresh them for those who were familiar with them. Again, the correct linkages were emphasized and the wrong ones were not exercised. Over time, those linkages not exercised would die off. This social environment enabled the students to update their mental connections based on the ideas of other students.

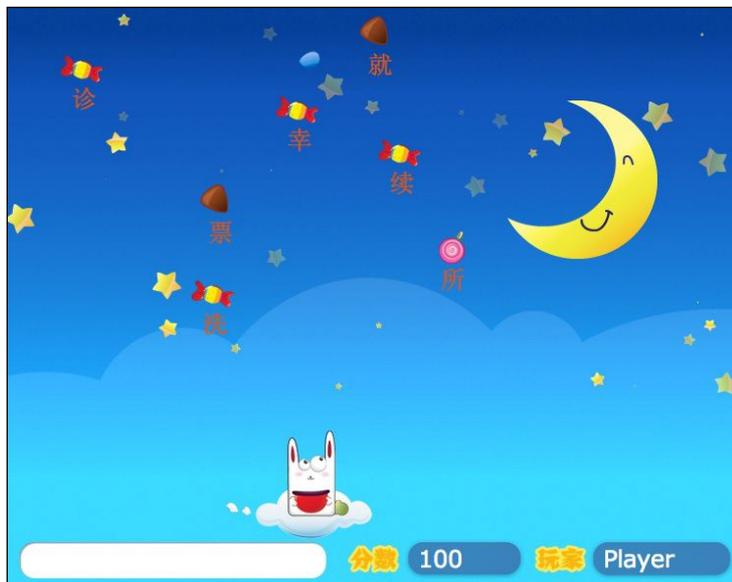


Figure 6.1. Single characters descending from the top of the game window.

The game had a high score board which captures the top 20 high scorers. The game was based on both accuracy and time, we observed that when the score was above 1000, the students were most likely at the level of correctly inputting two-character words. We can consider that they have achieved a minimum proficiency in pinyin. The following are the high score boards for the Primary 3 and 4 level game (see Tables 6.2 and 6.3).

Table 6.2
Game Scores for Primary 4 Level Game

No	Player	CA Ability	Score	Time
1	JT	2	10018	2:06:23
2	JT	2	5428	1:26:44
3	JT	2	4611	0:33:50
4	WT	2	2533	0:28:27
5	KSX	2	2235	0:17:39
6	KG	1	1981	0:11:13
7	WT	2	1604	0:48:04
8	WT	2	1454	0:35:26
9	WT	2	1344	0:12:51
10	NTB	Teacher	1294	0:07:09
11	WT	2	1263	0:32:10
12	SCS	NA*	1149	1:13:37
13	WT	2	1004	0:27:51
14	KSX	2	938	0:18:58
15	WT	2	916	0:24:23
16	KG	1	819	0:07:49
17	WT	2	806	0:21:16
18	WT	2	803	0:15:32
19	JC	1	554	0:08:47
20	WT	2	528	0:06:57

Note. * Student from another class.

Table 6.3
Game Scores for Primary 3 Level Game

No	Player	CA Ability	Score	Time
1	SSC	NA	4711	0:28:01
2	TZY	1	4692	0:21:38
3	TZY	1	4692	0:00:02
4	KG	1	4329	0:14:44
5	THY	1	4316	0:50:31
6	TZY	1	4308	0:15:58
7	KG	1	4303	0:35:13
8	TZY	1	4292	0:18:18
9	TZY	1	4268	0:17:06
10	KG	1	4244	0:13:30
11	AQ	1	3771	0:24:20
12	KG	1	3409	0:18:37
13	WT	2	2479	0:25:50
14	LEJ	NA*	1542	0:09:06
15	LYP	NA*	1185	0:09:45
16	TCZ	NA*	782	0:10:29
17	KSX	2	768	0:11:36
18	THY	1	753	0:13:32
19	JT	2	724	2:26:46
20	THY	1	691	0:04:05

Note. * Student from another class.

The game was played at the beginning of the year. The teacher would let the students play the game in the lab towards the end of any ICT classes. She would use

the game as reward for completing the ICT-mediated work, as the game was engaging. Two of the students interviewed commented on how much they enjoyed the pinyin game in the composition-training program. The reasons were: a) it is more challenging and interesting; b) need to type fast; c) can use the computer; d) the scores make it exciting; e) friends also play; f) improves pinyin and typing skills.

The high score boards indicated that some students prefer to stay in Primary 3 level game such as TZY and THY and some chose to move to Primary 4 such as JT and WT. It could be that the students preferred the Primary 3 level game which had a slower pace while others moved to the Primary 4 level because they found it more challenging. All these students would play the game whenever they had time, typically while at home. We found that they learned to play the pinyin game very well and they also spent a fair amount of time doing so. As such, the game seemed to engage them in learning pinyin. Learning via a game approach seemed to work. According to the teacher, “The words are the frequently used words, hence they were able to transfer some learning to typing after playing the game” (November 24, 2010). However, in casual conversation with the teacher, she mentioned that for the majority of students, there was insufficient time to do well in the game as they did not play it at home.

In addition, good students might not be very interested in the game as they already had pinyin ability. Out of the 14 high-ability (for definition of what high ability means, see Chapter 4 sub-section “Grouping of High, Medium, Low students”) students, only four were on the high score board. The game might not be challenging for them. This has implications for improving the game design that will benefit the high-ability students. One improvement could be to start off at a higher level where they have to rearrange characters to form phrases. This is consistent with the feedback

in the student interview. Several high-ability students said that pinyin was not useful as they either already know pinyin, or they did not see the need to use it in their writing.

In addition, there was no low-ability student in the high score scoreboard. They might find it too difficult to play the game. In the interview with a low-ability student, she said she rarely used pinyin so her pinyin score in the game was not too good. One learning point is that there is a need to slow down the pace even more and select the most common sight words for low-ability students. One may also have to consider letting them play the game earlier such as in Primary 1 or 2.

Furthermore, the scoreboard indicates that it requires more than 10 minutes of play to attain good scores (>1000). As such, the teacher must allow more time for students, preferably 20 minutes, for practice playing the game and become engaged.

Although two out of ten students who were of medium-high ability levels indicated in the end-of-study interview that they enjoyed the game most in the entire writing intervention and noted some improvements in their pinyin, it was very far from the expected results. The improvements might also be an outcome of inputting Chinese text into the e-portfolio.

Playing pinyin by itself had not shown to improve students' spelling and vocabulary. For instance, a student (JT) who got the top three scores of the Primary 4 level game made many errors in transcription in his Composition 5 in his e-portfolio. Either his vocabulary was limited or he was careless in inputting even the common sight words. In contrast, although high-performing students (e.g., JC) had medium scores in the game, they did not make any transcription error.

In conclusion, only a multi-pronged training approach would improve students' language ability. This would include the traditional handwriting training, using ICT to input Chinese characters, as well as using the game-based training.

Vocabulary

In addition to students' inability to transfer many Chinese characters from students' thought to paper or to the composition they wrote in my pilot studies, they had limited vocabulary and their writing had flawed sentence structure. In this section, I will discuss the scaffolds used in my study in order to remedy students' weakness in vocabulary. Two types of scaffold were adopted: traditional and ICT-mediated.

Traditional activities to scaffold learning of vocabulary.

The traditional methods included spelling and sentence making. The teacher highlighted words and phrases in the textbook that were useful for composition writing (e.g., feeling terms, action words, etc.). This was done in her regular Chinese lessons. She also made her students copy useful words and sentences into their exercise books and encouraged the students to revise them regularly. The teacher mentioned that "the pupils do have a book where they copied notes on good vocabulary or expansion of vocabulary, whenever we chanced upon them during daily Chinese lessons" (December 10, 2010).

Cognitive effects of the traditional teaching method.

In using the traditional method to scaffold the learning of vocabulary, students learned words in the context of sentences, e.g., they copied good sentences into their notebooks. By copying sentences, the students not only learned isolated words but also how to apply these new words in writing. When words were learned in context, the mental representation of the word would be elaborated with links to prior concepts. When there were more links, it was more likely for students to learn the words and

more likely for them to be activated and used. When students revised these sentences in their notebook, these mental links would be refreshed and strengthened.

Besides the traditional method, the teacher also scaffolded her students towards learning new words via ICT-mediated activities. I will discuss them in the following paragraphs.

ICT-mediated activities to scaffold learning of vocabulary.

Several ICT-mediated activities were designed to help students acquire vocabulary they could use in their composition writing. The Chinese language game not only helped students acquire common sight characters suitable for the Primary 4 grade, it also gradually built up students' skills in acquiring idioms and short phrases. The game-play changed every two levels in order to provide different training in Chinese. While levels 1 and 2 allowed students to learn single characters, levels 3 and 4 help them recognize two-character sight words. The phrases would get longer until level 10 which had six-character phrases (see Appendix B). Four character phrases were predominantly idioms. In the game, these phrases were dropped one by one from the top of the screen and they were all scrambled. Students had to unscramble them in their mind and then type in the correct pinyin. They had to do these before each of the phrases touched the bottom of the screen. If the student did not get a phrase correctly before it reached the bottom of the screen, the correct phrase would appear on the screen. By repeatedly exposing the students to common sight words and construct phrases, they would gradually learn to recognize the words. Over time, students would have a larger collection of words to use in writing compositions.

The second ICT-mediated activity that helped student acquire vocabulary was brainstorming for synonyms collaboratively via the mind map software (see Figure 6.2). The teacher grouped up mixed ability students. There were about ten students in

each group. She gave each group two seed words to brainstorm for two sets of synonyms. To add a synonym, the student would create a node and type in the word on his or her computer. The node would appear on all group members' screens.

The third activity was writing compositions in the e-portfolio with a larger amount of helping words (e.g., 30 as opposed to 10 using pen and paper) (see Figure 4.13). These helping words could be nouns, verbs, or linking words. The teacher also gave them a longer time such as a few days to complete their composition as compared to the normal composition lessons of 50 minutes. After writing the composition, the students would edit their peers' work. A student could highlight a part of the sentence and make modification. The modification would show up in a colored rectangle popup textbox (see Figure 6.2). The writer could either accept or reject the modification. More than one person could modify the same part of a sentence. Each editor was assigned a color at the time they did editing.

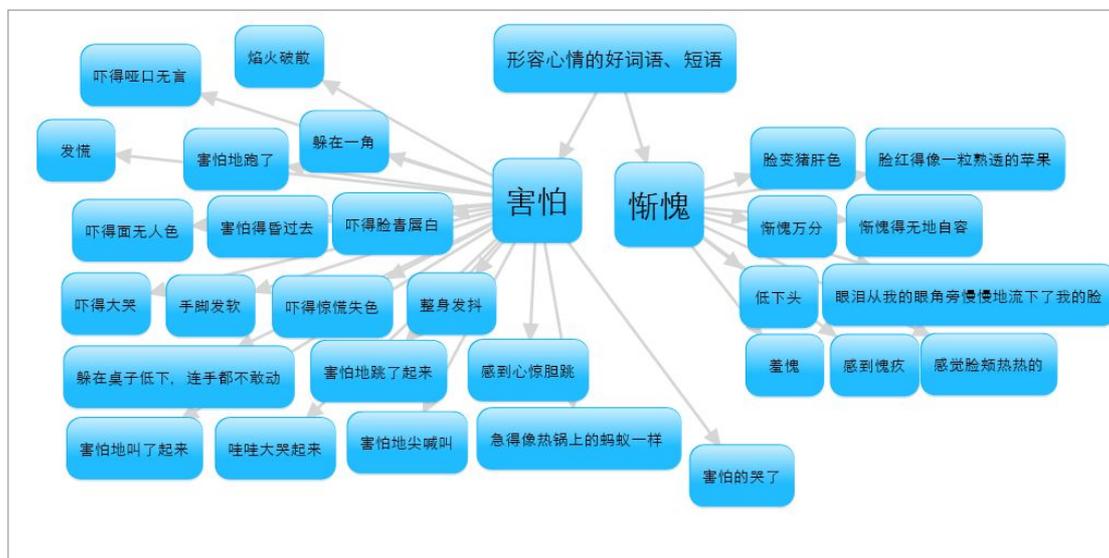


Figure 6.2. Collaborative brainstorming for synonyms.

After conducting ICT-mediated learning activities, the teacher found out students faced some technical challenges and therefore in future, the teacher needed to prepare the students for ICT activities.

The need to prepare students when scaffolding via ICT.

The main issue was the lack of technical skills. According to the teacher (February 27, 2009), the technical issues the students encountered were first, how to use the inputting software such as “changing EN to CH before typing and computer handling”; second, they did not know how to navigate the e-portfolio “such as moving around the website”; and third, “inadequate pinyin knowledge and slow speed of typing”. The teacher further pointed out that:

The weaker pupils are unsure of their pinyin and needed lots of help in typing. I need to gather the weaker pupils to sit together to help them out when they are typing, also to brush up their knowledge of pinyin.

From past experience, the teacher anticipated some of these issues and she did a demonstration on how to navigate the e-portfolio in class before taking the students to work in the computer lab: “The 15mins introduction and step by step demonstration on how to move around in the portal helped the pupils to quickly settle down to work in the afternoon”.

To minimize these technical issues, future training should look into conducting one or two training sessions before letting the students work on the actual writing activities. This will undoubtedly eat into the limited time available for the actual training. As such, these training sessions may have to be conducted during the holidays or after-school.

ICT is an important component of my writing model which was underpinned by the social constructivist theory. Teachers who adopt the social constructivist approach aim to help students construct accurate mental representations through social interaction. ICT engages students to learn in a social context but are they effective in helping students construct accurate mental representations? It was

important for this study to explore the effects of ICT on how they help students construct better mental representations of the Chinese language and their compositions. In the following paragraphs, I will explore how ICT influenced the construction of the mental model in the context of my study.

Cognitive effects of the ICT-mediated activities.

ICT-mediated activities were employed to provide more opportunities for social engagements in Chinese. The additional benefits were substantial. For instance, students liked computer-based activities so they would put in extra effort in their learning when they work on the computer. In conversation, the teacher frequently reported that the students were very motivated to work on the computer: “Pupils are definitely more interested in assignments online” (February 27, 2009). When the students were motivated, they tried harder. With ICT, students could revise the good vocabulary or phrases easily and frequently so that the newly form mental structures and links would be refreshed and over time, they would be strengthened. ICT activities have built-in features to force the students to review what they had learned, again and again. A good example would be the use of the Chinese language game to train vocabulary. In the game, the same jumbled phrases would appear on screen periodically until the student got the order and the pinyin correct. The students had to be persistent to rearrange them to score points. If the students wanted to score well, they had to repeatedly recite the phrases in their mind in order to enter the pinyin quickly. By doing so, the mental concepts and links would be strengthened. Collaborative activities allowed the students to draw the strengths and experiences of their peers to enrich their own learning. If they learned new words from their peers, it would increase their mental representations for the new words. If they found out from their peers what they knew was incorrect, they would refine their mental

representation to reflect the change. If they learn a synonym for a word, say an idiom that has the same meaning of the two-character word they already knew, it would enrich their mental representation for that word.

Cognitive Effects of Playing the Chinese Language Game.

The aim of including the game was to motivate the students to recite the common sight phrases repeatedly. Although the students might have been familiar with the phrases verbally, they did not necessarily know the written forms but by playing the game, they would be able to associate the verbal representations in their mind with the newly acquired textual representations. As the students progressed through the levels, the phrases would become longer (6 to 9 characters). As the phrases became longer, the context would be introduced. It would also show the students how the words were applied. When there is context, the coding would be more extensive. When coding was extensive, the chances of applying the vocabulary would be higher.

For phrases that were totally new to the students, they could also be able to create a mental concept of the order of the characters by repeatedly listening to the pinyin associated with the characters. Over time, the sounds of the characters and their order in the phrase would be associated with the characters.

The immediate feedback, fun, and excitement provided in the game would motivate the students to be persistent in playing it. Through repeated exposures, the mental concepts and links would be strengthened. It was hoped that over time, the students would internalize these common phrases and be able to apply them.

However, the use of the Chinese language game to help the students learn new words was not very successful. Very few students played the Chinese language game and even fewer reached higher levels where they had to unscramble characters to

make phrases. The reasons were several-fold. First, there was not enough time in class for students to advance to the higher levels of the game and they did not have much time at home to play it. Second, higher ability students reported in the interview that their pinyin was good so they actually disregarded the game. They might not know the game would help them construct phrases at a higher difficulty level. Third, the characters were dropping too fast for the low-ability students. Their pinyin was so weak that they could not cope with the speed of the dropping characters. As such, they were not motivated to play the game. The weaker students were, in a way, left out of the game. These limitations can be addressed by e.g., slowing down the game for weak students and allowing the high-ability students to start at higher levels that focus on helping the students acquire phrases.

Cognitive effects of working on collaborative mind map.

ICT activities compensate for what traditional training method lacks, that is, sharing of knowledge and experience. In this study, the students brainstorm for synonyms via the collaborative mind map to improve the students' vocabulary (see Figure 6.2). This activity was conducted in the computer lab. The students were grouped. Each group consisted of five students and each group was given a seed term. Each student used a computer. Everyone in the group had to contribute to building the network (mind map) of synonyms. As soon as a member of the group added a new node, it would appear on the screens of all the group members. According to the teacher, as she educated the students to check the network of nodes to see if that phrase had already been added, the students would scan the network of nodes frequently to check if the word or phrase they intended to add was already there. As such, the students would try to add nodes as fast as possible to beat their peers (Personal communication with teacher. According to the teacher, all students,

regardless of their ability level, liked the activity and checked the map constantly (Personal communication, April 4, 2011). Students with good Chinese ability contributed more words and phrases. The teacher confirmed that the immediate feedback prompted the students to add as many nodes as they could. Even the low-ability students were motivated to check the nodes: “They contributed fewer vocabulary but they were reading the nodes added by their better peers. So learning is achieved (April 4, 2011)”.

By doing such collaborative work, the students were encouraged to share knowledge of the Chinese language as fast as possible. Furthermore, feedback was immediate. These features encouraged the students to keep searching for new phrases mentally to add to the network. It encouraged the students to revisit what they had learned before, thereby strengthening their mental representations of the synonyms. It also enabled additional links to be formed as these phrases have a context now. These nodes were added and linked with a familiar concept (the seed word), making it harder to forget as compared to learning the phrases in isolation. Repeated checking of the network on the screen would also strengthen the mental concepts and links.

Furthermore, the students would be checking the network on their screen constantly. This enabled them to build new mental concepts for these words. As these words were learned in a context of synonyms, mental connections would also be formed to link them together as well as with a similar concept, usually easier, that was already in the mind. This deliberate encoding effort is known as elaboration. Elaborating concepts would help students to remember concepts better, thereby increasing the likelihood of retrieving them for future use (Zimbardo, Johnson, & McCann, 2009). This would be especially helpful for weaker students as they did not have much of a mental network of knowledge for the Chinese language. It was likely

that they had isolated nodes and very few links and therefore such learning would be likely to benefit them as they would develop mental networks. With repeatedly checking the screen for new vocabulary, more nodes would be attached to the existing network. Moreover, repeated exposure also enabled the strengthening of the nodes and links. By sharing knowledge, the students were able to integrate knowledge from their peers that would result in adding of new mental nodes and links. For weaker students, it might even be adding an entirely new mental network of nodes and links. By constantly checking the network of phrases, the mental network would be reinforced and strengthened.

Cognitive effects of writing in E-portfolio.

The teacher let the students complete sentence-making activities followed by writing compositions in their e-portfolios. When they were asked to write compositions, they were given a large number of helping words and more time to complete their composition. After they had written the compositions, their peers would edit their work.

When the students learned the words by constructing sentences, they were likely to build a more extended structure to represent that sentence, as compared to learning a word by itself, which would result in an isolated node to represent the word. By constructing a more extended representation, it was likely that the new ideas would be linked up with older ideas that were already well learned, thereby increasing the possibility of the link being evoked.

Furthermore, the helping words provided by the teacher revolved around the theme of the composition. It enabled the students to associate the words in a related context, thereby building a network of related nodes mentally. Once a node in the

network is prompted, the entire network can be activated. If a similar theme is presented in future, students are likely to apply the words in their mental network.

In addition, with more time to work on the composition, students could include as many helping words in their composition and also obtain help from their peers, parents or tuition teachers. This would enrich their vocabulary and increase their exposure to life experience of better ability people, or significant others. This help was known as customized scaffolding as each individual would receive help that was appropriate to his or her level of understanding (Foley, 1994). Because the help was customized for the composition, students would need to use them. These words would then fit into their mental structures easily. By integrating the knowledge and experience of others, students could build extended mental representations and connections.

Cognitive effects of peer editing.

After writing the composition, the students would edit one another's composition online. Peer editing is collaborative work that enables students to share ideas and knowledge. By doing so, their mental representations had the potential to be modified or enriched. When students examined their peers' comments, they had to carefully consider their peers' comments and compare it with what they had originally written. They had to evaluate if their peers' suggestions were correct, and if they thought they were better than theirs. If they were better, should they accept the changes made by their peers? When the students looked at the teacher's feedback, they also had to find out what was wrong with their own sentences as compared to the teacher's feedback. By experiencing a situation that they found uncertain, in this case, evaluating teacher and peers' comments, by reflecting what were available before them and connecting them with prior understanding and arriving at new

understanding of the situation, is an important higher cognitive process that educators tried to foster in the process of learning (Hatton & Smith, 1995). According to Bandura (1986, p. 21), *[p]eople not only gain understanding through reflection, they evaluate and alter their own thinking by this means*. This process is again underpinned by social constructivist theory where learning from peers facilitates a higher level of functioning. The students would draw on and integrate the thinking and experiences of their peers into their existing mental network (Gauvian, 2008). Such reflective practice was built into the peer editing ICT-mediated activities. Without ICT, it would be very difficult to conduct peer editing in class and at home.

As ICT encourages social interactions, they may be especially effective in training weak students. It is because they encourage weak students to compare their work with those of the higher-ability students. This was designed to prompt them to change their flawed mental representations. The mental representations of Chinese in the weak students were very likely literal translations of English. Studies have indicated that these incorrect prior structures were especially resistant to change and they did not respond well to the traditional teaching approach (Hubber, 2005). A constructivist approach was needed as it would take into account the students' past structures, allow the students to interact with the social change agent, deliberate upon the new concepts within the context of their personal mental structures, thereby generating new concepts or modifying the existing representations (Driver & Oldham, 1986). In this case, the weaker students, when presented with a new sentence structure, would experience some conflict between the new sentence and the students' own sentence. Then, through deliberation or clarification with peers and teacher, it would lead to modification of existing mental structures.

In future interventions, the teacher can compare the students' past work with current work. The teacher can point out to them how they have progressed over time. This will serve to consolidate learning by allowing the students to see how they have improved and giving them the confidence that it will eventually help them in writing good compositions.

After introducing numerous learning activities to scaffold the learning of vocabulary, it is important to find out if they were effective. Before the discussion of the effectiveness of the vocabulary learning activities, I would highlight how I corroborated evidence from various sources.

Analysis of results.

Need for triangulation of data.

In the following paragraphs, the perceptions of the teacher and the students are reported. In later sections, analysis of quantitative data will be presented. The reasons for reporting the perceptions are of two-fold: first, if the teacher and the students perceived that the intervention was effective in helping them learn and obtain better scores, they would find it worthwhile to put in the effort. This is an important way to engage the participants in taking part in the intervention. According to Tracey and Morrow (2006), in the social constructivist paradigm, when students are actively engaged in what they are doing, they will integrate new learning with existing structures. Perceiving usefulness in what they are doing motivates them to actively participate in their learning. Second, perception acts as an additional source of evidence for the effectiveness of the intervention. Quite often, perception is accurate but it is not always the case. Multiple sources of evidence are required to confirm if the intervention is effective. In this study, perception from both the teacher and the students are reported, as separate sources of evidence. They also corroborated hard

evidence such as composition exam scores. By combining multiple sources of results it is likely that the weaknesses and potential biases of the research that come from single source can be overcome so that the results are likely to be more *convincing* and *accurate* (Yin, 2003, p. 98).

The effects of both the traditional method and the ICT-mediated scaffolding to acquire vocabulary can be seen from a variety of sources.

Students' comments on the effectiveness of vocabulary learning activities.

In the student survey, we asked the students their view on whether they were able to write with a richer vocabulary at the end of the school year, most students agreed (4 or 5 on a 5 point scale). Further investigation indicated that high-ability students thought they used more new words than medium- and low-ability students.

In student interviews where altogether ten students were interviewed, a student reported that the composition marks improved as a result of her using more new words. When asked how collaborative work on the mind map helped students in their compositions, students of all ability levels said that it enabled them to learn new words and learn phrases from other students as well as to “write more vivid sentences”. It also allowed them to “learn to discuss [instead of argue] with my [their] friends”. As it was online, the students could access the words at home: “so can do it at home and go in to see the words used”. Besides accessing the words at home, another student pointed out that she can get faster responses from friends and had time to think of new words. Another student said, “I managed to use a few words as there are quite a few inside the mind map”. A few students believed that part of the reason their compositions had improved was because they learned new words (e.g. in mind map exercises). A student even reported that what she did best was to use new words in compositions whenever possible. Two students said that what they enjoyed

most in the composition training was the use of mind map as it could “include more people for collaboration, e.g., by class, so that more vocabulary can be compiled”. They collated words from friends, which was good for their compositions and revision before exam.

Besides working on the collaborative mind map, students also edited one another’s work. How did they perceive peer editing? They reported that peer editing helped them improve their vocabulary by identifying the wrong words and adding idioms and good phrases to the compositions. Students who participated in group-activities told their peers what words to use, identified the wrong words and explained why a word was wrong. One student said he enjoyed peer editing the most as he could learn new vocabulary and sentences and he liked his friend to edit his work. From the students’ feedback, we know that with ICT activities, the students could work on their compositions at home; they enjoyed learning from and helping their peers as well as learning as many new words as possible. When students enjoyed their work, they would be motivated to spend more time in the online environment and concentrate on the task they were doing (Bricken & Byrne, 1993). The ICT-environment has provided them with an opportunity to interact with the learning materials and peers extensively. These activities required students to share social experience as well as help one another to improve their writing, resulting in strengthening the mental network of the Chinese words and phrases.

Students’ perception was an important source of evidence. The other source came from the teacher.

The teacher's comments on the effectiveness of vocabulary learning activities.

The teacher's comments mostly centered on peer editing activities as she thought they were very effective. According to the teacher's notes (April 18, 2009), she enabled peer editing by pairing students up: "For this activity the pupils are paired as in their seating arrangement in class. The weaker pupils are already seated beside a stronger pupil, who is capable of helping them". From the teacher's note I found that she was very upbeat about peer editing:

I think they are really effective in making the pupils aware that their friends are looking at the work. They are also very concerned about their friend's views on their work. Hence I think through peer editing, this should be able to help the pupils improve on their work's surface features and also grammar.

Her enthusiasm for the peer editing activities in this study had prompted her to demonstrate the use of peer editing in the e-portfolio to many teachers' from other schools. She found peer editing effective in improving the students' sentence structure and ideas: "Most of the pupils are on task and are able to spot the mistakes of their peers and correct for them". The reason for its effectiveness was that the computer motivated the students and enabled them to model after their peers' work:

The peer editing is something new to the pupils and most are eager to correct their friend's work. In fact the pupils are also eager to find out what part of their sentence did their friends amend and through this, they know that their sentences are not too good and need to be improved. While peer-editing, the weaker pupils are paired with better ability pupils, hence by reading the better ability pupils' work, hopefully it will also improved on their sentence structure.

If this lesson is on pen-and-paper, I think the children will be uninterested and may feel troublesome as they have to cancel and write the correct sentences for their friends. As this is done simply by highlighting and typing, I think they are more interested and are more willing to edit for their friends.

In addition, the collaborative feature of ICT also freed up the teacher so that she could focus on providing customized scaffolding to the weak students who needed her attention most:

Yes. I can afford to leave my time to the weaker pupils, helping them to finish up the activity. The rest of the pupils complete the activity almost independently... I have to spend time with the weaker pupils, asking them to read aloud to me the sentences and sometimes giving them hint on where they can correct on their friend's work.

With further probing on how the teacher provided customized scaffolding. The teacher responded that she could work with them on modifying the peers' sentences. This would help the students in building correct mental representations of the Chinese language:

As I have help from the stronger students to edit their peer's work, I have more time to help the weaker students during peer editing. One example: I am able to physically stand beside him/her and get him/her to read out the sentences written by their peers and ask him/her what would he amend (May 6, 2011).

The teacher believed that peer editing not only improved the quality vocabulary, it also improved their thinking, creativity, ideas, flow of the compositions. Most importantly, the teacher perceived lasting effect in the improvement: "I think peer editing affects students' sentence structure. From their work will be able to see the impact and effect. Their sentences are better, using more vocabulary and longer after peer editing" (May 6, 2011).

When the teacher was asked to compare the effects of peer editing and collaborative mind mapping on learning at the idea level, the teacher commented that peer editing was more suitable for basic writing lessons while mind mapping, higher level training:

... Peer editing allows me to help students work on their sentence structure, not so much on content, ideas. Sometimes, I am able to add in better vocabulary for them, this will help in vividness a little. I think mind mapping did help with the higher level conceptual teaching. Its structure allows for more brainstorming of ideas (May 6, 2011).

In future, when basic writing training is required, the teacher can use more of the peer editing application.

Another important source of evidence was findings from statistical analysis. It was considered as hard evidence. They were not based on the perception of the teacher or students which might be biased or inaccurate.

Statistical analysis on vocabulary.

When students wrote compositions in the e-portfolio, they were given more helping words. If they had use more helping words in the composition, it would help them learn more new words. To find out if the students used more helping words when more of them were given, the average number of helping words used in the three available compositions (pre-test, Compositions 5 and 9) was compared. In the pretest, the students used an average of 5.7 out of 10 helping words. In Composition 5, the students used 16.2 out of 34 helping words while in Composition 9, 12.4 out of 21. As more helping words were given, the absolute number of them being used had increased. On the whole, the helping word scaffold was able to expose the students to more vocabulary, and help them grasp the meaning of the words through sentence constructions in the composition.

To investigate how students with different ability levels used helping words in their writing, I compared the median proportions of helping words used by high, medium, and low students for the three compositions (pre-test, Compositions 5 and 9). I also estimated, from a selected sample of the high-, medium- and low-ability

students, how many used their own vocabulary (see Table 6.4). High-ability students used, on average, half of the helping words. At the same time, they also used a large number of their own vocabulary. Their own vocabulary consisted mainly of linking words and phrases as well as adjectives. There were also some verbs. They included the vocabulary in their sentences naturally. It indicated that they had internalized these words. Medium-ability students exhibited similar pattern. However, they used much less of their own words as compared to the high-ability students. As such, the quality of their vocabulary was lower than the high-ability students.

As low-ability students wrote short compositions, they used few helping words. It seemed that they were not able to apply these words in their writing, indicating these words were not within their ZPD. They also contributed very few of their own vocabulary. Out of the vocabulary they used, there were some linking words (e.g., already). It seemed that they knew they had to make the composition flow by using linking words so they tried hard to include some of them. However, the sentences were awkward. It again indicated that they had not internalized the use of these words. Similarly, they also included a handful of adjectives but it did not contribute much to the quality of the vocabulary. They were simple words (e.g., happy, sad) that students used in lower primary levels. In future, the teacher must increase the vocabulary of these students. One option will be to let them play the Chinese language game.

Table 6.4

Statistics for Use of Helping Words and Own Vocabulary by Different Level Students

Composition 5	Median Use of Helping Words	Mode Use of Helping Words	Estimated Use of Own Vocabulary	Quality of Vocabulary
High	.5	1.0	13 to 21 words	3
Medium	.5	.8	3 to 8 words	2
Low	.35	1.0	2 to 4 words	1.5

Note. H = 14, M = 10, L = 7.

To find out if the quality of the vocabulary in the three compositions has improved over time, I first rated the three available compositions (pre-test, Compositions 5 and 9) and then compared the ratings. I rated the quality of vocabulary on a scale of 1 to 3, with 3 being good. The criteria for the ratings were decided in consultation with the teacher. A good rating of 3 refers to the correct construction of sentences with a large number of helping words or own vocabulary in the composition. An average rating of 2 means the use of adequate vocabulary to express ideas. A rating of 1 refers to a lack of vocabulary, use of homophones or wrong transcription, or use pinyin in place of Chinese characters. Inter-rating was conducted by first setting quality criteria. Then a stratified random sample with Chinese ability as a stratification variable was drawn. The teacher and I both rated the quality of vocabulary in the sample. The differences in rating were resolved through discussion. Then I proceeded to rate all the compositions.

I performed a repeated analysis of variance to find out if the quality of vocabulary increased over time. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .96$, $\chi^2(2) = .85$, $p = .65$, suggesting that

the observed matrix have approximately equal variances. As such, sphericity was assumed.

Results indicated a significant difference in the quality of vocabulary used in the three compositions, $F(2, 40) = 11.01, p = .00, \eta_p^2 = .36$ (see Table 6.5). Post hoc pairwise comparisons indicate that the quality of vocabulary in Compositions 5 and 9 were significantly higher, as compared to the pre-test. The findings supported the claim that the intervention was effective in improving the quality of vocabulary used over time.

Table 6.5

Statistics for Quality of Vocabulary in Compositions and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Composition 5
Pre-test	1.57	.15		
Composition 5	2.03	.19	.00*	
Composition 9	2.24	.17	.00*	.64

Note. N = 21. $\alpha = .05$, * = significant difference

Although the quality of vocabulary has improved over time, more can be done! The students reflected this view in the interviews. Students of all ability levels still felt they needed improvements in vocabulary. They said that their weaknesses were: a) In sentence making, they “would like to write some words to improve the sentences but don't know how to write them”; b) They “have the new words in mind, but don't know how to write the words” or “cannot come up with the word”. Another student reflected, “I have ideas but I don't know how to write the words. They are too difficult”; c) They needed more “New words/difficult words” which they needed to “get help from the dictionary”.

As such, the students requested more time on the computer: “Give us more time on the computer to work on idioms. Use Chinese games”. They wanted to learn more words and phrases such as idioms. When asked how to improve their vocabulary, a low-ability student gave constructive advice: “a) give difficult words for pupils to understand and learn; b) do spelling on those words; c) get them to add into composition; d) copy edited composition”. Weak students should do more of the above in future training. Furthermore, since we have not utilized the game to its potential, we can improve the game for future learning. It has shown to be an effective approach to engage the students. It needs some tweaking such as slow down the dropping speed and use very easy characters to motivate weak students, and allow high-ability students to enter at a higher level that will challenge them.

Concluding remarks on vocabulary.

Sources of evidence indicated that the learning activities were effective to help students learn new words. Apart from their increased use of helping words when more were given, the quality of their vocabulary had also increased over time. High-ability students benefited more from the training as they performed consistently better than the other students. Medium-ability students could benefit from the scaffolding as they used relatively the same amount of helping words as the high-ability students. However, they were still errors in their sentence structure, indicating that they had not internalized some of the helping words. Low-ability students use fewer helping words and their writing was awkward. This told us that the helping words might be too difficult for them. They could not internalize the helping words. In future, the teacher should provide them with a simpler set of helping words.

Sentence Structure

Students in the pilot study had basic writing skill problems. They were transcription, vocabulary, and sentence structure problems. The strategy to improve sentence structure was to work on sentence construction. Both pen-and-paper as well as ICT-mediated learning activities were adopted to scaffold sentence construction. The ICT-mediated activities included a) collaborative sentence construction, that is, a small group of students was each asked to expand a sentence and then incorporate one of the expansions into a new sentence they were asked to construct, and b) peer editing, where peers edit the sentences constructed.

Learning activities and their effectiveness in scaffolding of writing of grammatically correct sentences.

Sentence construction activities were usually conducted in the lesson before the composition lesson. The aim of this learning activity was to allow students to interact with the learning materials so that they could create new mental nodes and expand their mental network. As such, students either constructed sentences with given action words or they expanded sentences with given action phrases. An example of sentence expansion would be to expand the sentence “He was very nervous, he grabbed me tightly” with the clause “with trembling hands”. The resulting sentence would be “He was very nervous, he grabbed me tightly with trembling hands.” Therefore, sentence construction played an important role in learning Chinese. According to the teacher: “Sentence construction is more important than simply providing the vocabulary to them, as they might not know how to use these vocabulary correctly and thus forming wrong sentences, affecting their language portion [of the composition exam]” (December 24, 2010).

Furthermore, writing grammatically correct sentences formed the basis of good compositions. It did not only affect the language portion of the composition exam. It had an effect on the entire composition. Therefore, scaffolding students to write grammatically correct sentences became very important in the entire intervention. To this end, the teacher conducted many sentence making activities. The following is the teacher's description on why she conducted many sentence construction activities and how she assessed whether the students had learned the new vocabulary: "With more sentence making activities, students learnt to express themselves better" (April 11, 2011). Furthermore, she said:

Actually the frequency of doing sentence construction is quite high in the normal curriculum. For almost every chapter they do in the curriculum, important vocabulary will be picked out for sentence construction. These words are normally action verbs or linking words that appeared in the chapter, in which they can also use in their compositions. Even if they cannot use in their compositions as yet, some of these words are being tested in the exams.

If students can use the words and form sentences correctly, it means that they understand the meaning of the words and also able to apply the words correctly in a sentence. Hence sentence construction is an important activity to assess if students have truly learnt the words we have taught them (December 24, 2010).

Besides pen-and-paper activities, the teacher also scaffolded students via ICT-mediated activities. When writing via ICT, the teacher would either let the students construct sentences collaboratively via the collaborative mind map or construct sentences individually in the e-portfolio which was like the electronic version of the pen-and-paper sentence construction activities. After sentence construction in the e-portfolio, the teacher would follow it up with peer editing.

The teacher did not rely on one type of scaffolding. She explained: “Sentence construction activity can be done through different methods, e.g., group work, individual work, competition or even in the e-portfolio including peer editing” (December 24, 2010).

When she scaffolded students to construct sentences using ICT, she mixed and matched the different software applications and supports to achieve efficiency and effectiveness:

There are a bit of both [learn to write proper sentence via the mind map or the peer-editing application]. I remember there is one activity that we ask the pupils to do sentence making after action chain activity in mind map. We also got the children to do sentence making on the folio followed by peer editing of the sentences. The second activity was done more times, due to the simplicity of the activity and also the short time required (March 23, 2010).

The last time we did sentence construction in the e-portfolio, the vocabulary chosen were mainly used in compositions some of which are not taught in the normal curriculum. We wanted them to use better vocabulary in their composition; hence we provided them with new vocabulary to form sentences. If the sentences are correct, they can transfer this into their compositions. In the e-portfolio, we also encouraged peer editing, reinforcing students learning through correcting peers’ work (December 24, 2010).

However, the teacher encountered some issues when she asked the students to work in groups. When students constructed sentences via the collaborative mind map, she noted that they were not mature enough to collaborate. As a result, she adapted the collaborative work to suit the class:

The communication is not very constructive. They were basically asking where each other were as they can’t see each other appearing on the mind map. Communication is all in English. In the end I told them to see what their friends wrote on the mind map and leave the nodes there. So each one will just add their nodes, instead of discussing and write one node. No one is to remove

other peoples' nodes as well as they were not very mature to handle that part properly. I am the one who did the editing later. This reduces wasted time communicating (April 1, 2011).

When I asked the teacher to compare the ICT-mediated and traditional scaffolding methods, she preferred the ICT-mediated scaffolding:

Teacher gives them more high-level help such as how to write a sentence. The students can get some outside help. The composition is not restricted by the size of the paper which does not allow them to insert text (November 16, 2010).

ICT not only allowed students to get more help, it also allowed the teacher more time to work at a higher level of cognitive functioning with the students. In the traditional method, the teacher usually spent a large amount of time showing students how to write certain characters. In ICT-mediated training, students were independent in entering the pinyin and finding their own characters from the word-processor. If they could not recognize the characters from a list of homophones on the screen, they would ask their peers to pick the character for them instead of asking their teacher. Students could also obtain help in sentence structure via peer editing. So it freed up much of the teacher's time for her to work on higher-level issues with the students. She had more time to work with students to modify their ideas, improve expressions, and enable better transitions. This would eventually help students refine their imperfect mental representations of sentence structure.

In addition, when students worked collaboratively through using the collaborative mind map, they could see their group members' work on their computer screen. It let them find out how others' writing differed from theirs, when they wrote with the same set of seed words and instructions. Their peers would write with a slightly different sentence structure, and included different life experiences. This

would enable the students to both refine their mental representations of sentence structure as well as expand their mental structures to represent new experiences gained from their peers. It would also strengthen the connections between existing structures and structures representing new experiences. In future interventions, the teacher may want to use more of ICT to scaffold students in constructing sentences.

Since the teacher had spent a fair amount of time scaffolding students in writing good sentences, it was necessary to find out if the scaffolding had achieved its goal in helping students write better sentences. In the following paragraphs, I will analyze the sentence making exercises done in the e-portfolio to find out if they were effective in improving students' sentence structure. The exercises consisted of seed words taken from regular Chinese textbook that the teacher had explained in class. I will analyze the work done by a high-, medium- and low-ability students over time as well as compare the performance of these different ability students.

Sentence structure performance in sentence-making exercises written in E-portfolio.

I analyzed two exercises, one done in February 25, 2009 which was the first sentence making exercise and the other, August 27, 2009, the last sentence making exercise of that academic year. The work of three students, one from each ability group, was analyzed. While JC was a high-ability student, WT was a medium-ability student. RT was a low-ability student.

The low-ability student RT had clearly improved over time as he could not even complete the exercise at the beginning of the year. It was not an issue of time that he could not complete the work. Students were given ample time to complete the work. It meant either he did not know how to make sentences with the given seed words or he could not think of scenarios to write about. Also, the sentence structure

was sometimes flawed to the extent that he could not express himself, e.g., “I picked up an apple by the way, threw at my face.” (underlining indicates seed word). His sentences were mostly short and the descriptions were simple (see Table 6.6 for English translation of RT’s first exercise). Over time, RT improved. He could complete his assignment. His sentences, though still simple, were written in grammatically correct Chinese, e.g., There was a thief in the house, sister was so frightened she hid in a corner. (underlining indicates seed word) (see Table 6.7 for English translation of RT’s final exercise).

Table 6.6

English Translation of the First Sentence-making Exercise Done by Low-ability Student RT

No	Seed Word	Sentence
1	Then	I drank <u>then</u> , suddenly another classmate bumped into me.
2	By the way	I picked up an apple <u>by the way</u> , threw at my face.
3	Give up	Columbus picked up an egg handily, said: “Can you stand the egg on the table without using any gadget?” had to <u>give up</u> .
4	Indeed	I have <u>indeed</u> stolen your pen. So what?!
5	At once	Old grandpa fell down, I supported him up <u>at once</u> .
6	Finally	We have finally arrived.
7	Although	<u>Although</u> Grandpa was old, he was strong.
8	Instructed	[Did not attempt]
9	Constantly	[Did not attempt]

Note. Underlining indicates seed word.

Table 6.7

English Translation of the Final Sentence-making Exercise Done by Low-ability Student RT

No	Seed Word	Sentence
1	Lowered head	My mom scolded brother, brother <u>lowered his head</u> and said sorry.
2	Face red like a ripe apple	Min was ashamed because he hit his friend, therefore his <u>face red like a ripe apple</u> .
3	Felt too ashamed to show one's face	Min did not do well in the spelling test, he <u>felt too ashamed to show his face</u> .
4	Hands and legs buckled with fear	Ming saw a ghost at night, his <u>hands and legs buckled with fear</u> .
5	Face blanched	Brother saw a ghost, his <u>face blanched</u> from fear.
6	Fainted with fear	Dad saw blood all over his clothes, he <u>fainted with fear</u> .
7	Kept screaming	Mom saw a ghost, she was so scared she <u>kept screaming</u> .
8	Hid in a corner	There was a thief in the house, sister was so frightened she <u>hid in a corner</u> .

Note. Underlining indicates seed word.

The medium-ability student WT also improved over time. He started off with writing grammatically correct but short sentences, e.g., I went to take some water from the kitchen, I took some for Dad by the way. (Underlining indicates seed word). WT had good command of the language and it showed in the very first exercise he did (see Table 6.8 for English translation of WT's first exercise). Over time, his sentences became complex and more enriched with details, e.g., "The big bully in school

walked towards me in anger, my hands and legs started to buckle with fear, thinking he was going to hit me.” (Underlining indicates seed word). Sentences WT wrote in his final exercises showed that he could write complicated sentences competently (see Table 6.9 for English translation of WT’s final exercise).

Table 6.8

English Translation of the First Sentence-making Exercise Done by Medium-ability Student WT

No	Seed Word	Sentence
1	Then	Mom asked me to entertain guests, I was doing homework <u>then</u> .
2	By the way	I went to take some water from the kitchen, I took some for Dad <u>by the way</u> .
3	Give up	I ran a few laps, I was very tired, I wanted very much to <u>give up</u> .
4	Indeed	Mom said I was not doing my homework, but I was <u>indeed</u> doing homework.
5	At once	My grandpa was ill, I went home to see him <u>at once</u> .
6	Finally	I waited for a few hours, he <u>finally</u> arrived.
7	Although	<u>Although</u> Hua was very poor, he was very hardworking.
8	Instructed	Dad <u>instructed</u> me to the market to buy vegetables.
9	Constantly	He was forever not satisfied therefore he could improve <u>constantly</u> .

Note. Underlining indicates seed word.

Table 6.9

English Translation of the Final Sentence-making Exercise Done by Medium-ability Student WT

No	Seed Word	Sentence
1	Lowered head	The spelling test was very easy. Everyone in class received 100 marks. I was the only one who failed. I <u>lowered my head</u> , felt ashamed.
2	Face red like a ripe apple	Today, the teacher returned us our exam scripts, pal asked how many marks I got, my <u>face red like a ripe apple</u> , answered: "I, I ...I fail..."
3	Felt too ashamed to show one's face	Everyone passed the exam except me. When Dad asked me if I passed, I was very ashamed, <u>felt too ashamed to show my face</u> .
4	Hands and legs buckled with fear	The big bully in school walked towards me in anger, my <u>hands and legs</u> started to <u>buckle with fear</u> , thinking he was going to hit me.
5	Face blanched	Ming pretended to be a ghost to scare me, when I saw, my <u>face blanched</u> , thought it was real.
6	Fainted with fear	I heard some strange noise when I went to toilet, <u>I fainted with fear</u> .
7	Kept screaming	The big bully toppled me, hit me incessantly, I <u>kept screaming</u> .
8	Hid in a corner	I cheated in the exam, the principal scolded me in anger before the entire school. I <u>hid in a corner</u> in fear.

Note. Underlining indicates seed word.

JC, the high-ability student, wrote sentences with good Chinese even in her first sentence making assignment, e.g., “Mom instructed me to take care of my brother before she left the house” (underlining indicates seed word). Even in the first assignment, JC already showed originality in her sentences, e.g., “The classmates praised Li’s paintings saying they were indeed unique” (see Table 6.10 for English translation of JC’s first exercise). Over time, she could write highly complex sentences in good Chinese. She could describe a complete scenario in her sentence, e.g., “When Ming’s dad reprimanded him in school for stealing, Ming’s face was red like a ripe apple, repeatedly apologized to his dad (underlining indicates seed word). Moreover, the scenarios she described were varied, indicating she had been reading widely, e.g., “When mom found out my brother was kidnapped, she fainted with fear at once” (underlining indicates seed word). She did not just write about what happened in her immediate social circle which was her family and her school (see Table 6.11 for English translation of JC’s final exercise).

Table 6.10

English Translation of the First Sentence-making Exercise Done by High-ability Student JC

No	Seed Word	Sentence
1	Then	Li did not do well in the exam. Mom said if she had worked hard <u>then</u> , you would have good result.
2	By the way	After I finished my lunch, I washed the dishes <u>by the way</u> .
3	Give up	The teacher told us: “no matter what you do, cannot <u>give up</u> easily”
4	Indeed	The classmates praised Li’s paintings saying they were <u>indeed</u> unique.

5	At once	Old Grandma felt down, I ran over to support her up <u>at once</u> .
6	Finally	The plant that I carefully tended has <u>finally</u> flowered.
7	Although	<u>Although</u> our country is small, our country is stable.
8	Instructed	Mom <u>instructed</u> me to take care of my brother before she left the house.
9	Constantly	As long as you work hard <u>constantly</u> , you will be successful.

Note. Underlining indicates seed word.

Table 6.11

English Translation of the Final Sentence-making Exercise Done by High-ability Student JC

No	Seed Word	Sentence
1	Lowered head	Hua <u>lowered her head</u> , told mom: “mom, sorry, I was playful, that’s why I broke your vase. Please forgive me.”
2	Face red like a ripe apple	When Ming’s dad reprimanded him in school for stealing, Ming’s <u>face red like a ripe apple</u> , repeatedly apologized to his dad.
3	Felt too ashamed to show one’s face	Hua yelled and screamed in the quiet library, in the end was reprimanded by the librarian. He <u>felt too ashamed to show his face</u> and ran out of the library at once.
4	Hands and legs buckled with fear	When the classmates listened to Ming’s ghost stories, <u>their hands and legs buckled with fear</u> .
5	Face blanched	When I passed by my flat downstairs, I <u>face blanched</u> from fear by a flying cockroach.
6	Fainted with fear	When mom found out my brother was kidnapped, she <u>fainted with fear</u> at once.
7	Kept screaming	Liwen is very scared of big dogs. If she saw a big dog, she will <u>keep screaming</u> .
8	Hid in a corner	Lily’s home was on fire. She <u>hid in a corner</u> in a state of loss, kept screaming for help.

Note. Underlining indicates seed word.

The scaffolding that helped students towards writing better sentences was effective. Although high-ability students were already competent in writing Chinese, they did even better over time by writing grammatically sound and highly complex sentences. These sentences describe complete scenarios. Moreover, these scenarios were original, indicating the varied social experiences of high-ability students. Medium-ability students wrote fairly short sentences but they were grammatically correct. Over time, they could write longer sentences with good Chinese. Low-ability students wrote some sentences that were flawed in their first assignment. Over time, their Chinese grammar improved. However, their sentences remained short.

Furthermore, I learned from the above analysis that the high-ability student consistently performed better than medium-ability student. The medium-ability student wrote shorter, less complex sentences. His/her sentences had less detailed description, and the descriptions were about what happened in the immediate environment only, such as taking tests in school and outings with the family. Although he/she did not perform as well as the high-ability students, he/she did better than the low-ability students. Low-ability students wrote shorter sentences and with less details than their medium-ability peers.

Students showed clear improvement in sentence structure after the training. How did they feel about their performance? It will be discussed in the following paragraphs.

Students' comments on the effectiveness of scaffolding for sentence construction.

To find out if the many sentence construction activities had improved students' perception on whether they could write better sentences, I analyzed the ratings and comments in the student survey. In the survey, students were asked to rate if their

sentence structure had improved and most agreed. The ratings started from 3, which was neutral. Most gave a rating of 4 or 5 out of a five-point scale. High-ability students all selected 4 or 5 ratings. The students' feedback indicates that they felt their sentence structure had improved.

To find out more about how the students felt about their sentence structure, the teacher interviewed ten students. In the student interviews, they reported that after the sentence making exercises, their sentences were more grammatically correct, and they "can write sentences with good structure." They also said, "they improve my sentence structure as I used to have sentence structure problems", "I used to be not too good in my sentences but with this, I improve". Another student said, "I use the sentences learned from sentence making in my composition".

When the students were asked to provide feedback on peer editing, they said that peer editing helped them improve their sentence structure: They "write sentences with good structure", "In the past, bad, does not flow. Now much better due to sentence making and peer editing activities". The students also helped their peers to improve, such as "I help my friends change their sentence structure – weird structure". Weird structure is the topic I will turn to next.

Cognitive explanation on why weaker students had difficulties in writing good sentences and refinements for future intervention.

The weird structure the student mentioned could very well be referring to sentences that were literal translation from English. This is a very common phenomenon in Chinese writing in Singaporean schools. The weaker students tended to do literal, or clause by clause, translation from English when they write Chinese. For example, in English, it is grammatically correct to state *one afternoon, Ming waited for the bus at the bus stop* (一天下午, 小明等巴士在巴士站). However, it is

not acceptable to translate it clause by clause from English. In Chinese, it should be *One afternoon, Ming at the bus stop waited for bus* (一天下午, 小明在巴士站等巴士) (See Table 6.12).

Table 6.12

Sentences Structure for English and Chinese Language

Sentence Structure	One afternoon	Ming	waited for the bus	at the bus stop
English (English sentence structure)	One afternoon	Ming	waited for the bus	at the bus stop
Chinese (English sentence structure)	一天下午	小明	等巴士	在巴士站
Chinese (Chinese sentence structure)	一天下午	小明	在巴士站	等巴士

Low-ability students tended to do literal translation from English or they simply could not write in Chinese. Medium-ability students were also affected, to a lesser extent, by English grammar when they wrote in Chinese, resulting in awkward sentence structure. This indicated that low-ability students did not have proper mental structures for Chinese and medium-ability students had flawed representations. As such, it is very difficult for them to learn to write Chinese properly by themselves. It was necessary for a more knowledge other to point out exactly where the flaws were in their sentences. As such, collaborative learning was very important in scaffolding the development of sentence structure. The teacher alone could not scaffold all the low-ability students. Higher-ability students could provide help through peer editing. When high-ability students edit the sentences of weaker students, it forced the low-ability students to focus on how to improve their work. Then they had to instruct the

software to accept or reject the changes made by their peers. It forced them to make a decision whether to refine their sentence structures for that sentence or keep it as it is. When they had made the evaluation and decided to change, they would have to adjust their mental models to better represent the Chinese language. As a result, they would build more precise mental structures (Dede, Salzman, Loftin, Sprague, 1999). From the experience gained in this study, I would advocate the use of ICT-mediated collaborative learning, especially peer editing, in future studies.

The following paragraphs discuss whether students had improved in their sentence structure after the sentence structure scaffolding.

Statistical analysis of sentence structure writing performance.

Had the students improved in their sentence structure over time? The percentage of sentence structure errors in three compositions, the pre-test, Compositions 5 and 9 were compared to see if it had decreased. I derived the percentage of errors by obtaining the ratio of the number of errors and the number of sentences in a composition. However, do bear in mind that there may be fewer sentence structure errors in Composition 9, according to the teacher:

Composition 9 was done at home after the exams. I told them to write their best and they can refer to whatever resources we have provided to them before or their tutor gives them. I think they have put in the effort and thus writing quite well (April 9, 2010).

A repeated analysis of variance was performed. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .86$, $\chi^2(2) = 2.91$, $p = .23$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed.

Results indicated a significant decrease in the amount of sentence structure errors used in the three compositions, $F(2, 40) = 6.04, p = .01, \eta_p^2 = .23$ (see Table 6.13). Post hoc pairwise comparisons indicate that the percentage of incorrect sentence structure in Composition 9 was significantly lower as compared to the pre-test. The students wrote more grammatically correct sentences in their compositions over time.

Table 6.13

Statistics for Percentage of Sentence Structure Errors in Compositions and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Composition 5
Pre-test	39.84	7.22		
Composition 5	29.06	4.27	.38	
Composition 9	17.31	3.17	.02*	.10

Note. N = 21. $\alpha = .05$, * = significant difference

In addition to comparing the number of incorrect sentences in the compositions, I also investigated the quality of sentence structure. The criteria for assessing quality of sentence structure were derived in consultation with the teacher. They were whether the students could construct grammatically correct sentences, did the student use correct punctuation so that the sentence is readable, whether they could use complex sentences (e.g., ...not only... also) and whether the sentences approached the standard of the native speaker. Inter-rating was conducted by first setting quality criteria by both the teacher and the research. Then a stratified random sample with Chinese ability as a stratification variable was drawn. The researcher and the teacher both rated the quality of the sentence structure in the sample. The differences in rating were resolved through discussion. Then the researcher proceeded

to rate all the compositions. The rating was done on a scale of 3, with 3 being high quality sentence structure.

A repeated analysis of variance was performed to find out if the quality of sentence structure had improved over time. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .91$, $\chi^2(2) = 1.77$, $p = .41$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed.

Results indicated a significant increase in the quality of sentences written in the three compositions, $F(2, 40) = 11.86$, $p = .00$, $\eta_p^2 = .37$ (see Table 6.14). Post hoc pairwise comparisons showed that the quality of sentence structure in Compositions 5 and 9 was significantly better than the pre-test. The students wrote better quality sentences in their compositions over time.

Table 6.14

Statistics for the Quality of Sentence Structure in Compositions and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Composition 5
Pre-test	1.81	.16		
Composition 5	2.19	.16	.01*	
Composition 9	2.43	.12	.00*	.26

Note. N = 21. $\alpha = .05$, * = significant difference

Sources of evidence confirmed that students had improved in their sentence structure as a result of the extensive sentence structure exercises they worked on both in the normal classroom and in the e-portfolio.

Concluding remarks on sentence structure performance.

The sentence construction strategy was taught to help students write better sentences. The scaffolding supports included both pen-and-paper and ICT-mediated sentence making activities. The teacher thought that ICT-mediated activities were more effective. They enabled students to read one another's work, help peers out, and allow the teacher to work with weaker students. In future interventions, the teacher should include ICT as a form of scaffolding support for students to write better sentences.

Findings from analyzing the sentences written by students in the e-portfolio indicated that their performance had improved noticeably over time. While all had improvement, high-ability students performed better than medium-ability students in the complexity of sentences written, the ability to include scenarios and details in grammatically correct sentences, as well as the ability to write with originality and varied social experiences. Medium-ability students wrote longer and more complex sentences over time but the sentences they wrote did not approach that of the high-ability students. They did not contain as much detail, were not as complex, and they only wrote about what they encountered in their immediate environment. Low-ability students wrote longer and better quality sentences over time as compared to those in their first exercises. However, they were simple and the descriptions were mostly related to their immediate environment.

Next, I investigated if students' basic writing skill performance ultimately translated into better grades in the language portion of the composition exams.

Statistics Analysis on Language Scores Assessing Basic Writing Skills in Exams

Scaffolding to improve basic writing skills (transcription, vocabulary, and sentence construction) contributed to writing compositions in better Chinese language.

Did better language ability translate into higher scores in the language portion of the composition exams? In Singapore schools, total composition scores is 20 marks, with 10 marks for language and 10 marks for content. In a school year, there were two composition exams, one is the mid-year assessment and the other, final assessment.

To compare the language scores of the pre-test, mid-year and final exams language scores, I conducted a repeated measure ANOVA. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .85$, $\chi^2(2) = 4.67$, $p = .10$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed. It follows that the test scores for the three tests differed significantly, $F(2, 60) = 4.50$, $p = .02$. $\eta_p^2 = .13$ (see Table 6.15). Post hoc comparisons show that the students did better in their language scores in both the mid-year and final composition exams, as compared to the pre-test. The results indicated that their basic writing skills have improved over time. The results supported the findings from the teacher's feedback, the students' survey and interview, and the evidence obtained from comparing language performance in the pre-test compositions and the compositions written in the e-portfolio. The various sources of evidence point to the claim that language performance had improved over time. Is it possible to obtain the average improvement in scores across the whole cohort from the MOE? If so, is the improvement of the intervention group higher than the National average progress?

Table 6.15

Descriptive Statistics for the Language Scores in Three Tests and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Mid Term Exam
Pre-test	5.97	.25		
Mid-year Exam	6.39	.28	.04*	
Final Exam	6.55	.25	.00*	.49

Note. N = 31. $\alpha = .05$, * = significant difference

Indicators showed that the scaffolding towards writing better Chinese was effective. Did different ability students benefit equally from the scaffolding? I will investigate if performance level depended on students' language ability.

Language performance by ability.

From the student interview and survey as well as responses to the game, high-ability students seemed to respond to the intervention in a different way than low-ability students. To investigate how the composition intervention influences the performance of different Chinese ability students, language scores of these groups of students in three compositions were compared.

To group up the students by ability, student clusters were categorized according to their exam scores in curriculum material, which included comprehension of text, learning of vocabulary, and sentence structure. There were two exams for this portion of teaching, mid-year and final exams. They were known as continual assessments 1 (CA1) and continual assessments 2 (CA2). Each exam was allocated 50 marks. (Communication with Teacher, May 4, 2010). The mean CA scores were used to categorize students into high, medium, and low-ability. The mean CA scores range from 11 to 48. The boundaries were identified at natural gaps in the average scores, one occurred between 41.5 and 40 which demarcates the boundary for high and

medium-ability students, the other between 35.25 and 30.5, the boundary for medium and low-ability students. There were altogether 14 high-ability students, ten medium-ability students, and seven low-ability students.

A mixed model analysis of variance was performed to find out if different ability students had different language performance. In this analysis, the compositions was the within-subject factor and student-ability was the between subject factor.

In this analysis, there were 14 High-ability students, 10 and 7 medium and low-ability students respectively. The minimum number of student requirements in each cell is met. The assumptions were not violated. Test of equality of covariance matrices of the dependent variables are equal across groups, *Box's M* = 23.98, $p = .07$.

Results indicated significant ability effect, $F(2, 28) = 24.54$, $p = .00$, $\eta^2 = .64$, indicating that different ability does influence language performance. Pairwise comparisons show that high-ability students performed significantly better than medium- and low-ability students. Medium-ability students performed significantly better than low-ability students (see Table 6.16). Furthermore, results also indicated that high- and low-ability students performed better in the final composition exam as compared to the pre-test (see Table 6.17). Both the high- and low-ability groups benefited significantly from the basic writing intervention. However, low-ability students were not able to move up to the levels of medium- or high-ability students (see Figure 6.3). The teacher might have a clue to what happened:

For the language portion, we have not done much intervention, except for peer editing and sentence making in hope of improving their language. Maybe the frequency is not there to ensure they pick up good sentence structure?? Hmm I guess this might be the reason. I always think language is hard to improve overnight, because it's very much like a habit. If they read more, they will improve even more.... (March 30, 2010).

In future, we need to expose the students to more language activities, especially at a lower grade. This would build up the students' foundation for composition writing.

Table 6.16

Pairwise Comparisons of Language Performance in Three Abilities Groups

Test	M	SE	High	Medium
High	7.19	.22		
Medium	6.27	.26	.03*	
Low	4.57	.31	.00*	.00*

Note. N = 31, n_H = 14, n_M = 10, n_L = 7. α = .05, * = significant difference

Table 6.17

Pairwise Comparisons of Language Performance in Three Abilities Groups

Ability	Test	M	SE	Pre-test
High	Pre-test	6.86	.22	
	Mid-year Exam	7.07	.33	
	Final Exam	7.64	.25	.00*
Medium	Pre-test	6.10	.26	
	Mid-year Exam	6.70	.39	
	Final Exam	6.00	.29	
Low	Pre-test	4.00	.31	
	Mid-year Exam	4.57	.47	
	Final Exam	5.14	.35	.00*

Note. N = 31, n_H = 14, n_M = 10, n_L = 7. α = .05, * = significant difference

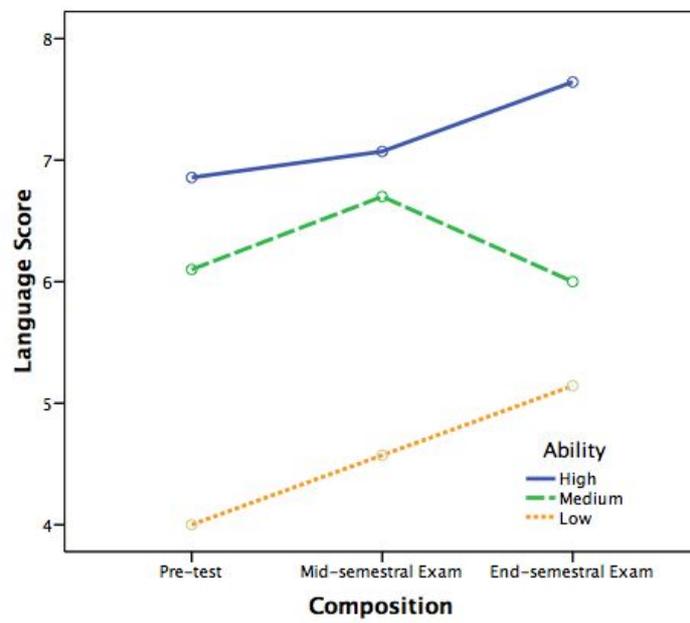


Figure 6.3. Language performance by high-, medium-, and low-ability students.

Chapter VII Composition Writing Skills Analysis and Discussion

From the pilot study in Chapter 2, I found that students had weak composition writing skills. These weaknesses were a) Students did not write fluent sentences b) they missed relevant events in the compositions, c) compositions were plain with scant descriptions of events. Together they gave rise to poor performance in the content portion of the Ministry of Education composition rubric. In the following section, I will discuss the effectiveness of the writing instruction in helping students create fluent sentences and avoid missed events in their compositions.

Flow

Flow was interrupted in the compositions when students described events in a story without connecting the sentences using linking words (e.g., “meanwhile”, “later on”, “the next day”) or linking phrases (e.g., “when he found out what happened, ...”). The resultant compositions were ungrammatical and choppy.

As flow affects the readability in compositions, it became an important issue to be addressed in the current study. The teacher and I discussed and worked on scaffolding activities that would help the students acquire the skills to write more fluent sentences in their compositions. In the following section, I will discuss scaffolding activities for improving the flow in the students’ writing and the effectiveness of these activities.

Learning activities to scaffold the flow.

Students had to learn to use linking words, e.g., “therefore”, “but”, “from”, “already” to flow their sentences. The teacher included linking words in her sentence-making exercises for the students to practice writing sentences that flow. She also included linking words as helping words in compositions. As such, there were no specific training activities to scaffold sentence flow. If the activity was ICT-mediated,

peer editing examples were included. The teacher commented on how she scaffolded the students to write sentences with linking words:

We do not have any ... specific activities for linking words. Teaching is embedded in the Chinese lesson, where the teacher will identify/highlight linking words in the passage taught, whenever I come across [the lack of link]. Some activities done in class include group sentence making (written in their exercise book). (April 11, 2011)

Flow performance in compositions written in the E-portfolio.

The students were given four pictures to compose a story in composition lessons. They were also given helping words to use in the composition. They wrote two compositions in the e-portfolio, namely, Compositions 5 and 9. I analyzed the compositions to find out how the students performed in writing flowing sentences. The performance differed according to the students' Chinese basic writing abilities. High-ability students could write naturally with linking words and phrases. For example, CWK had smooth flow in his composition (underlining indicates linking words CWK used):

This day [Embedded linking phrase given by the teacher], Uncle Ong, as usual, went to the office to clean up. When he was sweeping the floor in the boss' office, did not pay attention to the metal cabinet behind his back, on top of it was the boss' beloved vase. When he wanted to back up, accidentally knocked on the metal cabinet, resulting in the vase being knocked over, shattered glass scattered all over the floor.

JC whose writing approached the native Chinese standard (see Figure 7.1) also wrote with linking words and phrases. She could insert linking phrases between pictures, adding clarity to explanations although the actions in the pictures were in sequence and self-explanatory. She ended the story in textbox 2 (picture 1) with "The vase dropped and shattered with a 'clang'". She began textbox 3 (picture 2) with a

linking phrase “This scene petrified Uncle Lin”. Likewise, she ended the story in textbox 5 (picture 3) with the linking phrase “Uncle Lin told him exactly what happened and kept apologizing to the boss.” She began textbox 6 (picture 4) with another linking phrase “After the boss found out the full detail, ...” She was able to link up the sentences seamlessly, especially between pictures.

No	Text
1.	<p>1. 开头：(人物开头 - 介绍这个人)</p> <p>林伯伯是一个很勤劳的清洁工人。他每天都很准时到公司来上班。他也是一个很负责任的工人。</p> <ul style="list-style-type: none"> ▪ 退休后 ▪ 公司 ▪ 清洁工人 ▪ 这份工作 ▪ 赚钱养家 <p>1. Opening: introduce the main character Helping words: retired, company, cleaner, this job, provide for the family</p> <p>Uncle Lin was a very hardworking cleaner. Everyday, he went to the company to work punctually. He was a very responsible worker.</p>
2.	<p>2. 事情是怎么发生的？(这里请加入行动链)</p>  <p>这一天，林伯伯在一个办公室的角落扫地。他没有注意到后面有一个铁橱。铁橱上有一个花瓶，那个花瓶还是老板最心爱的。林伯伯一个不小心就撞倒了花瓶。花瓶“碰”了一声就掉在地上破碎了。</p> <ul style="list-style-type: none"> ▪ 像往常一样 ▪ 扫地 ▪ 老板的办公室 ▪ 铁橱 ▪ 心爱的花瓶 ▪ 后退 ▪ 一不小心 <p>2. What happened (add action chain) Helping words: As usual, sweep the floor, the boss' office, metal cabinet, beloved vase, backed up, accidentally</p> <p><u>This day</u> [embedded linking phrase], Uncle Lin was sweeping the floor in a corner of the office. He did not notice that behind him was a cabinet. On top of the cabinet was a vase, that vase was the boss' beloved vase. Uncle Lin accidentally knocked over the vase. The vase dropped and shattered with a “clang”.</p>

3. 3. 结果呢? 发生了什么意外? (这里加入对话)



这一幕把林伯伯给吓呆了。其他同事也纷纷跑来看个究竟。“林伯伯，您不要怕。您不是故意的，老板不会责怪您的。”其中一位同事对他说。

- 玻璃碎片
- 其他的员工
- 围过来
- 议论纷纷

3. What happened in the end? What accident occurred? (add dialogues)

Helping words: shattered glass, other workers, came over, made all sorts of comments

This scene petrified Uncle Lin. Other workers rushed in pell-mell to see what happened. “Uncle Lin, don’t be scared. It was not intentional. The boss won’t reprimand you.” One of the colleagues said to him.

4. 4. 花瓶被打破后, 主角有什么心情? (加上心情、表情、对白)

林伯伯看着碎片, 担心会被老板骂。他冒着冷汗, 不知所措地问同事: “现在怎么办? 我会不会被老板开除?” “希望不会吧。”同事安慰了他。可是他仍然感到害怕。

- 看着碎片
- 担心会被痛骂和被开除
- 感到害怕
- 不知所措

4. How did the main actor feel after the vase was shattered? (add feelings, expressions, dialogues)

Helping words: Helping words: looked at the shattered glass, worried he would be scolded badly and fired, felt scared, bewildered

Uncle Lin, looking at the shattered pieces, worried that the boss would reprimand him. He broke into a cold sweat, asked his colleagues in a bewildered manner, “what should I do now? Will I be fired by the boss?” “Hope not.” His colleagues comforted him. But he still felt scared.

5. 5. 老板回来后怎么了? (记得加入人物之间的对话、心情、表情)



这时, 老板的秘书打电话通知了他。老板马上丢下了手上的电话, 用力地推开了办公室的门, 然后气冲冲地从楼梯上跑了下来, 问个究竟。林伯伯便将整件事情一五一十的告诉老板并且不断的向老板道歉。

- 秘书
- 向老板报告
- 慌张
- 低下头
- 不敢直视

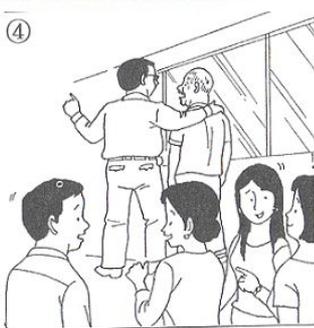
5. What happened when the boss came back?

Helping words: secretary, reported to the boss, panic, looked down, did not dare to look directly

Then, the boss came back [Embedded linking phrase], the boss’ secretary called him and informed him. The boss dropped the phone immediately, opened the door forcefully, then ran down the stairs angrily, to find out what actually happened. Uncle Lin told him exactly what happened and kept apologizing to the boss.

6. 6. 老板知道事情的经过后怎么做？

④



当老板知道了整件事情的真相之后，不但没有责骂林伯伯，还叫他早点回家休息。

- 没有责骂
- 温和
- 回家休息

6. After the boss found out what happened, what did he do?

Helping words: did not reprimand, gentle, go home to rest

After the boss found out the full detail, he not only did not reprimand Uncle Lin, he asked him to go home early and rest.

7. 7. 结尾：大家看到这一幕，做了什么？主角呢？有什么心情？

这件事情告诉我们，做人要诚实，才会得到别人的谅解。

- 称赞
- 爱护员工
- 学习
- 骄傲
- 安慰

7. Conclusion: What did everyone do when they saw this scene? How about the main character? How did he feel?

Helping words: praised, care for the workers, learn, proud, comfort

From this incident, we learned that we have to be honest, then others will understand and forgive us.

Figure 7.1. Composition 5 done by H student JC. The English translation has been added for explanation.

Different from the high-ability students who could complete the explanation with linking words and phrases, medium- and low-ability students seemed not to be able to described events in the story by connecting sentences using linking words.

Their sentences did not flow. BY, a medium-ability student wrote with missing linking words:

Grandpa Wang was a hardworking person. Grandpa Wang's children were still young, therefore he needed to find a job. He was then a cleaner [sentences did not flow well].

He would go to the office to sweep the floor at seven every day.

This day [teacher embedded linking phrase], he was sweeping the floor in the boss' office, backed up [linking word *when* missed], knocked on the metal cabinet accidentally.

The boss' beloved vase broke once it fell on the floor.

Other workers came over and made all sorts of comments when they saw this matter: You are in trouble! That is the boss' most beloved vase!" Grandpa Wang felt very afraid, worried that he would get a bad scolding and be fired.

Although BY's sentences did not flow, he wrote with greater skill and more detail than TT, a low-ability student. TT wrote (underlining indicates linking words):

This day [teacher embedded linking phrase] Grandpa Wang reached the office. He went to sweep the floor at once. Swept till the boss' office. Grandpa Wang swept till the boss' cabinet. He backed up a little bit. The vase dropped, was broken.

Students' compositions showed that the high- and some medium-ability students benefited more from their learning activities on sentence making. Students with weaker basic writing skills had difficulty in using linking words. Even when they could link sentences, their sentences were incomplete in the clarity of the links. This was due to their lack of knowledge of the basic writing skills. Cognitively, they either did not have the mental representations of the conventions of the Chinese language or they had very few of these mental representations. These mental representations were incomplete or faulty and this was reflected in their writing. As such, they missed using linking words frequently. When they were used, the writing was still awkward because they repeatedly use the same linking words they knew (e.g., *after*), regardless of whether it was used appropriately in linking their sentences. To help the weaker students to write with better flow, additional scaffolding will be needed in future interventions.

The sentence-making activities might not be adequate for solving the flow in the writing of weaker students. The problem could be more related to their Chinese language ability to express their ideas. It may be necessary to immerse them in Chinese language environment. Such long-term scaffolding may not be attainable in the present school system. Setting aside class time to play Chinese educational games at Primary 1 and 2 levels may be a viable option in the near future.

Strategy of peer editing and its effectiveness on flow.

After the students had constructed sentences or written compositions via the e-portfolio, they engaged in peer editing. The teacher assigned different ability students to work collaboratively to improve one another's writing. The students could edit every group member's compositions in his or her e-portfolios. Their editing was done in a separate textbox from their original composition and therefore it would not affect the original writing. The student could decide whether to accept the changes made by their peers. The effects of peer editing was two-fold. The students could benefit from the peers' modifications of their work, and they could also benefit from modifying other's work.

High-ability students did not require much help in their compositions (see Figure 7.2) as their writing problems were minor. They benefited from peer editing by applying their knowledge to edit the compositions of weaker students. By doing so, they had to carefully read and critically evaluate others' work. They had to compare what they had in mind and what was in their peer's composition. It would either refine or reinforce their existing mental structures. For example, KC, a high-ability student, added a common linking word to BY's sentence (see underlined text) "At the time he was sweeping the office floor, accidentally knocked into the metal cabinet" to make it flow smoothly. KC also added a linking phrase to another of BY's sentence. It

made the transition to the next paragraphs smoother. The original sentence was “He is now a cleaner”. She modified it to “He now works in a company as a cleaner”. KC’s mental structure in how sentences should flow would get to be reinforced when she apply her knowledge to help her peers.

Essay

 [Correction](#) [OFF!](#)

林伯伯是一个很勤劳的清洁工人。他每天都很准时到 **公司上班**。他也是一个很负责的工人。

这一天，林伯伯在一个办公室的角落扫地。他没有注意到后面有一个铁橱。铁橱上有一个花瓶，那个花瓶还是老板最心爱的。林伯伯一个不小心就撞倒了花瓶。花瓶“碰”**的**一声就掉在地上破**了**。

这一幕把林伯伯给吓呆了。其他同事也纷纷跑来看个究竟。“林伯伯，您不要怕。您不是故意的，老板不会责怪您的。”其中一位同事对他说。

林伯伯看着碎片，担心会被老板骂。他冒着冷汗，不知所措地问同事：“现在怎么办？我会不会被老板开除？”“希望不会吧。”同事安慰了他。可是他仍然感到害怕。

这时，老板的秘书打电话通知了他。老板马上丢下了手上的电话，用力地推开了办公室的**门**，然后气冲冲地从楼梯上跑了下来，问个究竟。林伯伯便将整件事情一五一十**地**告诉老板并且不断**地**向老板道歉。

当老板知道了整件事情的真相之后，不但没有责骂林伯伯，还叫他早点回家休息。

这件事情告诉我们，做人要诚实，才会得到别人的谅解。

Figure 7.2. Teacher and Peer editing for high-ability student JC.

Medium-ability students learned from high-ability peers how to write sentences that flow by reading their modifications. For example, SS, a high-ability student modified TRT’s sentences to make them flow better (underlining indicates linking phrases added by SS): “Accidentally, knocked on the metal cabinet behind him, ... Heard the sound of the vase drop on the floor, the office worker came over to see what happened” (see Figure 7.3).

The screenshot displays an ePortfolio page for a student named Tan Rong Ting. The page shows an assignment titled '你们回家完成作文 (五)。根据提供的问题和词语, 把个图的段落写出'. The assignment is assigned by Choy Wai Yin and has a deadline of 14 Jul 2009, 09:00am. The student's status is 'Started'. The page is cluttered with numerous floating windows showing peer review comments and suggestions in Chinese. For example, one comment says '花瓶掉在地上“砰”的一声，摔破了。' (The vase fell on the ground with a 'bang' sound, it broke). Another suggests '怎么可能被扣薪水，还可能会被开除呢！' (How could I be deducted salary, and I might even be fired!). The interface also shows a search bar and various navigation options.

Figure 7.3. Teacher and peer edit by two high-ability students for the medium-ability student TRT.

Besides learning to flow their compositions by reading the modifications done on their compositions, the medium-ability students also benefited from editing the flow of low-ability students. When editing, the medium-ability students had to carefully read the work, apply their knowledge on how to flow sentences to review the work, then make the changes. By doing so, the medium-ability students were applying their knowledge to solve real life problems. This is an important step in achieving internalization of the knowledge learned. If the students were successful in making good modifications on flow, then the teacher could fade her scaffold for helping them to write sentences that flow.

In the following example, two medium-ability students modified the flow of the composition of a low-ability student, JN (underlining indicates LZM's modifications): "This day, when Grandpa Wang was sweeping the floor, he accidentally knocked on the metal cabinet, on top of the metal cabinet has a the precious vase..." Another student, BY, also modified JN's sentences to improve their

flow. The original sentence written by JN was: “The boss thought: ‘Grandpa Wang was not intentional, I should forgive him, moreover, he had a fright and was very scared. The boss thought for a moment, did not reprimand, ...’” The modified version was (underlining indicates BY’s modifications): “The boss thought: ‘Grandpa Wang was not intentional, I should forgive him, moreover, he had a fright , now he is very scared. The boss thought for a moment, did not reprimand Grandpa Wang, ...’” (see Figure 7.4)

Figure 7.4. Two medium-ability students peer edited the composition of low-ability student JN.

Low-ability students benefitted from reading their peers’ modifications. Reading the modifications would prompt them to compare what they had in mind with the changes their peers had made for them. They would have to modify their own mental structures to accommodate these changes. The following example showed how a high-ability student NJH improved TT’s flow in her composition (underlining indicates NJH’s modifications): “Once he backed up, then he knocked into the metal cabinet. The vase on the metal cabinet dropped, was broken” (see Figure 7.5). The teacher also modified the students’ work, after the peer edit sessions. For example, she improved the sentential flow of TT’s writing from “He retired his job, he went to

an office to be a cleaner” to “After he retired, decided to go to an office to be a cleaner” (underlining indicates the teacher’s modifications).

The screenshot displays a digital writing environment with a central text area and a surrounding interface. At the top, a status bar shows 'Status: Started', 'Assigned by: Choy Wai Yin', and 'Submitted: -'. Below this, a table-like structure lists 'Start date: 2 Jul 2009, 09:00am', 'Exhibit date: 7 Jul 2009, 09:00am', and 'Instructions: 请你们回家完成...'. The main text area contains a paragraph in Chinese about a grandfather who becomes a cleaner after retiring. The text is annotated with numerous colored callouts (green, orange, purple) indicating original text and suggested changes. For example, a green callout suggests changing '扫到' to '扫到老板的办公室时'. A purple callout suggests changing '王爷爷' to '你'. A yellow callout at the bottom right lists key elements: '清洁工人', '这份工作', and '赚钱养家'. The interface also shows various timestamps and user names like 'Choy Wai Yin' and 'NG JING HUI'.

Figure 7.5. The teacher and a high-ability student NJH edited the composition of the low-ability student TT.

High-ability students benefited from peer editing by modifying their peers’ compositions. They also gained from reading the changes their peers made in their own compositions. These changes enriched their compositions with imaginative descriptions. Similarly, medium-ability students benefited from modifying others’ work as well as from changes made on their own compositions that usually were related to improving flow of the narrative. In contrast, Low-ability students contributed very little through editing their peers’ work, although they benefited from their peers’ changes to their own compositions.

Did the students benefit from peer editing work? The following was the teacher’s view:

I think H [high-ability students] can edit quite well. I also think both benefitted - reinforcement for H and more reading for L [low-ability students]. Noticeable improvement for M [medium-ability] students, they have some

ability, they are also willing to learn. Yes, peer editing is effective if there are mixed ability students in class. If whole class is L students, no point.

I think basically their sentence structure improve. The vocabulary they use also improve as sometimes the H students will use better vocabulary. I think improvement works both ways. They edit their peers' work, their work get edited, they get to see how good sentences should be like. I group them in mixed ability. Normally a H with a L, or a M with a L (April 20, 2011).

The low-ability students, on the other hand, did very little peer editing. The question remained whether they could benefit from the peer editing activities. The teacher provided her opinion:

That's because they have no computers at home, so sometimes they are not able to complete this peer editing task. Also they are editing H's work, so there isn't much changes. But they do read the other's work as I made them do so when I bring them to the lab (April 20, 2011).

On the whole, the teacher believed that the flow had improved over time. The improvements were due to the sentence making activities, writing compositions with given linking words or phrases, and peer editing.

The students also thought that they benefited from peer editing. In the student interview, one weak student acknowledged that he learned from his peers: "They know where to add linking words - I know where but I don't know how to write." Three high-ability students thought that their strongest skill was in flowing the sentences. They had improved in "the use of the linking words", "how to combine sentences", and "paragraphing". A low-ability student said that peer editing helped to make the composition flow as "sentences did not flow" before.

I conducted statistical analysis to find out if flow had improved over time. The following is a discussion of statistical findings.

Statistical analysis on flow.

To find out if the students could write compositions with better sentential flow over time, the number of missing linking words or phrases for the pre-test, Compositions 5 and 9 were compared. However, do bear in mind that there may be less flow errors in Composition 9 as they had much help in writing it. According to the teacher:

Composition 9 is written at home. So with more time at hand, students are able to think carefully before writing. So you will find that composition is longer, more vivid and not so much flow issue (April 11, 2011).

A repeated analysis of variance was performed to find out if the students had less missing linking words or phrases over time. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .75$, $\chi^2(2) = 5.53$, $p = .06$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed.

Results indicated a significant difference in the amount of missed linking words or phrases over time, $F(2, 40) = 12.35$, $p = .001$, $\eta_p^2 = .38$ (see Table 7.1). Post hoc pairwise comparisons indicate that the number of missing linking words or phrases in Compositions 5 and 9 was significantly lower as compared to the pre-test. The results indicated that over time, the students had learned to write compositions that flow better.

Table 7.1

Statistics for the Number of Missing Linking Words or Phrases in Compositions and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Composition 5
Pre-test	1.43	.21		
Composition 5	.43	.16	.001*	
Composition 9	.43	.13	.01*	1.00

Note. N = 21. $\alpha = .05$, * = significant difference.

Concluding remarks on flow.

To write sentences that flow, the students had to link up a sequence of events with words such as *after*, *later*, *meanwhile*, *already*, or linking phrases such as *the next day*, *when the boss found out what happened*. If the students left them out, the sentences would be unclear and choppy to read. Whether the students could write sentences that flow well depended on their abilities. High-ability students could link up sentences effortlessly and independently. They did not have to depend on the linking words provided by the teacher to flow their sentences. Medium- and low-ability students had much problem in writing sentences that flow. The difference in their performance between these two groups was a matter of severity. The medium-ability students depended on helping words provided by the teachers to write sentences that flow. When there were no linking words, the sentences they wrote would be awkward to read. Flow of the sentences was affected. The sentences written by the low-ability students were very awkward to read. They had very little knowledge of the Chinese language. As such, they were not able to write with linking words provided by the teacher. They either missed out using linking words entirely or they used the same linking words that they know of repeatedly, regardless of whether they were appropriate or not. The weak performance of the medium- and low-ability

students could be due to their weak basic writing skills. To improve in the basic writing skills, the teacher has to provide an environment that engages or immerses the students. This requires the long-term support of the school principal.

In the following section, I will discuss the completeness issue in the students' compositions. The students not only missed using linking words in their writing, they also tended to miss linking events. When a linking event is missed out, the readers will find it hard to follow a certain part of the story. It will affect the readability of the composition. I will discuss whether the intervention in my study had cut down on the missed events in the students' compositions over time.

Completeness

There were missed events in students' compositions. When some relevant events were missed in a composition, the story became unclear. It therefore would affect the readability of the composition. As completeness affects the readability in compositions, it became important issues to be addressed in the current study. The teacher and I discussed and worked on scaffolding activities that would help the students acquire the skills to identify relevant events to include in their compositions. In the following section, I will discuss the effectiveness of scaffolding activities designed for acquiring skills to identify relevant events in the pictures provided for writing compositions.

Learning activities to scaffold completeness.

The Circling Strategy was deployed to improve student's ability to achieve completeness in their writing of stories. The circling strategy was developed with the exam in mind as students were only allowed 40 minutes to write their compositions so they had to be able to order the relevant events in a short time. The teacher trained the students to do the circling and ordering of events in two to three minutes. It was

observed that most students could do it much faster than that. The circling strategy was developed to take the place of the traditional outlining strategy that would help the students write the main points of the story. But it would take too long to create an outline in the exam.

How did the teacher help students to acquire the circling strategy? In composition lessons, four pictures were given to the students and they had to describe the pictures to form a story (see Figure 7.7). The students were taught to draw a circle before the four pictures and labeled it *Opening*. They would then circle the important events and people in the four pictures. After that, they would circle between pictures, only when necessary. For example, they circled when the two pictures were not continuous in time such as one picture was in the day and the other at night. It indicated to the students that a linking phrase had to be included to ensure flow. Fourth, draw a circle after the fourth picture and labeled it *Conclusion*. The students were also asked to order the circles and write according to that order. The purpose was to focus the students on the main events or ideas of the story so that they would not miss them out. The students would circle the pictures and order the events before writing each composition, both when using pen and paper as well as in the e-portfolio. The following is the teacher's description on when she required the students to circle between pictures and how she conducted her teaching:

Sometimes the links between the pictures are not crucial, so it will not affect the flow, so the paragraphs are smoothly linked. However, sometimes the links includes important main events, if that is not included, it will affect the content. (April 13, 2011)

I told them that for every story there are small events happening. Some will happen first and it will lead to the next event to happen. They will think of the whole story and circle the main events and numbering them (which comes first, which comes later). I also told the students that sometimes there are

events happening between the pictures (which are not drawn out). If they think there are small events that happened in between the pictures, they will circle. If not they need not circle.

I remembered showing them an example picture where the linking circle is important. (Something about a passerby having to call the ambulance to arrive, as the next picture showed the ambulance already reached. I remembered questioning them "Did the ambulance fall from the sky?" They replied "No", leading me to explain the purpose of the linking circle.) (April 15, 2011)

My analysis of whether the circling strategy helped reduce missed events in students' compositions revealed that it correlated to students' language abilities.

Completeness performance in compositions written in E-portfolio.

Whether students benefited from the circling strategy depended on the Chinese ability of the students. High-ability students would include all the relevant events. Medium- and low-ability students would miss out some events in their stories. Let's compare the work of a high-, medium- and low-ability student to get a feel of how much information was missed out in their compositions. For example, in textbox 3 or picture 2 (see Figure 7.1), JC, the high-ability student, indicated that the sound of the shattered vase alerted the workers. On the other hand, JT, a medium-ability student, missed telling his readers the shattering sound of the broken vase had alerted the workers. He only described exactly what he saw in the picture: "Other office workers kept discussing: 'Grandpa Wang, you are dead.'" (see Table 7.2) Similarly, TT, a low-ability student, missed events in her composition (see Figure 7.6). She wrote "The colleagues, ran over quickly" without telling her readers why they ran over. The low-ability students placed even less attention on the links between events as compared to the medium students. This was how TT described picture 1 (in textbox 2): "He took one step back. The vase dropped, was broken". She missed out on the

important events that the cleaner had knocked into the metal cabinet, which was depicted in the picture.

Table 7.2

An Example of the Writing of a Medium Chinese Ability Student JT

Textbox	Question Prompt	Student's Writing
1	Opening: introduce the main character	Grandpa Wang was a hardworking cleaner.
2	What happened (add action chain)	That day [Embedded linking phrase], Grandpa Wang was sweeping the floor in the office. He accidentally backed up and then knocked into the metal cabinet. The boss' beloved vase was broken [Missed describing the sound of broken vase].
3	What happened in the end? What accident occurred? (add dialogues)	[Missed describing the workers heard the sound and ran over] Other office workers kept discussing: "Grandpa Wang, you are dead."
4	How did the main actor feel after the vase was shattered? (add feelings, expressions, dialogues)	Grandpa Wang felt very scared.
5	What happened when the boss came back?	Then, the boss came back [Embedded linking phrase], Grandpa Wang lowered his head in fear.
6	After the boss found out what	After the boss saw [missed describing

	happened, what did he do?	what the boss saw], he quickly ran over and asked Grandpa Wang to go home and rest.
7	Conclusion: What did everyone do when they saw this scene? How about the main character? How did he feel?	Everyone saw the boss did not reprimand Grandpa Wang, still, asked him to go home and rest. Praised the boss. [missed linking phrase “after they heard the boss”]]

The Circling strategy mainly benefited the high-ability students as well as helped the medium-ability students reduce the number of missing events in their compositions. It helped the low-ability students to be more observant so that there was a lower chance that they miss out events depicted in the pictures. However, it did not help them in establishing linkages between two events if the missed events were not depicted in the pictures (e.g., link between two pictures when the location or time had changed). After analyzing the compositions in the e-portfolio, I looked into the teacher's and students' comments to find out their perception of the circling strategy.

No	Text
----	------

1. **1. 开头：(人物开头 - 介绍这个人)** 
王爷爷很勤劳，他每天都七点起来去上班。他退休了他的工做。他去一个办公室做清洁工人。

- 退休后
- 公司
- 清洁工人
- 这份工作
- 赚钱养家

1. Opening: introduce the main character

Helping words: retired, company, cleaner, this job, provide for the family

Grandpa Wang was very hardworking. He woke up everyday and went to work at 7am. He retired his job [wrong grammar]. He went to an office to work as a cleaner.

2. 2. 事情是怎么发生的? (这里请加入行动链)



这一天, 王爷爷到了办公室。他马上去扫地。扫到老板的办公室。王爷爷扫到了老板的橱。他退后一下。花瓶掉了下来, 被打破了。

- 像往常一样
- 扫地
- 老板的办公室
- 铁橱
- 心爱的花瓶
- 后退
- 一不小心

2. What happened (add action chain)

Helping words: As usual, sweep the floor, the boss' office, metal cabinet, beloved vase, backed up, accidentally

This day [Embedded linking phrase added by the teacher], Grandpa Wang reached the office. He went to sweep the floor at once. Swept till the boss' office. Grandpa Wang swept till the boss' cabinet. He backed up a little bit. The vase dropped, was broken [Wrong grammar, literal translation from English].

3. 3. 结果呢? 发生了什么意外? (这里加入对话)



同事们, 赶快跑过来。说: “王爷爷你惨了这是老板最喜爱的花瓶”。王爷爷很紧张, 他怕被老板开除他。

- 玻璃碎片
- 其他的员工
- 围过来
- 议论纷纷

3. What happened in the end? What accident occurred? (add dialogues)

Helping words: shattered glass, other workers, came around, made all sorts of comments

The colleagues [wrong use of homophone] ran over quickly, said: “Grandpa Wang you are in trouble. This is the boss most beloved vase.” Grandpa Wang was very frightened [wrong use of homophone]. He feared that he would be fired.

4. 4. 花瓶被打破后, 主角有什么心情? (加上心情、表情、对白)

王爷爷很害怕被老板开除。王爷爷表情很害怕就说: “如果老板开除了我和家庭这么办”。

- 看着碎片
- 担心会被痛骂和被开除
- 感到害怕
- 不知所措

4. How did the main actor feel after the vase was shattered? (add feelings, expressions, dialogues)

Helping words: looked at the shattered glass, worried he would be scolded badly and fired, felt scared, bewildered

Grandpa Wang was very scared [wrong use of homophone] of being fired by the boss. Grandpa Wang had a very scared [wrong use of homophone] expression then said: “if the boss fired me and my family what to do [wrong grammar]?”

5. 老板回来后怎么了？（记得加入人物之间的对话、心情、表情）



这时，老板回来了。老板的秘书告诉了王爷爷打破了老板的花瓶。王爷爷低下头说：“老板对不起”。

- 秘书
- 向老板报告
- 慌张
- 低下头
- 不敢直视

5. What happened when the boss came back? (Add dialogues, feelings, expressions)

Helping words: secretary, reported to the boss, panic, looked down, did not dare to look directly

Then, the boss came back [Embedded linking phrase]. The boss' secretary told him Grandpa Wang broke the vase. Grandpa Wang looked down said: “Sorry boss”.

6. 老板知道事情的经过后怎么做？



老板每每骂王爷爷还开起的跟王爷爷说：“每关西，你好好休息吧”。

- 没有责骂
- 温和
- 回家休息

6. After the boss found out what happened, what did he do?

Helping words: did not reprimand, gentle, go home to rest

The boss did not scold Grandpa Wang, moreover said to him politely [wrong use of homophone]: “never mind [wrong use of homophone], you take a good rest”.

7. 结尾：大家看到这一幕，做了什么？主角呢？有什么心情？

王爷爷开心的跟老板说声谢谢。同事们也位王爷爷开心。

- 称赞
- 爱护员工
- 学习
- 骄傲
- 安慰

7. Conclusion: What did everyone do when they saw this scene? How about the main character? How did he feel?

Helping words: praised, care for the workers, learn, proud, comfort

Grandpa Wang happily thanked the boss. The colleagues [wrong use of homophone] were also happy for [wrong use of homophone] Grandpa Wang.

Figure 7.6. Composition 5 done by L student TT. The English translation has been added for explanation.

The teacher's comments on the effectiveness of the circling strategy.

The Circling strategy enabled the high- and medium-ability students to identify places that required linkages between events (see the circle between pictures 3 and 4 in Figure 7.7). These events were usually not depicted in pictures, for example, when there were changes in location or time *between* pictures. The students had to write a link that takes the readers from one location to the other or from a certain point in time to another.

However, the low-ability students were not able to benefit from this strategy. The Circling strategy mainly helped them identify relevant events *in, not between*, the pictures. These events were usually depicted in the pictures but they were not careful enough to spot them. The teacher commented:

Circling helps the [low-ability] students remember the main events [in the picture] (April 11, 2011).

Linking between pictures is still a weak point for the students. The M [medium-ability] and H [high-ability] pupils were able to internalize the linking technique, especially through the circling strategy taught to them (April 13, 2011).

The H and Ms are able to remember to circle those links and write those out without the prompts. But for the Ls, sometimes they will miss that out, so you will feel that they have missing information and missing links.

You will realise that for the H and M ability students, they will circle in between pictures. For the L students, it's difficult for them to identify those (April 15, 2011).

In order to be sure that the students had actually adopted the circling strategy, in my conversation with the teacher, I asked if students circled the pictures in the exam? The teacher's response was: "Yes! Some of them did circle. For these pupils,

they did internalize the strategy”. This provided evidence that in the exam students quickly pursued the Circling strategy.

Furthermore, from my observation, I found that the students could circle very fast. They did it in less than a minute. I asked the teacher if they really knew what they were doing. The teacher answered in the affirmative. “Yes they know. They followed the circles and write. If not they will not have a logical flow” (April 15, 2011). The teacher concluded that: “The circling is effective, with pupils remembering to include circles for introduction and conclusion” (April 25, 2009). The students who could internalize the circling strategy could do well in writing complete compositions. As such, it mainly benefited the high- and medium-ability students. Low-ability students still missed out circling linking events. The teacher provided her insight into why the low-ability students tended to miss out linking events:

The W [weak] students sometimes are not so detailed in their observation, leading to them not circling the linking events or details like sound ... If they didn't circle, they will leave them out in their writing since they have not thought of it (April 19, 2011).

They are weak in the language. They know they have to write the events clearly as we have always remind them in class, but they are unable to do so because they cannot express themselves. So they will ignore the event and not write it all together. Sometimes, it is because they think we are able to understand what they are writing as we know the picture. But I have already told them that they need to write as clearly as possible. (April 18, 2011)

The teacher provided two reasons for the poor performance of the low-ability students. One was that they were less observant and missed out relevant events in circling the pictures. This is a lesser problem as the teacher can scaffold the students to tell short stories from pictures so that they will learn to tell complete stories. The more serious problem was the low-ability students were overloaded by the basic

writing skills. They were not able to pay attention to other aspects of composition writing such as identifying all the relevant events in the story. It requires much determination and a concerted effort amongst the parents, the school, the teachers, and the society that values the Chinese language to make it successful.



Figure 7.7. Circling done by a high-ability student.

Students' comments on the effectiveness of the circling strategy.

In the student interviews, the teacher asked the students what they thought about the circling strategy. The high-ability students said it enabled them to write stories that were “more complete”. Another student said, “I will check if I had missed out important points so story development is no problem for me.” Numbering of the events enabled them to “make the composition flow”.

However, a high-ability student said this strategy was not useful as he or she had “no habit of circling, just observe pictures, just do numbering on the pictures”. It could be that the student did not require help in flowing the composition and as such, the strategy was not useful. Another student commented that he or she needed time to improve in using the strategy, “sometimes I missed the important point - circle wrongly”.

The medium-ability students said that the circling strategy enabled them to write “more main events from the pictures”. Moreover, circling and numbering the events enabled them to write with “more details, story flows more smoothly, more focused on events”. One student said, “I will not miss out events when I am writing.” Another student said, “I remember to circle and number events whenever I write composition”.

A low-ability student said that the circling strategy made compositions “easier to write. Know what to write. Just follow the numbers”. Additional comments from low-ability students were “I will not miss out events when I am writing”; “it helps me to identify the main points of the composition so that I can write more comprehensively.”; “Circle and number the events - It becomes part of me when writing composition. Helps me to identify what to write.”

Students welcomed the circling strategy for their writing compositions. It was deemed useful for future interventions. However, the low-ability students required more help than just the circling strategy. As we would be able to specifically identify the help they needed from knowing their cognitive representation of information, I proceeded to explore students’ cognitive representations of the events to be described in their composition.

Cognitive explanation of why weaker students missed out linking events and refinements to future interventions.

Weaker students missed out events because they were either not observant in identifying relevant events in the pictures or they were struggling so hard to express themselves that they could not pay attention to writing a complete, flowing story. Cognitively, due to weak language skills, the students would spend their mental resources on struggling with the fundamentals of the language, they would not have their full mental resources to focus on the pictures. The mental representation of the story they created would therefore contain missed events and details. If the mental representation were incomplete, it would be reflected in the actual writing. To find support for the claim that students with weak language skills wrote incompleteness compositions, I tried to identify the link between awkward writing and the number of missing events in the composition. Awkward writing, according to the definition given by University of Cambridge, means it "... makes the reader uncomfortable. It is ungrammatical, unclear, choppy, or just too difficult to follow..." (source: <http://www.hps.cam.ac.uk/research/wp.html>). I wanted to find out whether the more awkward the text of a composition was, the more missing events there were in that composition. I will illustrate this relationship with some examples below.

Let us first take a look at what the high-ability student JC included in her story which were not depicted in the pictures (underlining indicates JC's imagination):

This day [teacher embedded linking phrase], Uncle Lin was sweeping the floor in a corner of the office. He did not notice that behind him was a cabinet. On top of the cabinet was a vase, that vase was the boss' beloved vase. Uncle Lin accidentally knocked over the vase. The vase dropped and shattered with a "clang".

JC wrote good Chinese. And her story was complete with details such as the sound of broken vase and the position of the actor in the office. When the high-ability students saw a picture, they were not impeded by their language skills. They had the mental resources to interpret the picture and come up with more details than what was depicted. Their mental representations of the story were logical and complete. It was reflected in the compositions they wrote.

The profile of the medium-ability students was such that they relied a great deal on the helping words provided by the teacher to make sentences. Their language skills were good enough to write readable sentences with them. In addition, there were a large number of helping words. So they could even use a few helping words in a sentence. In terms of completeness of compositions, they tended to miss out relevant events. The following example was written by JT. It contained two missing events. The first missing event did not impact the flow as much as the second one (italicization indicates helping words):

That day [teacher embedded linking phrase], Grandpa Wang was *sweeping the floor in the office*. He *accidentally backed up* and then knocked into the *metal cabinet*. The boss' *beloved vase* was broken [missed the sound of the broken vase].

[Missed the workers came over] *Other office workers kept discussing:*
 “Grandpa Wang, you are dead.”

Since medium-ability students could make use of most helping words to write grammatically correct sentences, they did not have to struggle as much with the language to express themselves. The sentences they wrote were not as awkward as the low-ability students. They also had some extra mental resources to think about the details of the story. As compared to the low-ability students, they did not miss as

many events. Some of the missed events were minor and therefore did not affect the readability of the composition much.

Low-ability students wrote awkwardly and they missed out events in their compositions frequently. As such, some parts of their composition did not make sense. For example, TT neglected to mention Grandpa knocked into the cabinet, although it *was* depicted in the picture. She also did not mention the vase broke with a clang and the sound alerted the colleagues. She did not mention it because the sound was not depicted in the pictures. This was how TT wrote about the same picture mentioned above (italicization indicates helping words): “This day [teacher embedded linking phrase], Grandpa Wang reached the office. He went to *sweep the floor* at once. Swept till the boss’ office. Grandpa Wang swept till the boss’ *cabinet*. He took a *step back*. The vase dropped, was broken”. She continued to describe picture 2: “The colleagues ran over quickly, said: ‘Grandpa Wang you are in trouble...’. TT either did not know she had missed out some events or she might find it too difficult to explain these events and gave up trying. The low-ability students struggled with the language, as evident in the awkward manner TT wrote her sentences. They made use of few helping words as the helping words were too difficult for them to make sentences with. When they had to constantly struggle to write in proper Chinese, they had little mental resources left to describe the story in detail. To free up mental resources for writing detailed composition, the students have to improve their basic writing skills.

The above investigation had provided some support to my claim that there was a possible link between weak basic writing skills and missing events. If the extent of awkwardness is placed on a scale, high-ability students were on one extreme of the continuum of the scale. And they wrote complete stories without missing events. The writing of medium-ability students would be in the middle of the awkwardness scale.

They missed out some events. Sometimes, these events were minor which did not affect the readability of the story. The sentences low-ability students wrote would be on the other end of the awkwardness scale as compared to high-ability students. And they wrote with more missed events. These were relevant events which would affect the readability of the composition.

As the performance of the weaker students was affected by them spending mental resources on the basics of the Chinese language, they would require scaffolding in improving their basic writing skills as well as being trained to be more observant in circling events in the pictures. Improving basic writing skills requires great effort and determination on the part of the school and the society. An immersive environment is required. This will be an interesting and very challenging project which is not within the scope of this thesis. The teacher can help by providing more “localized” intervention. She can adopt technologies that engage the students such as the Chinese language game introduced in this study. She can also help students apply the language by getting them to describe simple stories from just two pictures that have different backgrounds. It will scaffold the students to flow the story with the appropriate linking events, words or phrases. These exercises can be verbal or written. Then, allow the peers to edit the stories, focusing on identifying missing events. Also, the teacher can collect negative examples and let the students identify what was missing in the story or to question if the descriptions are clear to their readers. The teacher can also tell stories and get the students to retell them. Then the teacher can record their stories and play them back the next day and ask the students to identify if any event is missing. All these exercises will help the students to be sensitive to missing events in a story and write in better Chinese.

After the students completed their own compositions in the e-portfolio, they were asked to edit their peers' work. In this task also, the extent to which benefits accrued from peer editing depending on their high, medium or low language ability.

Peer editing and its effectiveness on completeness.

High-ability students benefited by having the opportunity to apply their skills in identifying relevant events to their peers' work. They did so by critically reviewing their peers' compositions, looking for the missed events, and inserting the events for their peers in grammatically correct Chinese. Medium-ability students benefited by reading the modifications on their work. They learned by comparing their work with the modifications and deciding whether to accept the changes. If they did, they had to refine their mental representations to accommodate them. Continual refinements would result in improvement in performance. In the following example, two high-ability students peer edited the medium-ability student's TRT's compositions. In this particular case, the teacher also made some changes to TRT's work. They added the missed events for her. TRT's original sentence was "When backing up, accidentally, knocked into metal cabinet, knocked over the boss' most favorite vase". The teacher and two high-ability peers added in the missed events (underlining indicates editing done by the teacher and peers): "When he was [teacher's edit] backing up, accidentally, knocked into metal cabinet behind him [SS' edit], knocked over the boss' most favorite vase. The vase fell on the floor and broke with a 'Clang'! [THY's edit]" (see Figure 7.8). TRT, being a diligent student, read the modifications of the teacher and the peers. She then accepted the changes (In Figure 7.8, the popup textboxes contain modifications made by the teacher and the peers. The highlighted text in the composition were changes accepted by TRT).

王爷爷退休后,为了赚钱养家,就在一家公司当清洁工人。这一天,王爷爷和往常一样,在老板的办公室里扫地。他在后退的时候,一不小心,撞到了后面的铁棚,把老板最心爱的花瓶撞倒了,花瓶掉在地上“砰”的一声,摔破了。听到了花瓶掉落在地上的声音,在办公室里工作的员工都围过来看个究竟。大家都在议论纷纷,说老板会有什么反应。老千说:“老板一定会很生气,你可能会被扣薪水。”阿明说:“怎么可能只被扣薪水,还可能会被开除呢!”王爷爷看着碎片,担心到害怕而不知所措。

祖向老板报告花瓶打破的事情。王爷爷惭愧地低下头,不敢直视着老板。王爷爷低声地说:“对不起,请您原谅我。”

老板开没有责骂王爷爷,还用温和的语气安慰他。

大家都感到安慰,齐声地说:

Figure 7.8. Two high-ability students SS and THY edited the composition of the medium-ability student TRT.

Low-ability students benefited from peer editing by reading the linking events their peers had inserted for them. Low-ability students tended to miss out events when they had to infer them from the pictures. For example, a low-ability student AWB wrote in his composition 9 that the character in his story, Ming, got a bad scolding from his mom because he had failed his spelling test. But, AWB missed out on telling the readers how Ming's mom found out that Ming had failed. AWB wrote (underlining indicates helping words):

The next day, Ming was in the classroom, he was vexed because his mind was blank. He frowned. Later, Ming's mother was discovered Ming watched TV and did not do his homework, she gave him a bad scolding. His face then blushed from shame.

The high-ability student NJH edited his work by adding the missing information “Ming's mom found out from the teacher that Ming did not do his homework because he watched TV, thus she gave him a bad scolding. His face blushed from shame” (underlining indicates NJH's modifications) (see Figure 7.9).



Figure 7.9. The high-ability student NJH edited the composition of the low-ability student AWB.

In a similar example, TT, the low-ability student, also benefited from learning to write with linking events from reading her peer's changes. TT's original description was: "Sweep till the boss' office, Grandpa Wang was sweeping at the cabinet. He backed up a bit, the vase dropped, was broken." Her peer NJH added the missed events for her (underlining indicates NJH's modifications): "At the time, sweep till the boss' office, Grandpa Wang's back was facing the boss' cabinet. He moved back, knocked on the metal cabinet. The vase on the cabinet dropped, was broken".

When students reviewed the modifications, they compared them with the existing mental representations to decide whether to accept the changes. If they found the modifications better and would want to accept them, they would have to modify their existing mental representations to accommodate these changes. Learning would take place in this evaluation process.

High-ability students benefited more from editing their peers' work. This seemed to reinforce their own skills. Medium-ability students benefited from both editing others' work and from other's editing of their own work. This process enabled them to reinforce their writing skills besides critically reviewing their own work. Low-ability students gained from their peers' editing/modification of their work.

In the following section, I will examine my statistical findings for evidence to the claim that students missed fewer relevant events in their compositions over time.

Statistical analysis on completeness.

In this analysis, completeness was measured by how many events were missed out in a composition. When no event was missed, the composition was complete. To find out if there were less missed events in the compositions over time, the number of missed events for the pre-test, Compositions 5 and 9 was compared. Again, as Composition 9 was written with ample time, there might be fewer missed events.

A repeated analysis of variance was performed to find out if missed events in the compositions had reduced. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .76$, $\chi^2(2) = 5.25$, $p = .07$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed.

Results indicated a significant difference in the amount of missed events in the three compositions, $F(2, 40) = 48.29$, $p = .001$, $\eta_p^2 = .71$ (see Table 7.3). Post hoc pairwise comparisons indicated that the number of missed events in Compositions 5 and 9 was significantly lower as compared to the pre-test. There was evidence to suggest that the students missed out fewer events in their compositions over time.

Table 7.3

Statistics for the Number of Missed Events in Compositions and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Composition 5
Pre-test	1.95	.22		
Composition 5	.29	.12	.001*	
Composition 9	.10	.07	.001*	.64

Note. N = 21. $\alpha = .05$, * = significant difference

Did the low-ability miss out on including more events in their composition at the end of the year? The six low-ability students in class missed a total of five events

in Composition 9 while high- and medium-ability students did not miss any of the events. Half of the low-ability students missed including events in their compositions. It confirmed my previous analysis that it was necessary for the low-ability students to receive more scaffolding in addition to the circling strategy.

Concluding remarks on completeness.

The analysis of the students' work, teacher's and the students' comments, and statistical analysis showed that the students wrote fewer missed events in their compositions over time. Again, their performance depended on their Chinese ability. High-ability students were quick to learn (e.g., able to identify and circle the relevant events) and apply what they had learned. As such, they did not miss out events in their compositions. Medium-ability students depended on the scaffolds (e.g., helping words, pictures, prompts) to write their compositions. The scaffolds helped them to write fairly detailed stories. As compared to the low-ability students, they did not miss as many events. There were some missed events but the stories still came across as fairly intact. Low-ability students had very limited mental representations of the Chinese language. Their mental representations were likely to be poorly formed. They were constantly struggling with how to express themselves. They could only write whatever they could express and ignore those that they could not manage, especially events not depicted in the pictures. Since their mental structures were inadequate in describing a complete story, they would miss out important events.

Future intervention should start early for medium- and low-ability students. From our exploration of the mental representations of the medium and low-ability students, the completeness problems arose from weak basic writing skills. The teacher should engage the students in activities they find fun such as language games. Also, immerse them in a Chinese language environment such as role-play and performing

drama so that they can apply their knowledge and skills learned. These are two important considerations in designing future interventions.

Vividness

In the above section, I employed mainly the deliberate and the circling strategies to improve flow and completeness in students' compositions. Now I turn to strategies for improving the plainness of their writing style.

Students wrote only scant descriptions of the pictures given to them to write their stories. They had not included feelings, expressions, dialogues or descriptions of actions. To improve the vividness of the compositions, I proposed strategies for them to add feelings, expressions, dialogues and action chains in their writing (see Figure 4.8). To achieve this, I introduced strategy of helping students develop micro-writing skills.

Micro-writing skills were simple and easy to learn. They could help students write more vividly. They were a series of steps that students could quickly pick up and internalize, for example, to write vivid actions, students would be scaffolded to break down an action into three linked actions. Then, they would describe each of the three related actions, on which they would write a sentence that includes the three actions. Before the students were taught micro-writing skills, if they plainly wrote what was in the picture as "The old man fell", after the intervention, their writing is expected to become more vivid, e.g., "The old man tripped on a rock, lost his balance, stumbled and fell on the floor with a loud thud".

The reasons for introducing the strategy for teaching micro-writing skills were two-fold. First, there was very little time set aside for teaching composition writing. The teacher had to rush through her regular Chinese lessons so that she could save some time to work directly with the students on composition writing. Second, the

students were of mixed abilities. The writing skills had to be easy for low-ability students to learn and yet not too unchallenging for high-ability students to hold their interest and attention. Micro-writing skills were suitable for high-ability students who could be scaffolded to write more detailed and richer descriptions and for low-ability students who would be enabled to use basic micro-writing skills. The weaker students could at the least, write an action chain with two instead of three related actions. If they could not write action chains, they could concentrate on the Big Four micro-writing skill.

Big Four.

This was the first micro-writing skill introduced to the students. It helped the students write complete introductions by including the four necessary elements (four Ws): When, Who, Where, What. Further, they were scaffolded to write in that order as the order is fixed in Chinese. For example, in Chinese, the students would start an introduction with the four elements in a specific order When: One holiday; Who: my parents and I; Where: in Genting Highland; What: vacationing. With the four elements, the introduction would be more vivid as more details could be included.

The intervention was conducted using pen and paper. It included identifying the Big Four in sentences and passages (see Figure 7.10). For example, in the sentence given in the previous paragraph, the students had to identify When (“one holiday”), Who (“mom, dad and I”), Where (“Genting highlands”), and What (“vacationing”). Furthermore, they also practiced writing sentences that had the four elements. When writing a sentence with the Big Four, the teacher would provide the students with a scenario and asked them to write an introduction to the scenario.

The Big Four was perceived to be the easiest as it is a fairly standard way of writing introductions in Chinese. The students have already internalized it after

attending the regular Chinese lessons for a few years. Moreover, the teacher did not require them to elaborate on each element in their introductions. They just needed to include the Big Four elements in a sentence. As expected, only a handful of the students did not include all the four elements in the pre-test.

四大要素

作业 (一)

请根据提供的开头句子回答问题。如果句子里没有交代时间, 地点, 人物, 或事件, 请注明。

1. 下课铃响了, 同学们快步走出教室, 到操场上参加自己喜爱的课间活动。

时间: 下课

地点: 学校

人物: 同学们

事件: 参加自己喜爱的课间活动。

2. 清晨, 我穿上新衣, 坐上爸爸的车子, 随着父母去医院探望生病的婆婆。

时间: 清晨

地点: 车子上 → 医院

人物: 爸爸、我、妈妈

事件: 去探望生病的婆婆

3. 今天, 我们的组屋区正在举行义卖会。很多居民都下来参加, 为慈善出一份力。

时间: 今天

地点: 组屋区

人物: 居民

事件: 举行义卖会

4. 假期中的一天, 我和爸爸妈妈去云顶游玩。

时间: 假期中的一天

地点: 云顶

人物: 我、爸爸、妈妈

事件: 去云顶游玩

Figure 7.10. Identifying Big Four exercise.

Effectiveness of the Big Four micro-writing skill.

The teacher and I considered this to be the easiest micro-writing skill to learn and the students' performance confirmed it. Almost all the students interviewed said they could "remember what Big Four are". As the students were good in including the Big Four in their introductions from the beginning, there was not much improvement in subsequent compositions. However, it gave the students much confidence in writing introductions. These were the comments from low-ability students on how Big Four help them write better introduction: "will not miss out points [elements]"; "The flow of my composition is better than before"; "Teacher repeats the importance of Big Four, making me remember them"; "I was not able to write a complete intro. Now I can".

High and medium-ability students also provided positive comments: "I have better idea of what an introduction must include"; "it helped me to write clear and complete introduction"; "After learning Big Four, it was easier to open a composition"; "In the past, I would miss out important points in the Intro. Now I won't"; "I did not know how to write. Now I know"; "More intact. I could get more marks"; "It is easy to write introduction when I learned to include the Big Four"; "Used to be confusing. It is complete now". Some students also thought that Big Four was the skill that they could apply best, and was their strongest micro-writing skill: "Teachers' marks also reflect I do well in these".

As there was not much improvement in the Big Four elements among the students in the pre-test ($M = 3.91$, $SE = .06$) conducted at the beginning of the academic year, compared to the same students who wrote after being taught the Big Four (Composition 5) ($M = 3.96$, $SE = .04$), I discussed with the teacher whether there was a need to include the Big Four writing skill in future interventions. The teacher

felt that she would like to apply the Big Four to the entire composition, not just for the introduction. It would be useful for students in describing any event where they needed to, convey their thoughts about the time, actor, place and happening. The teacher said:

Actually Big 4 is not only restricted to the introduction. Big 4 can be used as a guide for the whole composition, as the 4 Ws can be used in the whole composition too. We did not do away with Big 4 as it is the base for the composition. Not alot of time was spent on that section too. Students take about 5 minutes to do circling and Big 4 before they write each composition. (May 6, 2011)

In fact, one of the exercises was about identifying the Big Four in each of the events described in a composition. The composition was about a family spending a day at the seaside and it described what event the family engaged in at different times of the day. The students were asked to identify the Big Four in each of the event. This exercise indicated to the students that Big Four was not only restricted to the introduction of the composition. However, at the Primary 4 level, the teacher did not require the students to include the Big Four throughout their compositions. Learning to write Big Four in an introduction was meant to be a basis for future learning (e.g., Primary 5 and 6).

In writing a composition, students not only needed to be scaffolded in writing descriptively using the Big Four, but also in expressing their feelings. This could be accomplished by writing feeling chains and dialogues.

Feeling chains and dialogues.

The feeling chain micro-writing skill was introduced to help the students write with feelings and expressions. This micro-writing skill established a mental link between feelings and expressions. The feeling could be viewed as the cause of

expression. When students wrote a feeling, they could write a relevant expression. More advanced students could also set the tone of dialogues with feeling chains, or enrich an action by including feelings and expressions. The feeling chain was found to be the main writing skill to add vividness to students' compositions as feelings and expressions were usually depicted in the pictures for students to write compositions. The teacher and I discussed and created learning activities to help students write feeling chains.

Learning activities to scaffold writing of feeling chains.

In scaffolding the writing of feeling chains, the students would first practice identifying feelings and expressions, and then write sentences that include both the feeling and expression words. The scaffolding included a series of activities that were conducted using pen and paper as well as ICT. Using pen and paper, the teacher let the students work on matching a list of feelings words with emoticons (see examples of emoticons in Figure 7.11). The students could select as many feeling words as possible to describe an emoticon. Then, they would select two emoticons they like and write a sentence each, to describe the feeling the emoticon showed. They also would have to provide a reason for that feeling.



Figure 7.11. An example set of emoticons (Source: <http://www.vocidelsud.com/site/images/foto/fotonews/creare-emoticons-per-msn-gratis.gif>)

After they had worked on the above activities, the teacher played a video clip for students to identify the feelings and the expressions the actors in the clip portrayed. The teacher commented: “In one of the activities, I got them to watch a video and they are supposed to write out the feelings and expression of the actors they have watched.” (May 8, 2011) After viewing the clip, the students filled out a table about each actor in the video. For each actor in the video clip, the students had to identify his/her feeling, expression, and action.

The teacher in my experiment always gave students four pictures for writing a story. The teacher also asked students to circle the actors in the pictures that they wished to write about as to the actors’ feelings and expressions. However it didn’t work out well so she abandoned the activity. She said: “I also remembered getting the children to use colours to circle for feelings and expressions but it seems like it confused the children.” (May 8, 2011)

One of the activities students worked on the computer was to brainstorm for feeling words. They used the collaborative mind map to brainstorm for synonyms. They were grouped into small groups and each group was given two feeling words to work on (see Figure 6.2). After brainstorming for synonyms, the students made sentences on a computerized worksheet. They were given a list of expressions to expand into a scenario. The descriptions of the scenarios should include feeling chains, actions, or dialogues (see Figure 7.12). Then, students were grouped up to peer edit the scenarios.

Feeling chain micro-writing skill performance in compositions written in the E-portfolio.

After the students completed the learning activities, they proceeded to writing compositions. Two of the compositions (5 and 9) were written in the e-portfolio. They

were analyzed to find out if students had improved in writing vividly with feeling chains. I found that students with different abilities responded differently to the feeling chain scaffolding.

惭愧的词语

1. 低下头：小花低下了头，对妈妈说：“妈妈，对不起。是我一时贪玩，才会打破您的花瓶。请您原谅我。”
2. 脸红得像熟透的苹果：当小明的爸爸在学校责备他偷东西时，小明的脸红得像熟透的苹果似的，接二连三地向爸爸道歉。
3. 惭愧得无地自容：小华在鸦雀无声的图书馆里大喊大叫，结果被图书馆管理员责骂了一顿。他惭愧得无地自容，马上跑出了图书馆。

害怕的词语

4. 手脚发软：同学们听小明讲鬼故事时，大家都吓得手脚发软。
5. 脸青唇白：当我经过租屋楼下时，被一只飞来的蟑螂吓得脸青唇白。
6. 害怕得昏了过去：当妈妈知道哥哥被绑架后，马上害怕得昏了过去。
7. 一直尖叫：李文很害怕大狗，如果她看见大狗，就会一直尖叫起来。
8. 躲在一角：莉莉的家着火了，她不知所措地躲在一角，不停地发抖。

Original: [打破了]
Choy Wai Yin Oct 30, 2009 2:00PM
Correction suggestion: [才]

Original: [喊救命]
GIAN MENG RONG Oct 30, 2009 2:00PM
Correction suggestion: [发抖]

Supporting materials

- NO ITEMS FOUND -

Figure 7.12. Sentence-making exercise and peer editing.

High-ability students' performance.

High-ability students understood and applied the writing skill using their own vocabulary. They were independent in writing. They did not rely on the helping words provided by the teacher to prompt them to include feelings and expressions. A high-ability student SS wrote (underlining indicates components in the feeling chain): “Grandpa Wang witnesses the scene, he was dumbstruck, his eyes grew big and his jaw dropped. He was at a loss”. She added: “The colleagues was startled by the shattering sound, they ran over to find out what happened”.

Some high-ability students could also integrate feeling chains with other writing skills such as describing the tone of dialogues with feelings and expressions. Four out of 13 high-ability students could set the tone for dialogues with feeling chains in Composition 5 and seven out of 14, in Composition 9. For example, JC wrote (underlining indicates components in the feeling chain): “Uncle Lin, looking at

the shattered vase, worried that the boss would reprimand him. He broke into a cold sweat, asked his colleagues in a bewildered manner, ‘what should I do now? Will I be fired by the boss?’” SS was also able to set the tone of her monologue: “Grandpa Wang heard them, was very frightened. He secretly cried: ‘I am dead meat! The boss will definitely fire me.’” Another high-ability student CWK wrote: “What should I do about it, I broke the boss’ most favorite vase!” Uncle Wang stared at the shattered pieces while muttering. He was very worried he would get a bad scolding and be fired. His heart felt very scared and bewildered.” He further wrote: “Uncle Wang lowered his head in panic, did not dare to look directly at the boss, said: ‘sorry, please deduct from my salary’”.

High-ability students could also describe actions with feeling and expression words. JC wrote this (underlining indicates the feeling chain): “The boss dropped the phone immediately, opened the door forcefully, then ran down the stairs angrily, to find out what actually happened.”

In addition, the high-ability students could use many feeling and expression words quite effortlessly in the compositions. For example, JC wrote (underlining added to indicate the feeling and expression words. Italicization indicates helping words): “This scene petrified Uncle Lin”; “He broke into a cold sweat, asked his colleagues in a bewildered manner ...”; “His colleagues comforted him”; “Uncle Lin told him exactly what happened and kept apologizing to the boss”. THY wrote: “Grandpa Wang knew that although he was poor, was respected and cared by the boss, therefore felt very happy”. Some other feeling and expression words the high-ability students wrote were: “heaved a sigh of relief, felt ashamed, curious, touched, friendly, calmed down, and spoke haltingly”.

The teacher's comment supported my analysis of high-ability students' compositions:

The effects of feeling chains are different for the different ability of students. I think the H students benefited the most as they have the ability to absorb what was taught to them. They were exposed to more descriptive words for feelings and to be able to write them out, they need to remember the words. As we know the H students have better retention than the M and L students, they are able to do better (May 8, 2011).

While high-ability students' could better absorb the skill of 'feeling chains,' medium-ability students needed helping words to prompt them about the use of 'feeling & expression' to enrich their compositions.

Medium-ability students' performance.

They relied on helping words to form feeling chains. For example, TRT wrote (underlining indicates components of feeling chain. Italicization indicates helping words):

Then, the boss came back [Embedded linking phrase]. The secretary reported the entire vase breaking incident to the boss. Grandpa Wang looked down in panic, did not dare to look directly at the boss. Grandpa Wang whispered: "sorry, I broke your vase accidentally."

Other medium-ability students such as GMR, JT, AC also wrote a similar feeling chain each. The medium-ability students could not form feeling chains without helping words.

However, the feeling chain writing skill had raised their awareness of writing with more feeling or add expression words. They used many more of them as compared to the pre-test. And these words were from their own vocabulary, for example, 吓了一跳 (startled), 惊讶 (surprised), 开心 (happy), 伤心 (sad), 生气 (angry), 感动 (touched).

Similarly, they could not set the tones of their dialogues or monologues with feeling chains but they could do it with either feeling or expression words. For example, AC wrote (underlining indicates feeling or expression words): “The boss told Grandpa Wang softly: ‘Today, you go home and rest. Come to work tomorrow’”; Similarly, TRT wrote: “Grandpa Wang whispered: ‘sorry, I broke your vase accidentally’”; HT wrote: “He said angrily: ‘who broke the vase?’” The compositions the medium-ability students wrote in the e-portfolio showed that they relied heavily on helping words to write feeling chains. Although they used similar amount of the helping words as compared to the high-ability students, they used far fewer of their own vocabulary. It clearly indicated that they lacked the vocabulary.

Also, the medium-ability students used more expression words than feeling words in their writing. It could be that they could not identify with the feelings of the actors because feelings were abstract concepts. The medium-ability students may lack the same exposure as the high-ability students to these abstract concepts whether they were acquired through personal experience or by reading or other channels. These findings seemed to go deeper than what the teacher first thought. She thought it was more of a vocabulary issue than an experience issue. She said:

I think basically this topic depends a lot on the usage of vocabulary. They were able to identify the feelings and expression but do not have the vocabulary to do so. With their young age, they might not be able to absorb so quickly (May 8, 2011).

The medium-ability students were weak in vocabulary as well as the ability to experience feelings vicariously. This could be due to the underlying weak fundamental skills that caused them to shun reading in Chinese and therefore not be able to obtain social experience from Chinese reading materials.

The difference between the low and medium ability students in the study seemed to be one of degree. The medium ability students took the prompt of helping words to make richer sentences. The low-ability students were not able to benefit fully from the writing skill as they could not utilize most of the given ‘helping’ words to express the actor’s feelings.

Low-ability students’ performance.

They wrote very few feeling chains. I could not be sure if they had understood this writing skill. Sometimes, they were able to write feeling chains when the teacher provided the helping words. For instance, BL could put together the helping words to form a feeling chain (underlining indicates components of feeling chain, italicization, helping words): Grandpa Wang was *panic*, lowered his head, did not dare to look directly. TT, another low-ability student, wrote: Grandpa Wang was very *scared of being fired by the boss*. Grandpa Wang had a very scared expression then said: “if the boss fired me and my family what to do?” These two examples seem to indicate that they had the feeling chain concept in their mind. However, most of the time, the low-ability students did not write feeling chains even when they were given the helping words. The following example is typical of low-ability students. JN was given the helping words “panic”, “lowered his head”, “did not dare to look directly”. Although there were enough helping words for him to write a feeling chain such as *Grandpa Wang panicked, lowered his head and did not dare to look directly at the boss*, he actually wrote using the *expression* words only: “A worker reported to the boss at once. Grandpa Wang lowered his head and did not dare to look directly”. Their focus was on “concrete” behaviors rather than inner feelings of the characters. For example, RT wrote (underlining indicate expression words and italicization, helping words): “He kept trembling and murmuring, was at a loss”; Uncle Lin looked down, did not

dare to look directly at the boss”. The reason for their lack of “feeling word” might also be due to their inability to differentiate between “feeling words” and expressions as they might have presumed that one could infer feelings from the expressions they used.

When low-ability students wrote about feelings, they used very simple feeling words such as scared, happy, and kind. JN wrote: “the boss thought kindly: Grandpa Wang did not do it intentionally...”

Surprisingly, two out of four low-ability students set the tone of their dialogues and monologues with feeling chains, e.g., JN wrote (feeling chain underlined):

The boss thought kindly, Grandpa Wang was not intentional, by right I should forgive him, moreover, he was scared and frightened. The boss gave it a thought, did not reprimand, moreover told Grandpa Wang gently: “I will not blame you, you were not intentional, you go home and rest, come after tomorrow.”

I checked with the teacher how JN performed in other subjects in school. The teacher assured me that he was a very bright boy (June 23, 2011). This indicated that weak basic language skills restricted students in writing vividly.

Being scaffolded to write feeling chains had also raised the awareness of the low-ability students to use more feelings or expression words. After the training, they tended to describe their dialogues or monologues with feeling or expression words. However, they did it with predominantly expression words. For example, TT wrote this (underlining indicates expression words):

Grandpa Wang’s expression was still fearful then said, “what will my family be if the boss fired me”. Meanwhile, the boss was back. The secretary told the boss Grandpa Wang had broken his vase. Grandpa Wang lowered his head and

said, “Sorry boss”. The boss did not reprimand Grandpa Wang and said to Grandpa Wang cordially, “never mind, you take a good rest”.

High-ability students did not need any scaffolding in applying the feeling chain micro-writing skill in their composition. They not only could describe an actor using feeling chains, they could also describe dialogues and actions with feeling and expression words. Medium-ability students were not able to write independently of the teacher’s help. When describing an actor, they relied on helping words to form feeling chains. They were not likely to perform if scaffolding help were withdrawn. They required time and practice to be able to write independently using feeling chains. Low-ability students were not able to write their feeling chains with helping words as they might have found the helping words too difficult and as a result, did not know how write sentences with them. They might have been able to write feeling chains if the teacher had provided them with a set of simple helping words.

In the following section, I will show how the teacher and students felt about applying feeling chains in writing.

The teacher’s comments on the effectiveness of the feeling chain micro-writing skill.

The teacher’s comments corroborated the findings of my analysis of students’ compositions in the e-portfolio. The teacher said it was not easy for the students to write feeling chains. Some students, including high-ability students, have not mastered the skill. The teacher commented:

I remembered feelings and expression was not easy for the children. They cannot differentiate feelings with expression. For example: they will write “she stared angrily at me”. To them “angrily” is an expression but actually it is feelings as well.

I remembered I had an interview with the students on this. One of the reasons I got from a H student is that she finds this topic difficult. She said that she knows to add vividness, she needs to describe the feelings. However, she felt that she did not have the vocabulary to describe the feelings (May 8, 2011).

The teacher realized early on that the medium- and low-ability students were not ready yet. This was when she gave them the feeling chain exercises to complete before they wrote the compositions. She commented: “They do it with me. I question and scaffold them, so they were able to understand and complete the activity” (May 12, 2011). This indicated that fading took place before its time for the medium- and low-ability students. The students needed time to internalize the skill and the vocabulary. However, time was not on the side of the teacher.

It seemed that there were many issues affecting the medium- and low-ability students in writing action chains. I gave the teachers a list of reasons to pick from that best represented the situation (see Table 7.4). The teacher indicated that all reasons were valid. She thought all of the reasons were responsible, to some extent, for why the medium- and low-ability students used very few feeling words in their writing. She said: “I think you have listed out all the reasons. All these reasons do play a part in their lack of use of feeling words. Different students face different difficulties” (May 12, 2011).

Table 7.4

Reasons for why the Medium- and Low-ability Students were not able to Use Feeling Words

No	Reason	Teacher’s Reply
1	The students did not have enough vocabulary	Yes
2	The students could not tell the difference between feeling words and expression words (to them, there	Yes

- was no difference so just use one would do)
- | | | |
|---|--|-----|
| 3 | Expressions were more concrete so they tended to write with more expression words. | Yes |
| 4 | The students did not grasp the cause and effect relationship in a feeling chain. | Yes |
| 5 | The students lacked social exposure (e.g., they lacked reading, traveling, or tuition so they did not have concepts about abstract feelings such as sad, empathy, ...) | Yes |
| 6 | The students could feel in themselves but could not ascribe the feelings to the characters in the compositions - basically could not represent a feeling person in their mind. They only write literary what they saw in the pictures. | Yes |
| 7 | If feeling words were given in the helping words, the students could use them. If not, they would ignore the feeling for whatever reasons. | Yes |
-

As the teacher understood that it was not easy to write feeling chains, she was happy if the students could use just feeling or expression words, instead of feeling chains, to improve the vividness of the compositions. Also, the teacher encouraged the students to write more dialogues and monologues. They did not have to set the tones of the dialogues and monologues if they were not able to. Simply writing more of dialogues and monologues in the compositions would add to the vividness of the compositions.

Students' comments on the effectiveness of the feeling chain micro-writing skill.

Some students felt that they had not mastered the skill of writing feeling chains. They were not clear that about the cause and effect relationship in the feeling chains. The students commented in their interviews that they did not know the trick that they could “write feelings then followed by writing expressions”. One high-ability student said he or she “never think of writing expressions”.

Students also did not have a large enough vocabulary to write feeling chains. Even high-ability students commented that they did not have a large enough pool of words for this writing skill: “I need more expression vocabulary”; “I can identify where to elaborate but am unable to do so due to lack of vocabulary”. A low-ability student commented that vocabulary issue hindered his or her writing: “I need more feeling vocabulary. I know the feelings of the character but have not enough words to express myself”.

The students also needed to have much social experience to be able to identify different feelings, for example, the students commented: “I have to think of the characters' feelings. That's quite tough”; “I am able to describe the person's feeling but not too good”. Medium and low-ability students gave similar comments: “I can't really see it in my mind's eye so I don't have anything to write about”. One student said feeling chains needed time to train.

While some students felt they have not mastered the feeling chain writing skill, others showed confidence in their learning. Some high- and medium-ability students commented in the interview that they were able to write feeling chains: “I can link feelings with expressions, for example, when the character feels sad, she will weep. (Teacher taught me)” and “I was not able to describe expression but now I can”.

Other students said writing feeling chains was a useful skill to learn. They felt that when they wrote compositions, they could include the words and idioms the teacher had taught them. They were also able to help their friends describe feelings as well as expressions. Most importantly, one high-ability student said he or she was able to feel for the characters: “I can feel how the character feels, for example, angry, happy, sad. I have to think through like I am the character (in a dream)”.

When students were clear about how a person’s feelings affected his/her expressions, and if they had the vocabulary, they were able to write feeling chains. If students could systematically organize cause and effect components of a feeling chain in their mind as well as retrieve the relevant vocabulary, they could render their thoughts. If I could study students’ mental representations of feeling chain, then I assume that I should be able to design better intervention to scaffold the students in writing feeling chains. The following is an exploration of an ideal mental representation for feeling chain based on which future interventions could be formulated.

Cognitive explanation on why weaker students had difficulties writing feeling chains.

The way students mentally represent feeling chains affects the way they write their composition. By understanding their existing mental representations, the teacher can target for improvement in future interventions. In the current study, weaker students constructed incomplete mental representations of feeling chains. A complete mental representation of a feeling chain would include a feeling which was the cause and an expression, which was the effect. They would need to have a *cause* node which comes before an *effect* node. The two had to be linked in that order. The weaker students did not seem to have a cause node in their mental structure. Some

might have several nodes in their mental representations but these nodes did not have a causal relationship. Moreover, those with mental construction of cause and effect nodes might not have the vocabulary to fill in the nodes.

Future intervention can focus on helping students build the nodes and causal links cognitively. Activities such as watching video clips to identify feelings; the expressions as a result of the feelings, feeling and expression vocabulary would help the students to write feeling chains. Also, the students can play the Chinese game in the e-portfolio which will familiarize them with the feeling and expression vocabulary. Other more time consuming activities such as role-playing and drama to immerse the students in a Chinese environment would also be effective.

In the following paragraphs, I compare the number of feeling chains in three compositions written right through the whole academic year so that we may know whether students had written more feeling chains and if so, how students with different ability fared in their writing over time.

Statistical analysis of feeling chain micro-writing skill.

The feeling chain strategy was not an easy skill for the students to master as it required good basic language skills to apply it well. Did students indeed write more feeling chains over time? It was therefore necessary to run a statistical analysis to find out. The number of feeling chains was compared for the pre-test, Compositions 5 and 9. I conducted a repeated measure ANOVA. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .74$, $\chi^2(2) = 5.52$, $p = .06$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed. It follows that the test scores for the three tests differed significantly, $F(2, 40) = 12.51$, $p = .001$. $\eta_p^2 = .39$ (see Table 7.5). Post hoc pairwise

comparisons showed that students wrote significantly more feeling chains in Compositions 5 and 9, as compared to the pre-test. The results provided support that the feeling chain intervention was effective. It had helped the students write more feeling chains over time.

Table 7.5

Descriptive Statistics for the Number of Feeling Chains Written in Three Compositions and P Values for Pairwise Comparisons

Composition	M	SE	Pre-test	Composition 5
Pre-test	.43	.11		
Composition 5	1.62	.23	.001*	
Composition 9	2.00	.35	.001*	.29

Note. N = 21. $\alpha = .05$, * = significant difference

Was there a difference in performance by high-, medium-, and low-ability students in writing feeling chains? Descriptive statistics (see Table 7.6 and Figure 7.13) showed that high-ability students wrote increasingly more feeling chains over time and they wrote more feeling chains as compared to medium- and low-ability students.

Table 7.6

Mean Number of Feeling Chains Written by Different Ability Students Over Time

Level	Composition	M	SE
High	Pre-test	.58	.14
	Composition 5	2.00	.30
	Composition 9	2.83	.38
Medium	Pre-test	.14	.18
	Composition 5	1.14	.39
	Composition 9	1.14	.49

Low	Pre-test	.50	.35
	Composition 5	1.00	.72
	Composition 9	0	0

Note. $N = 21$, $n_H = 12$, $n_M = 7$, $n_L = 2$.

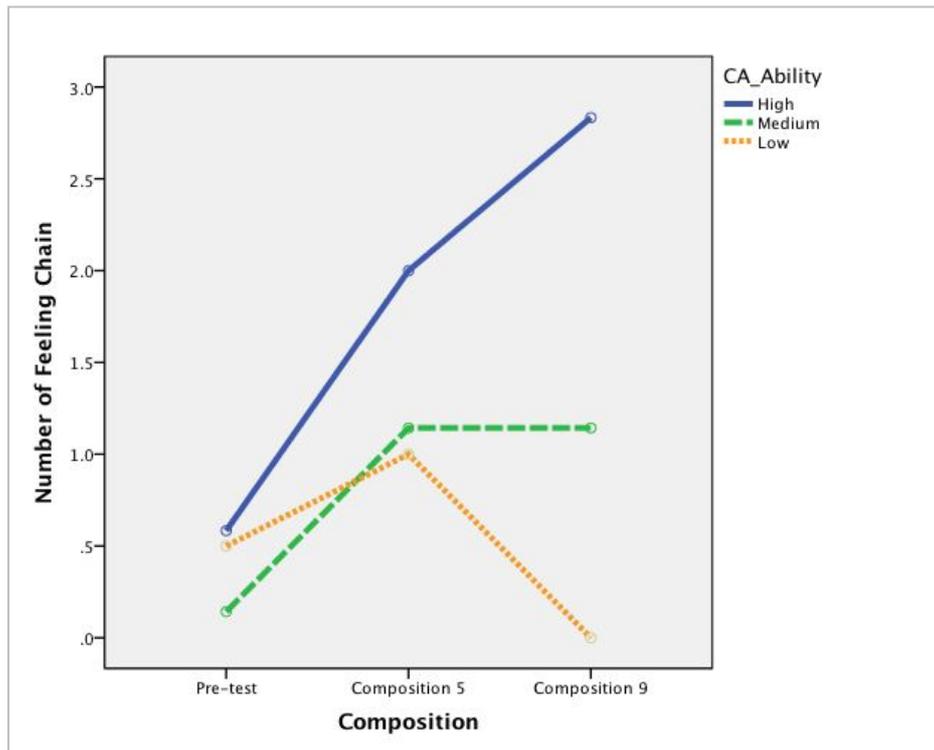


Figure 7.13. The number of feeling chains written over time by high-, medium-, and low-ability students.

A one-way between groups ANOVA was conducted to find out if the feeling chain writing strategy selectively benefitted different ability students. The total number of feeling chains written by each student was computed. The data were analyzed by the ANOVA procedure.

Results showed that higher-ability students wrote more feeling chains than lower-ability students, $F(2, 18) = 9.47$, $p = .002$. Post hoc pairwise comparisons showed that high-ability students wrote more feeling chains than medium- and low-ability students. Medium- and low-ability students did not differ in the number of feeling chains they had written (see Table 7.7). Results suggested while the

intervention was effective for high-ability students, more scaffolding is needed for medium- and low-ability students.

Table 7.7

Descriptive Statistics for the Total Number of Feeling Chains Written by Different Ability Students and P Values for Pairwise Comparisons

Composition	M	SE	High	Medium
High	5.42	.36		
Medium	2.43	.84	.004*	
Low	1.50	1.50	.02*	.77

Note. N = 20. $\alpha = .05$, * = significant difference

Did students of different abilities write more feeling chains over time? One-way repeated measures ANOVA were conducted on the high- and medium-ability students to see what was happening on their feeling chain performance over time. This analysis was not conducted on the low-ability students as there was not enough students in this category to run it.

The one-way repeated measures ANOVA on feeling chain performance over time for high-ability students was conducted with $W = .38$, $\chi^2(2) = 8.9.61$, $p = .008$, which indicated that the assumption of sphericity had been violated. Therefore, degrees of freedom would have to be corrected. In this case, the epsilon values from Mauchly's test values are .62 and .66, both were lower than .75. As such, the Greenhouse-Geisser estimate of sphericity corrected value ($\epsilon = .62$) is used.

It follows that the scores for the three compositions differed significantly, $F(1.24, 13.60) = 14.89$, $p = .001$. $\eta_p^2 = .58$ (see Table 7.8). Post hoc comparisons show that high-ability students wrote significantly more action chains in Compositions 5 and 9, as compared to the pre-test. The results suggested high-ability

students had mastered the feeling chain strategy and could apply them steadily in their compositions.

Table 7.8

Descriptive Statistics for the Number of Feeling Chains in Three Compositions and P Values for Pairwise Comparisons for High-ability Students

Composition	M	SE	Pre-test	Composition 5
Pre-test	.58	.15		
Composition 5	2.00	.17	.001*	
Composition 9	2.83	.41	.002*	.35

Note. N = 12. $\alpha = .05$, * = significant difference

A one-way repeated measures ANOVA on feeling chain performance over time for medium-ability students was conducted with $W = .92$, $\chi^2(2) = .40$, $p = .82$, which indicated that the assumption of sphericity was not violated.

Results showed that scores for the three compositions did not differ significantly, $F(2, 12) = 2.21$, $p = .15$. $\eta_p^2 = .27$ (see Table 7.9). Although medium-ability students wrote more feeling chains over time, the number of feeling chains they had written was not large enough to reach significant level. Results again indicated that the feeling chain writing strategy benefitted high-ability students than medium- and low-ability students. This could be due to their weaker basic language skills and therefore they could not apply the writing strategy. More scaffolding is needed to increase their vocabulary and strengthen the mental links between feelings and expressions.

Table 7.9

Descriptive Statistics for the Number of Feeling Chains in Three Compositions and P Values for Pairwise Comparisons for Medium-ability Students

Composition	M	SE	Pre-test	Composition 5
Pre-test	.14	.14		
Composition 5	1.14	.55	.47	
Composition 9	1.14	.46	.33	1.00

Note. N = 7. $\alpha = .05$, * = significant difference

High-ability students wrote many more feeling chains that contributed to the significant number found in Compositions 5 and 9. While medium-ability students maintained the amount of feeling chains they wrote in Composition 9, low-ability students did not write any. It indicated that the low-ability students had not internalized the strategy. The reason that medium- and low-ability students did not adequately apply this strategy could be because they were struggling with the basic language skills. They either found it too difficult to write feeling chains due to inadequate command of the language or their attention was focused on applying basic sentence structure to express themselves. In future intervention, teachers should both scaffold medium- and low-ability students to write *more* feeling chains and help them improve their basic language skills.

As discussed earlier, students could describe dialogues or monologues with feeling chains to improve their vividness, e.g., “He shouted angrily, ‘let me go!’” instead of “He said, ‘Let me go!’”. Students were also instructed they could describe dialogues with feelings *or* expressions, instead of using the more complex feeling chains, e.g., “He shouted, ‘let me go!’” I conducted the following statistical analysis to find out if students had improved in describing dialogues and monologues more vividly after learning the feeling chain writing strategy.

Statistical analysis of setting tone of dialogues or monologues with feeling or expression words.

Only half of the high-ability students and two low-ability students set the tone of dialogues and monologues with feeling chains. It showed that the students had not internalized the skill to describe dialogues or monologues with feeling chains. This was not surprising as the teacher did not actively scaffold her students in doing so. She felt that it was a difficult task for the students to do. She merely introduced it and hoped that students could continue with their learning of this writing skill in Primary 5.

However, many students had learned to set the tone of dialogues and monologues with either feeling or expression words. It is therefore worthwhile to find out if it had indeed increased over time. The number of dialogues and monologues with feeling or expression tone setting was compared for the pre-test, Compositions 5 and 9 using repeated measures ANOVA. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .84$, $\chi^2(2) = 3.37$, $p = .19$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed. It follows that the test scores for the three tests differed significantly, $F(2, 40) = 6.94$, $p = .003$. $\eta_p^2 = .26$ (see Table 7.10). Post hoc comparisons show that the students set the tones for dialogues or monologues with feelings or expression words significantly more in Compositions 5 and 9, as compared to the pre-test. Next, I would like to find out if all students set the tones of dialogues/monologues or only the higher-ability students.

Table 7.10

Descriptive Statistics for the Number of Dialogues and Monologues with Tone Settings in Three Compositions and P Values for Pairwise Comparisons

Composition	M	SE	Pre-test	Composition 5
Pre-test	.29	.12		
Composition 5	1.76	.38	.002*	
Composition 9	1.33	.45	.04*	.20

Note. N = 21. $\alpha = .05$, * = significant difference

Differences in dialogue/monologues tone setting among high-, medium-, and low-ability students.

A between groups ANOVA was conducted to find out if different ability students could set tones of their dialogues/monologues with feeling or expression words. The total number of dialogues/monologues each student had written over the year was computed. Then the data were analyzed by the ANOVA procedure. Results indicated that there was no difference in the amount of dialogues/monologues with tone setting written by students of different abilities, $F(2, 18) = .84, p = .45$ (see Table 7.11). Students of all ability levels were able to set the tones of their dialogues/monologues with feeling or expression words.

Table 7.11

Descriptive Statistics for the Total Number of Dialogues/Monologues with Tone Setting Written by Different Ability Students and P Values for Pairwise Comparisons

Composition	n	M	SE	High	Medium
High	12	4.17	1.27		
Medium	7	2.00	.84	.42	
Low	2	3.50	1.50	.97	.86

Note. N = 21. $\alpha = .05$, * = significant difference

The next question I wish to find answer for was did higher-ability students write more dialogues/monologues with feeling or expression words over time? One-way repeated measures ANOVA was conducted each on the high- and medium-ability

students to see what was happening on the tone setting performance. This analysis was not done on low-ability students as there was not enough students in this category to run it.

One-way repeated measures ANOVA on high-ability students was conducted with $W = .86$, $\chi^2(2) = 1.52$, $p = .47$, which indicated that the assumption of sphericity had not been violated.

It follows that the scores for the three compositions differed significantly, $F(2, 22) = 4.77$, $p = .02$. $\eta_p^2 = .30$ (see Table 7.12). Post hoc pairwise comparisons show that the high-ability students were able to set tones of dialogues or monologues with feeling or expression words in Compositions 5 compared to the pre-test. The results supported the findings from the analysis of the compositions. However, the performance did not continue to increase after Composition 5, indicating the skill has not been internalized. This is not surprising as the teacher had not spent much time scaffolding this strategy as she could continue the instruction in Primary 5.

Table 7.12

Descriptive Statistics for the Number of Tone Settings for Dialogues or Monologues in Three Compositions and P Values for Pairwise Comparisons for High-ability Students

Composition	M	SE	Pre-test	Composition 5
Pre-test	.25	.18		
Composition 5	2.25	.61	.04*	
Composition 9	1.67	.76	.27	.92

Note. N = 12. $\alpha = .05$, * = significant difference

A one-way repeated measures ANOVA on tone setting performance over time for medium-ability students was conducted with $W = .33$, $\chi^2(2) = 5.58$, $p = .06$, which indicated that the assumption of sphericity was not violated.

Results showed that scores for the three compositions did not differ significantly, $F(2, 12) = 2.91, p = .09, \eta_p^2 = .33$ (see Table 7.13). Although medium-ability students set tones of their dialogues or monologues over time, the number had not reached significant level.

Table 7.13

Descriptive Statistics for the Number of Dialogues/Monologues with Tone Settings Written by Medium-ability Students in Three Compositions and P Values for Pairwise Comparisons

Composition	M	SE	Pre-test	Composition 5
Pre-test	.29	.18		
Composition 5	.86	.14	.09	
Composition 9	.86	.26	.52	1.00

Note. N = 7. $\alpha = .05$, * = significant difference

High-ability students wrote many more dialogues and monologues with tone setting, they contributed to the significant number found in Compositions 5 and 9 compared to the pre-test. Although the teacher encouraged her students to set the tone of their dialogues/monologues, she realized that it was difficult for medium- and low-ability students to do it. But she noticed that students were eager to write simple dialogues/monologues as they had the social experience to support their writing. Therefore, she encouraged them to write as many dialogues/ monologues and did not emphasize setting tones for dialogues and monologues.

Student performance in writing dialogues and monologues.

Dialogues/Monologues Analysis.

The students could write dialogues and monologues fairly easily as they had personal experiences to support their writing. For example, they were familiar with how their parents reprimanded them, how to apologize, how their teachers encouraged them, or, how they argued with their peers. As such, the students already had mental representations of dialogues and monologues for many social situations. All they needed to do was to retrieve them for their composition. As such, there were no learning activities on writing dialogues or monologues.

However, the quality of the dialogues and monologues still depended on the language ability of the students. Higher-ability students, who tended to read more or had tuition at home, had richer representations. They could write dialogues or monologues with better vocabulary, more elaborations, or better ways of expressing themselves. Lower-ability students would tend to write simple, or unrefined dialogues. The following is a comparison of the dialogues written by three students with high-, medium-, and low-abilities. The dialogues were extracted from Composition 5 which was about the cleaner who had broken his boss' expensive vase (see Table 7.14).

Table 7.14

Comparison of the Quality of Dialogues Written by High, Medium, and Low-ability Students

Ability	Dialogue	Remark
High (JC)	“Uncle Lin, don’t be scared. It was not intentional. The boss won’t reprimand you.”	JC could write an elaborate dialogue with a comforting tone. It indicated her enriched social experience and ability in empathizing with others. She had created an imaginative and detailed

		mental representation of the story.
Medium (TRT)	Old Qian said: “the boss will surely be very angry, maybe he will deduct your salary.” Ah Ming said: “far more than that, you may be fired!”	TRT wrote a fairly extended dialogue to illustrate what was depicted in the picture, i.e., people commenting away about the broken vase. It was fairly imaginative too. But she did not give considerations to the feelings of the poor cleaner who broke the expensive vase. She had expressed herself at a more superficial level than JC.
Low (TT)	“Grandpa Wang you are in trouble. This is the boss most beloved vase.	TT wrote a simple dialogue that reflected what she thought the colleagues would say. She wrote it out of her own limited social experience and vocabulary.

The teacher’s comments about the effectiveness of writing dialogues and monologues.

The teacher said that there were “some common problems include incorrect punctuation with relation to dialogue and monologue. This is still something where students need to be reminded on” (May 16, 2011). However, she continued, “with dialogues and monologues, their compositions are more vivid, the length of the composition also increases” (May 16, 2011). The teacher’s feedback indeed summarized the findings from my analysis of the compositions. First, this was an easy

topic as the students already had social experiences in similar situations to support their writing:

I think this is the easiest topic to master. As dialogues and monologues are in their daily lives, students are better able to write them out in their composition. The students were quite good in dialogue and monologue, being able to write out relevant content related to the story. They like this because they find it easier to apply in their compo (May 15, 2011).

There were also differences in the performance of the different ability students due to their basic writing ability:

The H and M students write more dialogue as compared to L. The main cause is still the foundation of the language. H and M students can express themselves better. Even so, this is one topic which you can see the L applying the most in their compo (May 16, 2011).

Students' comments about the effectiveness of writing dialogues and monologues.

Some of the students thought they did best in writing dialogues and monologues. The high-ability students said: "I use it often and I can write long, meaningful dialogues; Teachers' marks also reflect I do well in these."

Medium-ability students were confident about writing dialogues and monologues: "I know where in the pictures to add dialogues"; "My dialogues are quite interesting"; "I will try to write more dialogue; punctuation of dialogues has improved". Another medium-ability student said: "my dialogues are quite long but they are simple. Able to add points to the composition". They also found writing dialogues and monologues easy: "Sometimes include dialogue, not difficult"; "I already know [how to write dialogues] so not useful for me"; "I know where in the pictures to add dialogues, especially after viewing the pictures"; and "I know what to say after thinking". They were also able to help their friends in punctuation, which

incidentally, the teacher thought the students needed to pay more attention to. Another medium student said he was able to learn from friends' suggestions via peer-editing where they added dialogues for him.

Low-ability students were also positive about writing dialogues and monologues, e.g., "I know where to add dialogues, I know what to say - will write and think along the way". However, some were still not confident: "a little. Sentences did not flow; don't know what to write". From the comments of the low-ability students, we know that they need help in fundamental skills and they need engagement in different social contexts to form more mental representations of what to say in various situations. In addition, the students, regardless of ability, believed they could help their peers in writing dialogues: "I change their dialogues - a bit".

Statistical analysis of dialogue and monologue performance.

To find out if the students wrote more dialogues and monologues over time, I compared the quantities of dialogues and monologues for the pre-test, Compositions 5 and 9 with repeated measures ANOVA. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .93$, $\chi^2(2) = 1.34$, $p = .51$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed.

It follows that the test scores for the three tests differed significantly, $F(2, 40) = 7.21$, $p = .002$. $\eta_p^2 = .27$ (see Table 7.15). Post hoc comparisons showed that the students wrote more dialogues and monologues in Compositions 5 and 9, as compared to the pre-test. The results supported the findings from the teacher's and the students' feedback that dialogues and monologues were easy for them to write.

Table 7.15

Descriptive Statistics for the Number of Dialogues and Monologues in Three Compositions and P Values for Pairwise Comparisons

Composition	M	SE	Pre-test	Composition 5
Pre-test	1.14	.20		
Composition 5	3.29	.51	.001*	
Composition 9	3.00	.67	.01*	.63

Note. N = 21. $\alpha = .05$, * = significant difference

Did the higher ability students write more dialogues/monologues over time?

The total number of dialogues/monologues written by each student over the year was computed. Then the data were analyzed using the one-way ANOVA procedure. Test of homogeneity of variance indicated it was not violated ($p = .19$).

Results showed that the number of dialogues/monologues written by students did not differ over time, $F(2, 18) = .66, p = .53, \eta_p^2 = .07$ (see Table 7.16). Students of all ability levels wrote about the same amount of dialogues/monologues over time. Results supported the teacher's observation that students of all ability levels were enthusiastic about writing dialogues.

Table 7.16

Descriptive Statistics for the Total Number of Dialogues/Monologues Written by Different Ability Students and P Values for Pairwise Comparisons

Composition	n	M	SE	High	Medium
High	12	8.50	1.76		
Medium	7	5.86	.94	.52	
Low	2	6.50	.50	.86	.99

Note. N = 21. $\alpha = .05$, * = significant difference

Besides writing dialogues/monologues to improve the vividness of compositions, students could also describe actions in detail to improve the vividness

of their writing. Thus, action description was an important component of my two-stage writing model for writing vividly (see Figure 4.8). Action description could be achieved through scaffolding students to apply the action chain micro-writing skill.

Action chains.

The teacher scaffolded students to learn the action chain micro-writing skill so that they could write more vivid actions. The teacher first showed students how she expanded an action into three closely related actions. Then she chose an action such as “ride a bike” for the students to brainstorm for closely related actions. According to the teacher: “The brainstorming activity is conducted as a whole class where better ability pupils provide their observations of certain actions and teacher assists in recording the actions into words” (April 7, 2009). The teacher then drew three boxes and guided the students to fill in the boxes with one closely related action each. Then, she asked each student to write a sentence with the three closely related actions. The final sentence writing activity was an important step to tell the students it was not enough to break down an action into three actions. They had to write a sentence with the three closely related actions, which was the goal of the exercise.

Writing action chains in collaborative mind maps.

The teacher also scaffolded the students to expand actions into related actions via the ICT-mediated collaborative mind map. When scaffolding the students via the collaborative mind map, they were grouped up and each group was given a phrase to expand into related actions. Each group had their own mind map and every member in the group could edit it on their own computer screen and they could edit one another’s work. The teacher commented how she grouped the students:

For this activity the pupils are grouped into small groups of 3 or 4. Each group works on one mind map. In their group, there is a mixture of weak and strong pupils. This is to enable the strong pupils to guide the weaker ones during

discussion, allowing the weaker pupils to model and learn from them (Teacher's note, April 18, 2009).

Challenges in implementing the collaborative mind map.

They have to be considered before effective scaffolding can take place. ICT was introduced to enable collaboration among peers. Students could work on the same collaborative activity on their own computer, edit one's own work, comment on one another's work, and even collaborate with others from different geographic locations. However, the teacher faced technical challenges when she introduced the collaborative mind map to the class. They are:

1. The students had problems inputting text due to their weak pinyin skills. The teacher reflected after her first collaborative mind map activity:

If this lesson is on pen-and-paper, I think the children will be able to complete the activity faster than on computer. Communication will be more direct as they can talk and discuss face to face. Weaker pupils are also able to contribute more as they are not deterred by their weak typing/pinyin ability.

It was slow. They took 1 hour to work on one mindmap template. (April 18, 2009)

As such, the students were unlikely to discuss online as their typing was slower than face-to-face discussion: "Mind map collaboration function is restricted to contribution of ideas for now. Discussions are minimal as pupils rather walk to their friend to tell them what they want to say" (April 25, 2009).

2. The students lacked training in how to collaborate with peers. They were not used to work collaboratively. For example, the teacher noted that:

There are some chatting asking group members the location they are at as there are many nodes and some pupils might be leaving comments on certain nodes. Comments are mainly confined to agreeing on the tiny actions and looking for each other in the nodes. Suggestions of good tiny actions are little (April 18, 2009).

The teacher further commented about one weak student in her notes:

One weak pupil ZZ is more interested in arranging the nodes, which will affect fellow group mates who are working on the node. I have to supervise him constantly, helping him with the pinyin, making sure he is on task (April 25, 2009).

Due to the lack of collaboration, the teacher then changed the intervention and asked each in the group to create their own nodes and write their own sentences. The advantage was that they would still see their peers' work on screen and could learn from one another:

By pulling out individual nodes, there are lesser disruptions to the activity. Pupils are working on their own and collaboration is at the end of the activity where they can look at their friends' nodes, pick and choose 3 tiny actions to form a logical sentence. [However,] Pupils need to discuss more. By using this new method, disruptions / useless comments are reduced, but this also reduces the communication between the members. We have to think of a better use of the mind map to encourage **COLLABORATION**. (April 25, 2009)

Given the short timeframe, the teacher could only change the way the students work with one another so that she could still maintain some form of collaboration. However, that would not be exploiting the potential of collaboration. This limitation may be addressed by training the students to discuss and negotiate with their peers. If the students can see the benefits of coming up with good work through discussion, they will gradually learn to discuss in a meaningful manner.

3. The students were not familiar with features on the collaborative mind map software. The teacher commented:

Being not familiar with the functions of the Silverlight mind mapping tool, the children faces technical problems like deleting of nodes after discussion through the comments function. They also need top toggle between "review

on" and "review off" to comment or to update the nodes. These technical issues gave pupils a hard time and in turn it is us who need to figure the issues raised (April 18, 2009).

The teacher therefore saw the need to learn about the features of the system and demonstrate the system to the students before the lab session:

I need to set aside time to go through the technical functions required whenever they try out something new. It will also be good if I can do a live demonstration for them. This will reduce the number of queries during the actual activity itself (April 18, 2009).

These issues pointed to the need to prepare the students before starting the learning activities. Pinyin is a long-term issue that has to be addressed since Primary 1. It has to be reinforced continually over the years. If the students could not type Chinese fast, they would not only be slow in doing their exercises, they would also not be able to discuss or comment online. The Chinese game used in this study is a good platform to engage the students to learn how to type. Moreover, the teachers need to demonstrate how to use the system before the actual lab session. Also, the teacher can conduct a practice session for the students to familiarize with the system before the writing activity. In addition, a short course on Internet etiquette and how to collaborate with peers will be very helpful for the students. The Chinese Subject teacher does not have to conduct this course. It can take the form of an enrichment course. These courses are usually conducted by outside experts.

Despite the initial challenges, students benefited from this technology over time, according to the perceptions of students and the teacher outlined below, notes taken by the researcher and examination of student work. Perceptions of the teacher's and students' on the effectiveness of the collaborative mind map to scaffold writing action chains are as follows:

The teacher's comment on the effectiveness of the collaborative mind map software.

After the teacher had conducted the mind map activities for the students to generate synonyms several times, she found that the students would gradually adapt to working with peers closely online. The software was able to:

1. Engage students. The teacher noted that “pupils are excited about the activity.

Though it's their first time using the mindmapping function, most of them are patient and are willing to try out the functions” (April 18, 2009). She further noted that:

Though ICT, they take longer time to complete the assignment, however, I can see that the pupils are more interested in ICT based than pen-paper based. Pen-paper though discussion is face-to-face, weaker pupils may not open their mouth to contribute. But by this new method of pulling individual nodes, the weak pupils are forced to contribute their own nodes. Even if they are just copying from the stronger team mates, at least that action is learnt and absorbed. (this is modeling) (April 25, 2009).

2. Improved collaborative work. After the students had more practiced using the mind map software, they improved in collaborative work. They would collaborate verbally and then make changes online. This is reflected by the teacher's comments after the second mind map activities:

I realised this time, there are verbal communication between stronger pupils. They are sharing ideas how they can improve on the sentence. Communication is verbal which is easier for them, instead of expressing what they want to say through typing in the comments column (April 25, 2009).

In addition, ICT enabled the students to collaborate from different locations:

However, using ICT allows children to work on the assignment anywhere.

One kid was unwell and stayed at home. However, during the ICT lesson, he

logged onto the website and was able to communicate/discuss with his group mates and complete the assignment with them (April 18, 2009).

3. Empowered students in their learning. The collaborative mind map empowered the students to be independent in learning. The teacher said in her notes: “I allow the better pupils to have the freedom of completing the activity independently, only to show me the outcome of the assignment before shutting down” (April 18, 2009). It also enabled the teacher to teach at a higher, or, conceptual level: “...I only help them through simple verbal prompts like you can think of how to expand this action etc.” (April 25, 2009). The teacher summarized her teaching experience via the collaborative mind map as follows:

We made use of the mindmap to let students accumulate descriptive vocabulary and also work on action chain. Because their peers' work are reflected real-time on their screens, the H students are able to learn independently, by reading other peers' work then reflect and amend their own sentences. I am able to then spend more time on the W students, helping them on the action chain sentence making (July 2, 2011).

The teacher's comments on the effectiveness of the action chain micro-writing skill.

The teacher perceived the action chain intervention to be the most difficult writing skill to scaffold. It was because the students had to visualize the unfolding of an action which was something they had never learn to do before. Furthermore, they had to describe the related actions with words that they most likely did not have in their vocabulary.

Contrary to her belief, the students performed surprisingly well in applying the action chains writing skill. The teacher was also amazed by her students after she introduced action chains to them for the first time: “Some of the pupils have already included simple action chains in their composition” and “the weaker pupils actually

able to tell you the small actions but their usage of words limited, hence teacher needs to provide more prompts on this” (April 7, 2009). The teacher also noted that “all the pupils are on task and are able to come up with 3 tiny actions to support the big action. They are also able to link the tiny actions into a sentence, forming an action chain” (April 18, 2009).

Students’ comments on the effectiveness of the action chain micro-writing skill.

Those high- and medium-ability students who could write action chains showed confidence in their abilities: “I am able to split the action into smaller actions”; “[They] make composition more interesting plus get more marks”; “get to know many action vocabulary (more exposure to them)”; “Teachers' marks also reflect I do well in these”; “I can imagine the actions; and I have the vocabulary to write action chains”. On the other hand, many students commented: “very hard, I was not able to write them. It is too difficult. Too difficult and always get it wrong”.

What is it then that caused everyone to perceive action chain as a difficult writing skill to master? The students told us several explanations: (a) they were not able to visualize the unfolding of an action and as such, they were not able to write the three closely related actions. A student commented: “I can only think of two actions”. Other comments included:

I can’t really see it in my mind’s eye so I don’t have anything to write about. I know where to add action chain but am unable to write as specifically and I am not able to break down [an action] to tiny actions.

These comments were not made by the low-ability students alone. High and medium-ability students also shared the same views, (b) the students did not have the vocabulary to write detailed actions, as a high-ability student commented, “I need more vocabulary”, (c) they did not know where to add action chains, that is, they

could not identify actions to write in the pictures: “I don’t know where in the pictures to add actions”.

Students found it difficult to write action chains. Did they actually write them in their compositions? Let us take a look at the compositions in the e-portfolio to find out how they performed in writing action chains.

Action chain performance in the compositions written in the E-portfolio.

Students did well in applying the action chain writing skill to describe actions. In Composition 5, even the low-ability students could break down an action into at least four closely related tiny actions. For example, JN, a low-ability student, wrote (underlining indicates closely related actions): “This day, When Grandpa Wang was sweeping the floor, he accidentally knocked on the metal cabinet. The very precious vase was toppled. ‘Clang’ that vase fell on the floor”. Another low-ability student TT described the incident in this manner: This day, Grandpa Wang reached the office. He went to sweep floor at once. When he swept till the boss’ office, grandpa Wang swept till he reached the boss’ cabinet. He stepped back, the vase dropped, and broke. BL, another low-ability student, wrote a six-component action chain: This day, old grandpa as usual, was sweeping at the boss’ office. Accidentally stepped back, his buttock knocked into the metal cabinet, the boss’ favorite vase was knocked over and broken. The glass shattered on the floor.

High- and medium-ability students could write better quality action chains. For example, JC could write action chains with logical flow and imagination (underlining indicates closely related actions):

This day, Uncle Lin was sweeping the floor in a corner of the office. He did not notice that behind him was a cabinet. On top of the cabinet was a vase, that vase was the boss’ beloved vase. Uncle Lin accidentally knocked over the vase. The vase dropped and shattered with a “clang”.

A medium-ability student AQ also wrote with better fundamental skills than the low-ability students (underlining added to indicate closely related actions):

That day, Uncle Wang, as usual, went to the office at 7 o'clock to clean up. Uncle Wang went to the boss' office to sweep the floor. When he swept, backed up a step, the back knocked into the cabinet accidentally, the vase on top of the cabinet dropped, the vase shattered with a "clang".

High-ability students were able to apply the action chain writing skill to describe actions in detail and with imagination while Medium-ability students' descriptions were effective in 'good' Chinese and with some imagination. Although low-ability students were able to breakdown an action into a few closely related actions and described them in 'simple' Chinese, they missed including relevant events. As a result their description did not make sense in some places.

Since action chain was perceived to be difficult to write, why was it that the students were able to write good action chains in Composition 5? It could be because the teacher anticipated the challenges the students faced and helped them to resolve the issues by first, letting the students practiced writing action chain before the actual composition. The teacher explained:

We made use of Silverlight mind mapping to do brainstorm for tiny actions for some big actions like fighting, falling etc. With the tiny actions, they will put them together and form sentences (May 2, 2011).

As the students worked on writing action chains via collaborative mind maps just before this composition, the writing skill was therefore fresh in their mind and they were able to render it during the composition.

The teacher included appropriate vocabulary for writing the action chain as helping words. They were words like sweeping the floor, metal cabinet, favorite vase,

backing up, and accidentally. By using these words to form sentences, the students could write an action chain.

Hints were given and the teacher inserted an instructional prompt at the appropriate textbox to tell the students where to write the action chain. In addition, the action was indicated in the picture. The students knew exactly where to insert the action chain.

Had the students internalized the writing of action chain? Let us take a look at whether the students wrote action chains in Composition 9, which was the last composition written for that year. In the pictures and the e-portfolio, there were no hints given to the students as to where to write an action chain. If the students could write action chains in this composition, then it would provide support for the claim that the students had internalized the writing of action chains.

In this composition, there were no actions in the pictures. As such, the teacher did not expect the students to write action chains. However, the students could still include a sequence of events (event chain) in their compositions. The teacher would regard this as a natural extension of writing action chains as they could not be clearly demarcated from action chains in the first place. In fact, in action chain writing exercises, the teacher did not differentiate between the two. For example, the students could write an action chain or an event chain for the phrase *picking up a wallet from the floor*. The action chain version could be: *She spotted the wallet on the floor. She looked left and right several times, walked towards it, bent down and picked up the wallet quickly.* An event chain could be: *She spotted the wallet. She went over to pick it up from the floor. Then she made her way to the police station to hand it over to the police.* The teacher would award both with higher vividness marks.

Let us take a look at the work of the students to see whether they were able to write event chains. Low-ability student TT described what Ming, the character in the story, did when he got home (underlining indicates components in the event chain):

“This day, after school, Ming reached home, cast his schoolbag aside, then he switched on the TV to watch cartoon”. Another low-ability students wrote JN a combination of event chain and action chain: “This day, after school, Ming, once reached home, went to shower and eat lunch immediately. After lunch, he dashed to watch TV program. He switched on the TV, unable to take his eyes off the TV program”.

AQ, a medium-ability student, wrote this event chain (underlining indicates components of the event chain): “This day, after school Ming, upon reaching home, cast his school bag aside, turned on the TV, with eyes wide open, began to watch TV programs”.

TXH, a high-ability student, wrote a long event chain: “This day, after school, Ming got back from school. Once he reached home, he immediate put his school bag down, switched on the TV then sat on the sofa to watch TV and be enthralled by the program”.

The work of the students in Composition 9 has provided us with evidence that the students had acquired the skills of writing closely related actions or events. We can clearly see the sequence of events in students of all ability levels. Although it was originally thought that this was the most difficult micro-writing skill for the students to learn, it turned out that the students could acquire this skill in a short time frame.

Overall students were able to apply the action chain micro-writing skill. However, medium- and low-ability students would need scaffolding to help them

describe the closely related actions in an action chain. It was because they lacked the vocabulary or sentence structure for writing effectively.

Although the action chain micro-writing skill can be learned quickly, the teacher may have to provide regular opportunities for the students to write action chains. This will reinforce them to automatically identify the places where they should add an action chain, visualize how an action unfolds, and use appropriate vocabulary. The weaker students must learn as many actions words. This can be enriched through the Chinese language game. In the following section, I will discuss a few innovative methods in order for students to acquire and internalize action chain micro-writing skills.

Methods to help students in writing action chains.

Both the teacher and the students provided their views on how to improve the writing of action chains. The students said that there was not enough time dedicated to the action chain activities. A high-ability student commented: “a. too little time spent, a little rush as we cannot discuss/elaborate much in class” and “b. too few actions are discussed”. There was also “too short a time to absorb learning”. The teacher confirmed this: “Due to time constraint, I was not able to get pupils to act out the actions. I only got the pupils to think and give me suggestions of small actions” (April 7, 2009). It may be necessary to set aside more time to go through actions in future interventions. As time is limited in the composition lessons, the teacher will need to do this in the regular Chinese lessons. When she comes across actions in the textbook, she can let students act them out and describe the closely related actions. Other suggestions on how to improve action chain writing from a high-ability student were:

Video will be able to help me, and [there was] little time spent/taught this in school so when reading at home I will go and find out more on action chain

which make me more interested in this part; mom will guide me/teach me to write in details (through thinking).

Video is an ideal tool to show how an action unfolds and the teacher can pause at the appropriate frame and ask the students to write a description about it. In future, a mobile application will be included in the intervention for the students to capture video clips and annotate frames. The students can see clearly how actions unfold and write descriptions about closely related actions.

In addition, the teacher provided an excellent suggestion which would enable the students to know what good action chains are: “The example from the pupils' composition became an introduction to the lesson. I explained to the pupils what action chain is and that for vivid actions, they should observe more and break the actions down into smaller actions” (April 7, 2009). Good example should always be collected to scaffold the subsequent batches of students. These are valuable resources that can help students grasp what the teacher means by writing action chains. The teacher and I worked together to identify good resources. We hoped to achieve automatic retrieval of appropriate resources at the appropriate time to scaffold students toward writing better action chains. Such ‘adaptive’ scaffolding (Pea, 2004) will require long-term effort to achieve.

The following statistical analysis of students’ performance in writing action chains over time showed that students of all ability could write action chains.

Statistical analysis for action chains.

To find out if the students wrote more action chains over time, the number of action chains and event chains in the pre-test, Compositions 5 and 9 were compared. In Composition 5, there was a distinct action depicted in the one of the pictures. The action could be broken down to a series of tiny related actions. The teacher also

instructed the students where to include an action chain. In Composition 9, there was no such depiction in the pictures and the teacher also did not instruct the students to write an action chain. As the teacher also taught her students to expand an event into closely related events, the concept of action chain could be expanded to include writing a sequence of events.

I conducted a repeated measure ANOVA to compare the numbers of action/event chains written in the three compositions. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was significant, $W = .65$, $\chi^2(2) = 8.96$, $p = .01$, which indicated that the assumption of sphericity had been violated. Therefore, degrees of freedom would have to be corrected. In this case, the epsilon values from Mauchly's test values are .74 and .78, both very close to .75. As such, the Huynh-Feldt estimate of sphericity corrected value ($\epsilon = .78$) is used.

It follows that the number of action/event chains for the three compositions differed significantly, $F(1.57, 34.47) = 39.74$, $p = .001$. $\eta_p^2 = .64$ (see Table 7.17). Post hoc comparisons show that students wrote significantly more action chains in Compositions 5 and 9, compared to the pre-test. The results supported the findings from the analysis of the compositions that students were able to write action chains.

Table 7.17

Descriptive Statistics for the Number of Action Chains in Three Compositions and P Values for Pairwise Comparisons

Composition	M	SE	Pre-test	Composition 5
Pre-test	.00	.00		
Composition 5	1.00	.09	.001*	
Composition 9	1.13	.16	.001*	.42

Note. N = 23. $\alpha = .05$, * = significant difference

Differences in number of action chains written by high-, medium-, and low-ability students.

Did all students benefit from the action chain writing strategy and write more action chains? I conducted a one-way between groups ANOVA to find out. The total number of action chains written by each student was first computed. Test of homogeneity of variance was not violated ($p = .06$).

Results showed that there was no significant differences in the number of action chains written by different ability students, $F(2, 22) = 1.19$, $p = .33$, $\eta_p^2 = .11$ (see Table 7.18). Results suggested that students of all ability levels benefitted from the action chain scaffolding.

Table 7.18

Descriptive Statistics for the Total Number of Actions Chains Written by Different Ability Students and P Values for Pairwise Comparisons

Composition	M	SE	High	Medium
High	2.42	.36		
Medium	1.75	.16	.30	
Low	2.00	.00	.78	.92

Note. N = 23. $\alpha = .05$, * = significant difference

It is therefore safe to conclude that the action chain scaffolding in the writing program was successful in helping all levels of students describe actions vividly. All students wrote more action chains after the scaffolding and some students broke down actions into more than 3 closely related actions. Statistical analysis was required to find out if higher-ability students break down an action into more than three closely related actions. The total number of closely related actions was first computed for each student. Then the data were analyzed using the one-way between groups ANOVA procedure. The assumption of homogeneity of variance was not violated ($p = .07$).

Results suggested there was no difference in the number of closely related actions written over time by different ability students were $F(2, 22) = 2.16, p = .14, \eta_p^2 = .18$ (see Table 7.19).

Table 7.19

Descriptive Statistics for the Total Number of Closely Related Actions Written by Different Ability Students and P Values for Pairwise Comparisons

Composition	M	SE	High	Medium
High	9.83	4.80		
Medium	6.25	2.12	.12	
Low	8.00	1.00	.74	.78

Note. N = 23. $\alpha = .05$, * = significant difference

Analyses indicated that the action chain micro-writing skill was, contrary to our beliefs, not a difficult concept for students to learn and apply. From the teacher's observation, it seems that low-ability students did not have much of a choice but to write their action chains in awkward Chinese. Medium-ability students were precisely the group that would spend time trying to write better Chinese. As such, their mental effort and attention were directed at improving their basic language (e.g., write better

sentences, use more vocabulary) rather than writing actions chains. In future interventions, the teacher may want to consider using video annotation software that allows the students to annotate video frames. This will help medium-ability students focus on the closely related actions and write more descriptions and high-ability students to write more enriched action chains. However, for the weaker students, improving in their basic writing skills is still the key to better writing performance.

According to the two-stage writing model proposed in this study, the first stage was to help students in their basic writing skills. This would lay the foundation for them to write vividly. Vivid writing was the objective of the second stage of my writing model. To improve vividness writing, I proposed strategies to scaffold students in writing with better flow, identify relevant events in stories, and apply writing skills to write with richer descriptions. To improve the flow in compositions, I proposed a strategy of making sentence with linking words. To identify relevant events in the pictures, circling strategy was used. Finally, micro-writing skill strategy was included to help students better describe events, actions, dialogues/monologues, and emotions.

In the following section, I discuss whether these strategies have indeed helped students write better compositions in exams.

Statistical analysis of composition writing skill performance.

Content scores for composition examinations were the closest indicators of composition micro-writing skill performance. I compared content scores in three compositions, namely, the pre-test, mid-year exam, final exams to find out if writing skill performance had improved over time. Teachers assessed the compositions according to the Ministry of Education rubric in which ten marks were allocated for language performance and another ten, content. Content performance was assessed by

whether students had included relevant events in their compositions and whether they had vivid descriptions.

I conducted a repeated measure ANOVA to compare students' content performance over time. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .87$, $\chi^2(2) = 3.98$, $p = .14$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed.

It follows that content scores for the three compositions differed significantly, $F(2, 60) = 19.20$, $p = .001$. $\eta_p^2 = .39$ (see Table 7.20). Post hoc comparisons show that students did better in their in both the mid-year composition exam and the final exam, as compared to the pre-test. Similarly, they also did significantly better in the final exam content score as compared to the mid-year exam.

Table 7.20

Descriptive Statistics for the Content Scores in Three Tests and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Mid Term Exam
Pre-test	5.97	.26		
Mid-year Exam	6.45	.27	.04*	
Final Exam	7.07	.29	.001*	.01*

Note. N = 31. $\alpha = .05$, * = significant difference

The significant improvement in content performance in the mid-year exam over the pre-test could be attributed to the teacher's scaffolding of the circling strategy and the micro-writing skills. The circling strategy helped students include relevant events in the compositions and micro-writing skills enabled students to write more vividly.

The significant improvement in the final exam over the mid-year exam could be attributed to them having regular practice in the second half of the year. After the mid-year exam, the teacher let students practice regularly what they had learned in the first half of the year. The teacher called it the consolidation phase in which students practiced the skills until scaffolds for the writing skills were faded in the final exam. Content exam scores indicated that the consolidation phase was crucial in the scaffolding process as it had significantly improved the scores from the mid-year exam to the final exam. The results also supported the claims by the teacher and students that the compositions had improved in vividness. They also collaborated the findings from analyzing the compositions in the e-portfolio.

However, did all students improved at the same pace?

Content performance by ability.

To find out if different ability students performed differently in writing vivid contents, a mixed model analysis of variance was performed. In this analysis, the various tests was the within-subject factor and student ability was the between subject factor. The assumptions were not violated. Test of equality of covariance matrices of the dependent variables are equal across groups, *Box's M* = 12.22, $p = .61$.

Results indicated significant ability effect, $F(2, 28) = 24.00$, $p = .001$, $\eta_p^2 = .63$, meaning students with different abilities differed in content performance. Pairwise comparisons showed that high-ability students performed significantly better than medium- and low-ability students. Medium-ability students performed significantly better than low-ability students (see Table 7.21). The results indicated that high-ability students benefited significantly more than the medium- and low-ability students from the intervention. Medium-ability students also benefited significantly more than the low-ability students.

Table 7.21

Pairwise Comparisons of Content Performance in Three Abilities Groups

Test	M	SE	High	Medium
High	7.48	.24		
Medium	6.43	.28	.01*	
Low	4.62	.34	.001*	.001*

Note. $N = 31$, $n_H = 14$, $n_M = 10$, $n_L = 7$. $\alpha = .05$, * = significant difference

How did the different ability students progress in their content scores over time? Results showed that high-ability students progressed differently from other students (see Table 7.22). They did not write more vivid compositions between the pre-test and the mid-year composition exam. But, they did significantly better between the mid-year composition exam and the final exam. Overall, they also improved significantly between the pre-test and the final exam. It was probably that they already did well in the pre-test ($M = 6.93$, $SE = .25$) as compared with the mid-year composition exam ($M = 7.14$, $SE = .31$). Their improvement in the mid-year content score therefore did not reach the significant level. This indicated the important role the basic writing performance played in content performance. If the students could write well, the content scores would be high as well. This was evident in the high pre-test content scores for the high-ability students. They were not introduced to any writing skill at the time of the pre-test. And yet their content scores were high.

Then, in the consolidation phase, high-ability students practiced applying strategies and skills they had learned. They were able to master them and when the scaffolds were faded in the final composition exam, they were able to write independently. It contributed to the significant improvement in their final exam

content score ($M = 8.36$, $SE = .27$) compared to the mid-year score. The practice phase was therefore crucial for high-ability students.

Medium-ability students, on the other hand, did better between the pre-test and the mid-year composition exam. It could be because they did not do as well as the high-ability students in the pre-test content performance ($M = 5.90$, $SE = .30$). When they were able to apply some strategies and micro-writing skills in the mid-year composition exam, their compositions performance went up significantly ($M = 6.80$, $SE = .36$). Their performance, however, decreased between the mid-year composition exam and the final exam. Fortunately, the decrease in performance in the final exam had not reached the significant level. Findings indicated that medium-ability students benefited from the intervention but did not benefit from the consolidation phase which was designed to help them writing independently. It could be that their writing was still affected by their weaker basic writing ability. They might know what to write but struggled to write it. It is important, therefore, to scaffold medium-ability students in basic writing skills in the consolidation phase. Playing the Chinese game in the e-portfolio will be of help to them.

Low-ability students had different learning behavior from their peers. They only showed improvement in their content performance in the final exam (see Figure 22). They required an entire year to improve, probably because they started off with very weak basic writing skills (see Figure 7.14). Basic writing skills training should be the focus for low-ability students and this has to start from Primary 1.

Table 7.22

Pairwise Comparisons of Content Performance for High-, Medium-, and Low-ability Groups

Ability	Test	M	SE	Pre-test	Mid-year Exam
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High	Pre-test	6.93	.25		
	Mid-year Exam	7.14	.31	1.00	
	Final Exam	8.36	.27	.001*	.001*
Medium	Pre-test	5.90	.30		
	Mid-year Exam	6.80	.36	.01*	
	Final Exam	6.60	.32	.07	1.00
Low	Pre-test	4.14	.36		
	Mid-year Exam	4.57	.44	.54	
	Final Exam	5.14	.38	.02*	.42

Note. N = 31, n_H = 14, n_M = 10, n_L = 7. $\alpha = .05$, * = significant differences.

Students with different abilities learned and progressed differently. High-ability students started off with the highest level of Chinese ability. They performed significantly better than the medium- and low-ability students throughout the academic year. Their performance shot up after the consolidation phase. This indicated that they required a period of time to internalize the skills taught to them. Medium-ability students performed significantly better than the low-ability students but their learning stagnant after the mid-year exam. They need more scaffolding and longer period of deliberate practice to consolidate their learning. Low-ability students improved gradually over the year. However, their improvement had not reached an acceptable level. This was indicated by their low content score which they barely passed at the 50% mark.

I have discussed students' performance according to my two-stage writing model, namely, their performance in applying their basic writing skills and vividness writing skills. Students had improved in both stages. I set out now to find out if they had improved in the overall composition performance.

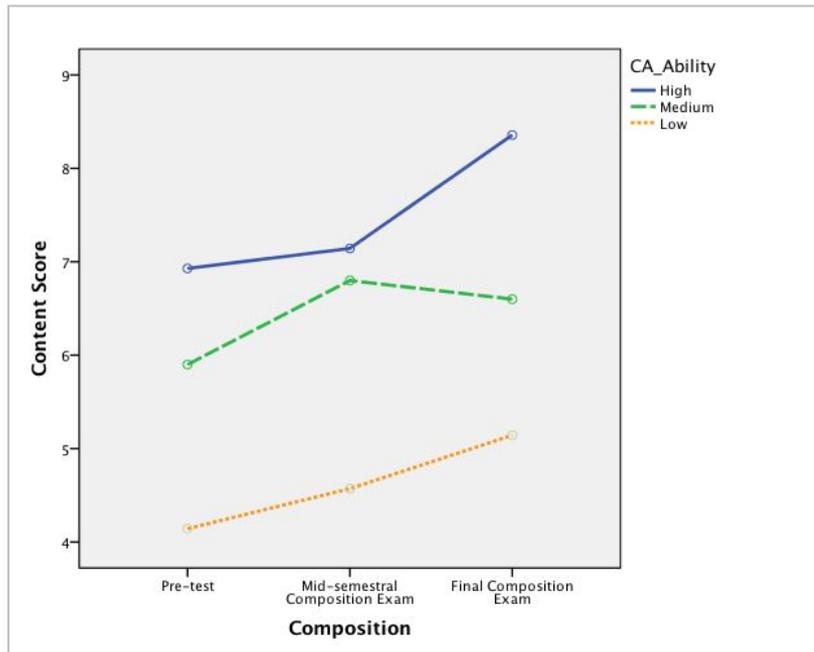


Figure 7.14. Content scores in the pre-test, mid-year composition exam and final composition exams by high, medium, and low-ability students.

Statistical Analysis for Overall Composition Performance

It was necessary to find out if the strategies in this study helped students improve in their overall composition performance. As mentioned before, the composition score consisted of two components: 10 marks for language performance, and another 10, content. The overall performance score was derived by adding up the marks assigned for these two components.

The final composition exam scripts were randomly assigned to all teachers teaching the Primary 4 Chinese subject. Therefore, they were not marked by their own teacher alone.

I conducted a repeated measure ANOVA to compare the overall composition scores for the pre-test, mid-year and final exams. Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was significant, $W = .79$, $\chi^2(2) = 6.87$, $p = .03$, which indicated that the assumption of sphericity had been violated. Therefore,

degrees of freedom would have to be corrected. In this case, the epsilon values from Mauchly's test values were 0.83 and 0.87, both greater than 0.75. As such, the Huynh-Feldt estimate of sphericity corrected value ($\epsilon = 0.87$) was used. As such, sphericity was assumed. It follows that the test scores for the three tests differed significantly, $F(1.74, 52.07) = 12.18, p = .001, \eta_p^2 = .29$ (see Table 7.23). Post hoc comparisons show that students did better in their overall composition scores in both the mid-year exam and the final exam, compared to the pre-test. This indicated that students' overall writing performance had improved over time. The intervention was effective in helping the students writing better compositions over time. However, they did not continue to improve as expected in the final exam as compared to the mid-year exam, that is, the improvement was close ($p = .068$) but did not reached the significant level.

Table 7.23

Descriptive Statistics for the Composition Scores in Three Tests and P Values for Pairwise Comparisons

Test	M	SE	Pre-test	Mid Term Exam
Pre-test	11.94	.48		
Mid-year Exam	12.84	.55	.008*	
Final Exam	13.61	.53	.001*	.068

Note. N = 31. $\alpha = .05$, * = significant difference

It was necessary to drill down to find out how different ability students perform in the composition tests. To find out, a mixed model analysis of variance was performed. In this analysis, the compositions was the within-subject factor and the student-ability was the between subject factor. Test of equality of covariance matrices of the dependent variables are equal across groups, *Box's M* = 16.56, $p = .33$.

Results showed significant ability effect, $F(2, 28) = 25.41, p = .001, \eta_p^2 = .65$, indicating different ability students differed in composition performance. Pairwise

comparisons showed that high-ability students performed significantly better than medium- and low-ability students. Medium-ability students performed significantly better than low-ability students (see Table 7.24). The results suggested that high-ability students benefited significantly more than the medium- and low-ability students from the intervention. Medium-ability students also benefited significantly more than the low-ability students.

Table 7.24

Descriptive Statistics and Pairwise Comparisons of Composition Performance in Three Abilities Groups

Test	M	SE	High	Medium
High	14.67	.44		
Medium	12.70	.53	.01*	
Low	9.19	.63	.001*	.001*

Note. $N = 31$, $n_H = 14$, $n_M = 10$, $n_L = 7$. $\alpha = .05$, * = significant difference

How did different ability students progress over time? Results showed that there was a significant interaction effect between ability and test. Composition scores depended on the ability of the students, $F(4, 56) = 3.68$, $p = .01$, $\eta_p^2 = .21$. Post hoc tests pair-wise comparisons indicated that high-ability students did not improve significantly between pre-test and the mid-year exams but their performance increased significantly between the mid-year the final exams.

Performance of medium students was opposite that of the high-ability students. Improvement only took place between pre-test and the mid-year exam. The improvement in performance of low-ability students was so gradual that significant increase only appeared in the final composition (see Table 7.25 and Figure 7.15).

Table 7.25

Pairwise Comparisons of Composition Performance for Three Ability Group Over Time

Ability	Test	M	SE	Pre-test	Mid-year Exam
High	Pre-test	13.79	.42		
	Mid-year Exam	14.21	.62	1.00	
	Final Exam	16.00	.50	.001*	.01*
Medium	Pre-test	12.00	.50		
	Mid-year Exam	13.50	.73	.04*	
	Final Exam	12.60	.59	.57	.50
Low	Pre-test	8.14	.59		
	Mid-year Exam	9.14	.87	.44	
	Final Exam	10.29	.71	.001*	.43

Note. $N = 31$, $n_H = 14$, $n_M = 10$, $n_L = 7$. $\alpha = .05$, * = significant differences.

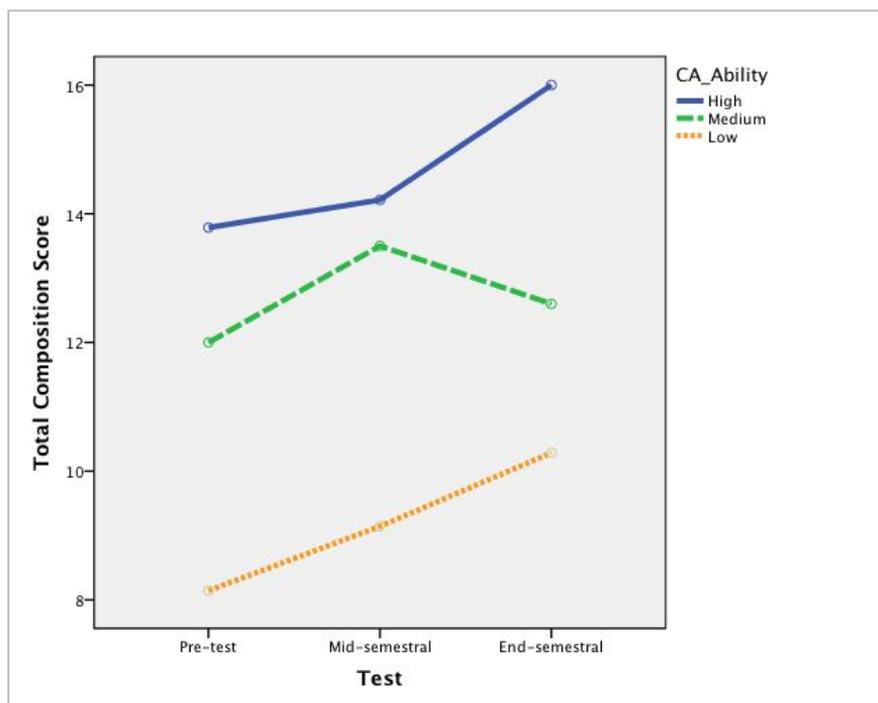


Figure 7.15. Composition scores in the pre-test, mid-year composition exam and the final composition exam by high-, medium-, and low-ability students.

Statistical analyses showed that high-ability students improved in composition writing over the year and they also had significant improvement between the mid-year and final exams. They benefited from both the intervention and consolidation phase. As they were able to internalize and apply the micro-writing skills, they wrote significantly better compositions in the final exam. When asked why high-ability students did well in applying the writing strategies, the teacher indicated that their basic writing ability played an important role in their performance:

I think they were able to master the feeling description quite well. Also dialogue was quite well done as well. Normal simple action description they are quite ok but I don't think they wrote a lot of action chains in the exam. Their compos are good because their language play an important part. With good sentence structure, the reader is able to understand what is being expressed and thus give marks to both the language and content components. Hence total marks are higher. (June 11, 2011)

Medium-ability students only improved in their composition performance between the pre-test and the mid-year exam. There was a slight decrease in their performance in the final exam, although not significantly lower than the mid-year exam. The reason might be that they had not internalized the micro-writing skills before the final exam. They also did not have as good basic writing skills as high-ability students to write well. They depended on helping words to form sentences. If there were not enough helping words, they would not be able to express themselves. Or, if the helping words were too difficult, they would not be able to form sentences with them. This was especially true for the students who were at the lower spectrum of the medium-ability group. The teacher provided further explanation:

The M students comprises of a bigger spectrum of students. So there will be some M students who are quite weak in their language. If these

students happen to not write properly in the final exam, a dip in the marks will be expected. (June 11, 2011)

Since this group of students represents a large percentage of students in the school, more effort should be put in to help them improve in their basic language ability. It is essential that they work on basic writing activities throughout the year. And the training should start early, in Primary 1.

Low-ability students, on the other hand, improved very gradually over the year.

The teacher commented:

The only reason I can think of is that the L students were already scoring very low marks in the beginning. So through the year, their marks will only get higher, especially if they were able to write slightly better sentences in the final exam, improving in their content marks. (June 11, 2011)

Weak Students could understand the concepts of the micro-writing skills but could not write proper sentences to express them. Their weak basic language skills affected their vividness performance. Similarly, future intervention should focus on improving the basic language ability of low-ability students.

Lack of basic language skills is an important factor affecting not only *language* performance, but also *content* performance. To find support for this argument, we performed a two-way repeated ANOVA to compare the total content and language scores for the high, medium, and low-ability students.

Results indicated content scores for high-ability students were significantly higher than their language scores. Content scores for medium- and low-ability students were not significantly higher than their language scores (see Table 7.26). Results showed that content scores tended to be slightly than basic language scores. If language scores are low, content scores will also be low. Basic language skills of

medium- and low-ability students therefore affected their content performance (see Figure 7.16). To improve on the content score, the focus will still have to be placed on basic language skills. Improving overall performance still harks back to the learning of basic language skills.

Table 7.26

Pairwise Comparisons of Total Language and Content Performance for Three Ability Group

Ability	Rubric Component	M	SE	Language
High	Language	21.57	.65	
	Content	22.43	.72	.01*
Medium	Language	18.80	.77	
	Content	19.30	.85	.17
Low	Language	13.71	.92	
	Content	13.86	1.01	.74

Note. N = 31, n_H = 14, n_M = 10, n_L = 7. α = .05, * = significant difference.

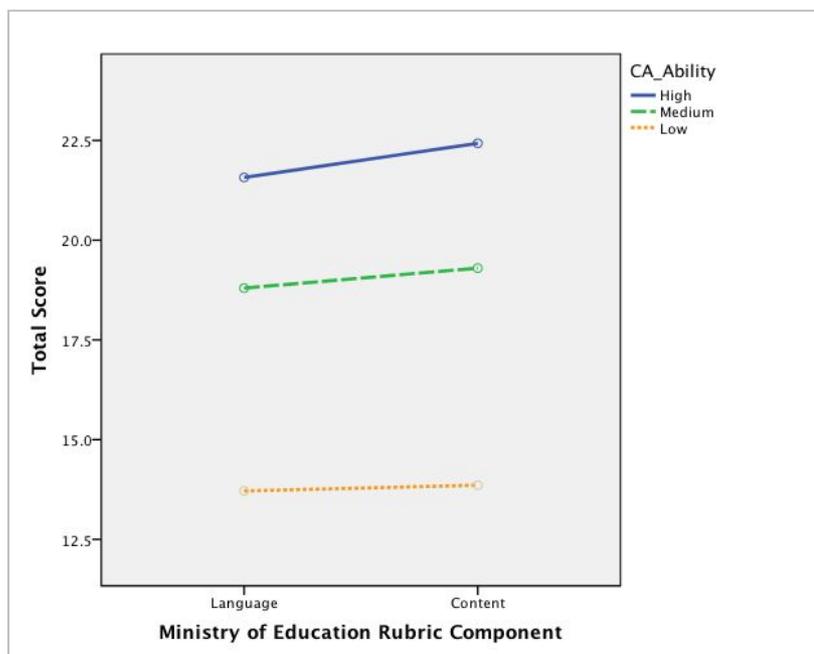


Figure 7.16. Total language and content scores for high, medium, and low-ability students over time.

Students have shown significant improvements in writing composition that can be attributed to the scaffolding of language and micro-writing strategies. However, they also attended regular Chinese lessons. Did these lessons contribute more to the composition performance? I conducted statistical analysis to control for the effects of the regular Chinese lessons. Then I checked the composition performance of the students. If they still performed at a high level, I would have evidence to support the claim that scaffolding of writing strategies improved the writing performance of students.

Statistical Analysis for Overall Composition Performance Controlling for the Effects of the Regular Chinese Lessons

I performed a mixed model analysis of covariance on the total composition scores to control for the effects of regular Chinese lessons. The covariate is the students' performance in their continual assessments (CA) 1 and 2. This analysis enabled us to find out if students still maintained their levels of performance after controlling for the performance in continual assessment over time (CA2 scores – CA1 scores). In this analysis, the composition intervention was the within-subject factor and student ability was the between subject factor. The covariate was the difference between CA1 and CA2 scores.

Sphericity was tested using the Mauchly's Test, which finds out if the hypothesized and the observed variance patterns were equivalent. The test was not significant, $W = .86$, $\chi^2(2) = 4.03$, $p = .13$, suggesting that the observed matrix have approximately equal variances. As such, sphericity was assumed. It follows that the test scores for the three tests differed significantly, $F(2, 54) = 13.53$, $p = .001$. $\eta_p^2 = .33$. The result indicated that after covarying for the performance in continual assessment, the significant improvements in composition scores was due to the

composition intervention. The results were similar to previous analyses. Students wrote significantly better compositions in the mid-year and the final composition exams as compared to the pre-test. Moreover, students performed better in the final exam compared to the mid-year composition exam. The improvement, however, was close to but had not reached significant level ($p = .056$) (see Table 7.27). Findings showed that when effects of the regular Chinese curriculum were controlled for, there was still significant improvement in the composition performance. This provided evidence to support the claim that the composition intervention was effective in helping students write better compositions.

Table 7.27

Descriptive Statistics for the Composition Scores in Three Tests and P Values for Pairwise Comparisons, after Covarying for CA Performance

Test	M	SE	Pre-test	Mid-year Exam
Pre-test	11.35	.28		
Mid-year Exam	12.31	.44	.01*	
Final Exam	13.04	.31	.001*	.056

Note. $N = 31$. $\alpha = .05$, * = significant difference. Covariates were evaluated at 1.97.

Similarly, students with different abilities performed at different levels, $F(2, 27) = 21.56$, $p = .001$, $\eta_p^2 = .62$. Post hoc tests pair-wise comparisons indicated that all comparisons were significant, with higher ability students performing better than lower ability students (see Table 7.28). The findings indicated that high-ability students benefited more from the intervention and therefore contributed more to the overall composition performance of the class.

Table 7.28

Descriptive Statistics for Composition Scores for the Three Ability Groups and P Values for Pairwise Comparisons, after Covarying for CA Results

	M	SE	High	Medium
High	14.59	.43		
Medium	12.52	.51	.004*	
Low	9.59	.63	.001*	.002*

Note. N = 31, n_H = 14, n_M = 10, n_L = 7. $\alpha = .05$, * = significant difference. Covariates were evaluated at 1.97.

How did the different ability students perform over time? After covarying for CA results, similarly, results showed that improvement over time depended on student ability. There was a significant interaction effect between student ability and the composition scores for the three tests, $F(2, 27) = 5.41, p = .01, \eta_p^2 = .29$ (see Figure 7.17). Post hoc tests pair-wise comparisons indicated that high-ability students did not improve much in the mid-year exam but their performance shot up in the final exam. Performance of medium-ability students was opposite, improvement only took place between pre-test and the mid-year exams. The increase in performance of low-ability students was so gradual that significant increase only appeared in the final composition exam scores (see Table 7.29).

Table 7.29

Pairwise Comparisons of Composition Performance for Three Ability Groups, after Covarying for CA Results

Ability	Test	M	SE	Pre-test	Mid Term Exam
High	Pre-test	13.72	.41		
	Mid-year Exam	14.17	.63	1.00	
	Final Exam	15.88	.45	.001*	.01*

Medium	Pre-test	11.85	.49		
	Mid-year Exam	13.41	.75	.04*	
	Final Exam	12.32	.53	.87	.28
Low	Pre-test	8.49	.61		
	Mid-year Exam	9.36	.93	.71	
	Final Exam	10.92	.66	.001*	.17

Note. N = 31, n_H = 14, n_M = 10, n_L = 7. $\alpha = .05$, * = significant difference. Covariates were evaluated at 1.97.

The different performance by students of three ability levels affected the overall composition performance in the final composition exam of the class as a whole. The overall composition performance improved between the pre-test and the mid-year exam. This could be due to the improvements obtained in the high- and medium-ability students. However, there was no significant increase in performance for the class between the mid-year composition exam and final composition exam. This is due to the decrease (although not significant) in performance for the medium-ability students and the very gradual improvement in the low-ability students, resulting in no significant overall increase in the final composition exam scores. The reason for the low level performance by the medium- and low-ability students could be attributed to their weak basic writing skills.

The mixed model analysis of covariance indicated that the regular Chinese curriculum had some effect on the scores of the students, which was expected. However, the students still benefited significantly from the composition intervention, as shown mainly from the improvements between the pre-test and the final composition exams.

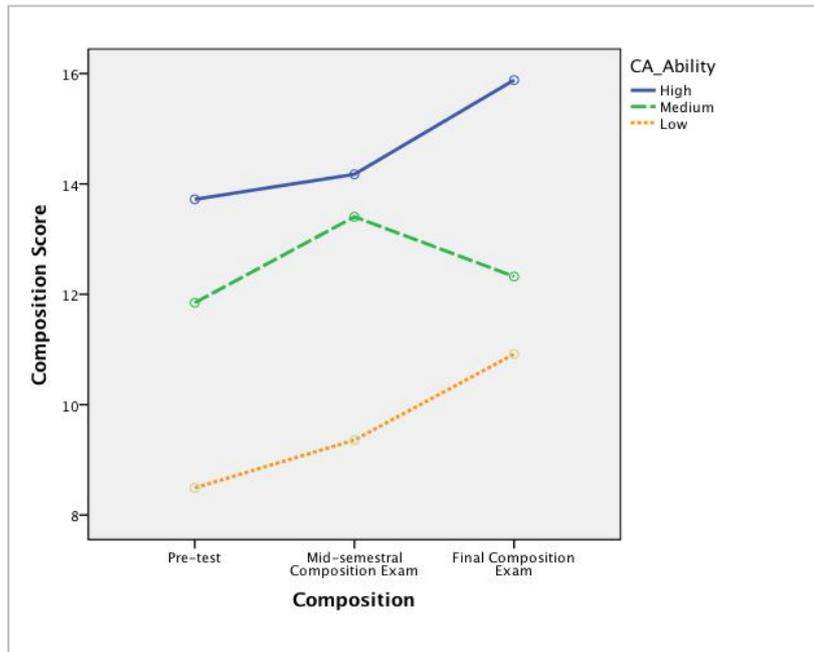


Figure 7.17. Composition scores for high, medium, and low-ability students over time (Covariates appearing in the model are evaluated at 1.97).

Analyses indicated students improved in writing performance after being scaffolded using the two-stage writing model. Effective scaffolding has to take into account the learner's ability. Over- and under-scaffold will not improve learning. However, in a classroom, the teacher do not have enough time to scaffold every student based on his or her ability. One option will be to have multiple scaffolders, each providing several scaffolds. I opted for this option in this study.

The teacher was the main scaffolder. She scaffolded the students face-to-face. In addition, she scaffolded students indirectly via ICT. She provided students an e-portfolio platform and on it, various games and software applications that immersed the students in a Chinese environment. These ICT-mediated scaffolds were the Chinese language game, a composition writing application in which the teacher could provide helping words, pictures, question prompts and instruction prompts to scaffold the students to write compositions, a collaborative mind map application for sharing ideas, and a peer editing application for peers to help one another. Since ICT-

mediated scaffolds was also an important component of this study, it was necessary to find out whether they were effective in helping students write good compositions.

Although the effectiveness of ICT-mediated scaffolds was not quantifiable in this study, I gathered qualitative evidence about whether the teacher and students found them effective through their feedback, and from the investigation of students' work stored in e-portfolio database. In the following section, I will discuss the effectiveness of the composition writing application and the peer editing application.

Discussion on the Composition Writing and Peer Editing Environment in the E-portfolio

The composition writing environment.

The aim of the composition writing application on the e-portfolio (from now on, I will refer to it as the e-port for short) was to provide adaptable help for different ability students to write compositions. As such, there was more help (or scaffolds) in it than the pen and paper environment. These scaffolds exposed the students to more vocabulary and focused their attention at the main points of the pictures. Let us take a look at the scaffolds in the e-portfolio and how they were different from the pen and paper environment.

When the students wrote with pen and paper, they were given four pictures and ten helping words. The teacher would help the students face-to-face during composition writing if they required more vocabulary. When writing compositions in the e-portfolio, the teacher would still provide face-to-face help in the lab. In addition, she provided the students with additional ICT-mediated scaffolds as follows (see Figure 7.18):

1. At least one textbox for each picture as well as one for the opening and one for the conclusion. These textboxes helped the students focus on the particular portion of

the composition that they were writing about. They could write as much as they like, perform copy and paste, and make changes at ease. All these operations were not possible if they were writing on paper.

2. A question prompt for each textbox to focus the students on the main theme of that box. This would ensure the students include all the pertinent information.
3. An instructional prompt after the question prompt to tell the students how to write more vividly such as *add dialogue*. It also reminded them to write the main point of the picture such as *introduce the main character*.
4. Many more helping words compared to the paper version and the helping words were customized for each textbox. The paper version contained only ten helping words for the entire composition. The aim of the teacher was to expose the students to more relevant words when they write in the e-portfolio. This would encourage them to make use of more words to write sentences.
5. Embedded linking phrases in the textbox to scaffold the students such as *that day*, *when the boss came back*. The purpose was to show the students how to link up pictures.
6. More time for the students to write. As they could access their work online, they could also write at home. The teacher would give them more time so that they could put more thoughts into the story.

Composition 5

1. 开头：(人物开头 - 介绍这个人) ①

1. Introduction: (Introduce Main character)

CONTENT -

Helping words

- after retirement
- company
- cleaner
- this job
- make money to help the family

- 退休后
- 公司
- 清洁工人
- 这份工作
- 赚钱养家

2. 事情是怎么发生的？(这里请加入行动链) ②

2. How did it happened? (Add action chain)



这一天,
That day [this is
an embedded
linking phrase.]

Helping words

- as usual
- sweep floor
- the boss' office
- cabinet
- beloved vase
- back up
- accidentally

- 像往常一样
- 扫地
- 老板的办公室
- 铁橱
- 心爱的花瓶
- 后退
- 一不小心

3. What happened in the end? What accident occurred? (Add in dialogues)

3. 结果呢? 发生了什么意外? (这里加入对话) ③



Helping words

- shattered glass
- other workers
- came around
- talked about

- 玻璃碎片
- 其他的员工
- 围过来
- 议论纷纷

4. 花瓶被打破后, 主角有什么心情? (加上心情、表情、对白) ④

4. How did the main character feel after the vase was shattered? (Add in feelings, expressions, dialogues)

CONTENT -

Helping words

- looked at the shattered glass
- worried he would be scolded badly and fired
- felt scared
- at a loss

- 看着碎片
- 担心会被痛骂和被开除
- 感到害怕
- 不知所措

5. What happened when the boss came back? (Add in dialogues, feelings, expressions)

5. 老板回来后怎么了? (记得加入人物之间的对话、心情、表情)



Helping words

- secretary
- reported to the boss, panic
- looked down
- did not dare to look directly

- 秘书
- 向老板报告
- 慌张
- 低下头
- 不敢直视

6. 老板知道事情的经过后怎么做?

6. After the boss found out what happened, what did he do?



Helping words

- did not reprimand
- gentle
- go home to rest

- 没有责骂
- 温和
- 回家休息

7. 结尾：大家看到这一幕，做了什么？主角呢？有什么心情？

7. Conclusion: What did everyone do when they saw this scene? How about the main character? How did he feel?

Helping words

- praised
- care for the workers
- learn
- proud
- comfort

- 称赞
- 爱护员工
- 学习
- 骄傲
- 安慰

Figure 7.18. The ICT-mediated composition writing application in the e-portfolio.

There were question prompts, instructional prompts, and a set of helping words (on the right of the figure) for the textboxes. Sometimes, a linking phrase is embedded in the textbox (e.g., in textbox 5). The English translation has been added for explanation.

It was necessary to find out whether the ICT-mediated composition-writing environment was effective. I would investigate by analyzing how students responded to teacher's scaffolds in this environment.

Effectiveness of writing compositions in the E-portfolio.

When the students wrote compositions in the e-portfolio, they received more scaffolds than when they wrote compositions on paper. In general, with the help of these scaffolds, the students were able to write longer compositions, include more

details, and had better flow than when they wrote using pen and paper. To drill deeper, I have analysed the students' responses to the question prompts, instructional prompts, and helping words, which were the main scaffolds in the e-portfolio, to find out their effectiveness.

Students' responses to question prompts.

There was a question prompt in every textbox to remind the students to include the main points of the pictures. They should expand the main points into a story by adding in details. It was found that students with different abilities responded differently to the question prompts. This is clearly illustrated by what the students of three ability groups wrote. While high-ability students responded to the prompts as guides and added in their own details, weaker students would simply treat the prompts as questions to be answered with short sentences. The following are the students' responses to the question prompt for textbox 5 (picture 3) "What happened when the boss came back?"

The high-ability student JC wrote (underlining indicates details added by JC, italicization indicates helping words):

Then, the boss came back [embedded linking phrase added by the teacher], the boss' secretary called him and informed him. The boss dropped the phone immediately, opened the door forcefully, then ran down the stairs angrily, to find out what actually happened. Uncle Lin told him exactly what happened and kept apologizing to the boss.

The medium-ability students depended more on the question prompts as compared to the high-ability students. Sometimes, they would just answer the questions that were meant to guide them in their development of the story. They seldom include details from their own imagination. The medium-ability student TRT

wrote (see Figure 7.19) (underlining indicates details added by TRT, italicization indicates helping words):

Then, the boss came back [embedded linking phrase]. The secretary reported the entire vase breaking incident to the boss. Grandpa Wang *looked down in panic, did not dare to look directly* at the boss. Grandpa Wang whispered: “sorry, I broke your vase accidentally.”

No	Text
1.	<p>1. 开头：(人物开头 - 介绍这个人) ①</p> <p>王爷爷退休后,为了赚钱养家,又再一家公司当清洁工人。</p> <ul style="list-style-type: none"> ▪ 退休后 ▪ 公司 ▪ 清洁工人 ▪ 这份工作 ▪ 赚钱养家 <p>1. Opening: introduce the main character Helping words: retired, company, cleaner, this job, provide for the family</p> <p>After Grandpa Wang retired, he had to provide for the family. He found a job as a cleaner in another company.</p>
2.	<p>2. 事情是怎么发生的? (这里请加入行动链) ②</p>  <p>这一天,王爷爷像往常一样,在老板的办公室里扫地。后退的时候,一不小心,撞到了铁橱,把老板最心爱的花瓶撞倒。</p> <ul style="list-style-type: none"> ▪ 像往常一样 ▪ 扫地 ▪ 老板的办公室 ▪ 铁橱 ▪ 心爱的花瓶 ▪ 后退 ▪ 一不小心 <p>2. What happened (add action chain) Helping words: As usual, sweep the floor, the boss' office, metal cabinet, beloved vase, backed up, accidentally</p> <p><u>This day</u> [embedded linking phrase], Grandpa Wang, as usual, swept the floor in the boss' office. When he backed up, he knocked into the metal cabinet accidentally. He knocked over the boss' favourite vase.</p>
3.	<p>3. 结果呢? 发生了什么意外? (这里加入对话) ③</p>  <p>听到了花瓶掉落的声音,其他的员工都围过来。大家都在议论纷纷老板会有什么反应? 老干说:“老板一定会很生气,你可能被扣薪水。”阿明说:“哪只扣薪水,还可能被炒鱿鱼呢!”</p> <ul style="list-style-type: none"> ▪ 玻璃碎片 ▪ 其他的员工 ▪ 围过来 ▪ 议论纷纷 <p>3. What happened in the end? What accident occurred? (add dialogues)</p>

Helping words: shattered glass, other workers, came over, made all sorts of comments

Hearing the vase dropped, other workers all came over. They made all sorts of comments predicting the boss' reaction. Old Qian said: "the boss will surely be very angry, maybe he will deduct your salary." Ah Ming said: "far more than that, you may be fired!"

4.

4. 花瓶被打破后, 主角有什么心情? (加上心情、表情、对白) ②

王爷爷看着碎片, 担心会被痛骂和被开除, 心里感到害怕而不知所措。

- 看着碎片
- 担心会被痛骂和被开除
- 感到害怕
- 不知所措

4. How did the main actor feel after the vase was shattered? (add feelings, expressions, dialogues)

Helping words: looked at the shattered glass, worried he would be scolded badly and fired, felt scared, bewildered

Grandpa Wang looked at the shattered pieces, worried that he would be scolded badly and fired, his heart felt scared and felt bewildered.

5.

5. 老板回来后怎么了? (记得加入人物之间的对话、心情、表情) ③



这时, 老板回来了。秘书小姐向老板报告花瓶打破的事情。王爷爷慌张地低下头, 不敢直视着老板。王爷爷低声地说: "对不起, 我不小心把你的花瓶打破了。"

- 秘书
- 向老板报告
- 慌张
- 低下头
- 不敢直视

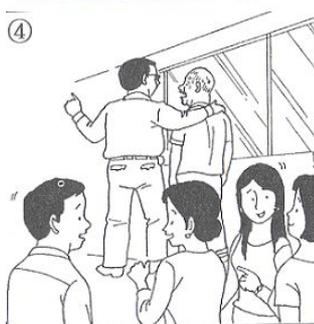
5. What happened when the boss came back?

Helping words: secretary, reported to the boss, panic, looked down, did not dare to look directly

Then, the boss came back [Embedded linking phrase]. The secretary reported the entire vase breaking incident to the boss. Grandpa Wang looked down in panic, did not dare to look directly at the boss. Grandpa Wang whispered: "sorry, I broke your vase accidentally."

6.

6. 老板知道事情的经过后怎么做? ④



老板并没有责骂王爷爷, 而且温和的安慰他。老板还让王爷爷提早回家休息。

- 没有责骂
- 温和
- 回家休息

6. After the boss found out what happened, what did he do?

Helping words: did not reprimand, gentle, go home to rest

The boss did not reprimand Grandpa Wang. Moreover, he consoled him gently. The boss even let Grandpa Wang to go home early to rest.

7. 7. 结尾：大家看到这一幕，做了什么？主角呢？有什么心情？
大家看到老板那么明白事理，爱护员工，都感到安慰，齐声称赞他。

- 称赞
- 爱护员工
- 学习
- 骄傲
- 安慰

7. Conclusion: What did everyone do when they saw this scene? How about the main character? How did he feel?

Helping words: praised, care for the workers, learn, proud, comfort

Everyone saw that the boss was sensible, caring for the workers, they all felt comforted. They all praised him in unison.

Figure 7.19. Composition 5 done by M student TRT.

The low-ability student TT responded in two sentences (underlining indicates details added by TT, italicization indicates helping words): “Then, the boss came back [embedded linking phrase]. The boss’ secretary told him Grandpa Wang broke the vase. Grandpa Wang *looked down* said: ‘Sorry boss’”.

While the high-ability students include much more detailed information which was not depicted in the pictures, low-ability students would simply write their compositions by answering the questions in the textboxes. Medium-ability students would answer the questions in greater detail but their answers were restricted to using the helping words to make sentences. It seemed that the weaker ability students treated the question prompts as real questions to each of which they could answer with just a sentence or two. Therefore, the question prompts should be customized to encourage the weaker students to write more such as “describe the sequence of events that lead up to this point, or, how did the character feel?”, “What did he do or say because of how he felt?” In addition to the question prompts, I also investigated students’ responses to instructional prompts.

Students' responses to instructional prompts.

The teacher would include instructional prompts after the question prompts (e.g., “How did it happen?” “*Add action chain here*”). The aim of including these prompts was to help students write more vividly. They reminded the students to include dialogues, monologues, action chains, and feeling chains. Again, the responses to these prompts depended on the ability of the students. High-ability students did not rely entirely on them; sometimes they even ignored them and wrote what they wanted. Medium-ability students follow these instructions diligently, and low-ability students would follow whatever they could write. The following are examples written by the high-ability students in textbox 5 (picture 3). The teacher included some instructions at the end of the question prompt to remind them to write vividly (underlining indicates instruction prompts): “What happened when the boss came back? (Remember to include dialogue, feeling, expression)”

The high-ability student JC included much of her own descriptions and she did not follow the instruction to add dialogues (underlining indicates details added by JC, italicization indicates feeling and expression helping words):

Then, the boss came back [embedded linking phrase added by the teacher], the boss' secretary called him and informed him. The boss dropped the phone immediately, opened the door forcefully, then ran down the stairs angrily, to find out what actually happened. Uncle Lin told him exactly what happened and kept apologizing to the boss.

Another student GT also included a fair bit of details in her writing (underlining indicates details added by GT, italicization indicates feeling and expression helping words):

Then, the boss came back [embedded linking phrase added by the teacher], the boss' secretary told him the incident in detail. Grandpa Wang *lowered his*

head, did not dare to look directly at the boss. Grandpa Wang mustered up his courage, told the boss: “Sorry boss, I broke your favorite vase *accidentally*.”

CWK also wrote an interesting dialogue in this textbox (underlining indicates details added by CWK, italicization indicates feeling and expression helping words):

Then, the boss came back [embedded linking phrase added by the teacher], the secretary hurriedly told him what happened. Uncle Wang *lowered his head in panic, did not dare to look directly* at the boss, said: “Sorry, please deduct from my salary.”

High-ability students were confident in writing compositions. The scaffolds they required were probably those that reminded them to write vividly. They had good command of the language. They wrote with much of their own imagination. They could write logically without missing events and they could include interesting details in their compositions.

Medium-ability students followed the instructional prompts closely. However, as mentioned before, their writing relied heavily on the help words, as shown in the following examples. TRT wrote (underlining indicates details added by TRT, italicization indicates feeling and expression helping words):

Then, the boss came back [embedded linking phrase added by the teacher]. The secretary *reported* the entire vase breaking incident *to the boss*. Grandpa Wang looked down in *panic, did not dare to look directly* at the boss. Grandpa Wang whispered (underlining indicates details added by TRT, italicization indicates feeling and expression helping words): “sorry, I broke your vase *accidentally*.”

Similarly, another medium-ability student LZM wrote a simple description (underlining indicates details added by LZM, italicization indicates feeling and expression helping words): “Then, the boss came back [embedded linking phrase added by the teacher]. His secretary said: “Boss, your vase...” The boss was shocked.”

Low-ability students also tried to follow the instructional prompts. However, their descriptions were factual, the vocabulary was simple, and the dialogues were plain. It seemed that they were trying their best to meet what they thought were the minimum requirements set by the teacher, namely, following the instructional prompts. The reason might be that they were struggling with the language and could only manage what they were explicitly instructed to do. For example, TT wrote (underlining indicates details added by TT, italicization indicates feeling and expression helping words): “Then, the boss came back [Embedded linking phrase added by the teacher]. The boss’ secretary told him Grandpa Wang broke the vase. Grandpa Wang *looked down* said: “Sorry boss”. Another student JN wrote something similar (underlining indicates details added by JN, italicization indicates feeling and expression helping words): “Then, the boss came back [Embedded linking phrase added by the teacher]. An office worker went to report to the boss immediately. Grandpa Wang *lowered his head, did not dare to look directly*. Soon, Grandpa Wang whispered to the boss: ‘Sorry, I am not intentional.’” BL is also a low-ability student. He wrote (underlining indicates details added by BL, italicization indicates feeling and expression helping words): “Then, the boss came back [Embedded linking phrase added by the teacher]. *A secretary reported to the boss* what happened. Grandpa Wang was very *panic*. *Lowered his head, did not dare to look directly*. Low-ability students did not use their own feeling and expression words. They could only follow the instructional prompts to add vividness to their work if the teacher provided the appropriate helping words. Their work told us they were very weak in basic writing skills. They struggled to express themselves but they could only do so with very simple words.

High-ability students were reminded by the instruction prompts to write vivid descriptions. They could apply the skills they had learned and write in good Chinese. Medium-ability students could apply the skills only when they were given the vocabulary. Low-ability students could only do so with their own simple vocabulary. They were not able to write with the vocabulary given by the teacher as they were too difficult. They ignored the instructions if they could not write them. This led me to analyze how students responded to helping words corresponding to each textbox.

Students' responses to helping words.

Different ability students responded differently to the helping words provided by the teacher. High-ability students did not rely much on the helping words. They would write with their own vocabulary. When they used the helping words, they would not just combine them into sentences like the medium-ability students. They would use the helping words with many words from their own vocabulary, use helping words from another textbox, use part of a helping phrase, or use the helping words in a way not intended by the teacher such as set the tone of a dialogue. For example, JC did not rely solely on the helping words when she wrote. She also creatively set the tone with the helping word “bewildered” (underlining indicates helping words):

Uncle Lin, looking at the shattered vase, worried that the boss would reprimand him. He broke into a cold sweat, asked his colleagues in a bewildered manner, “what should I do now? Will I be fired by the boss?” “Hope not.” His colleagues comforted [taken from helping words belonging to textbox 7] him. But he still felt scared.

Similarly, TZY added many details when he wrote about the same picture:

Uncle Wang became frantic, wanted to pick up the shattered glass. Accidentally, cut his own hand. Uncle Wang was scared stiff, his legs buckled, and face ashen, worried that he would get a bad scolding and be fired.

As the high-ability students were independent in their writing, the teacher can consider providing reference materials, instead of helping words for the students to look up instead of just providing helping words which many of them were not used. The reference materials could be lists of feeling, expression, and action words with example sentences. The teacher was supportive of the idea: “I also think if the learning environment is interactive, it will be good for them. It encourages self-directed learning as they can get the answers they want by looking for it themselves instead of waiting for teacher” (June 8, 2011).

While the high-ability students enriched their writing with helping words, they were the important part of the compositions of medium-ability students. For example, TRT, a medium-ability student, tended to string up almost all of the helping words to form her composition (underlining added to indicate the helping words used by TRT):

After Grandpa Wang retired, he had to provide for the family. He found a job as a cleaner in another company.

This day [embedded linking phrase added by the teacher], Grandpa Wang, as usual, swept the floor in the boss’ office. When he backed up, he knocked into the metal cabinet accidentally. He knocked over the boss’ favorite vase.

Hearing the vase dropped, other workers all came over. They made all sorts of comments predicting the boss’ reaction. Old Qian said: “the boss will surely be very angry, maybe he will deduct your salary.” Ah Ming said: “far more than that, you may be fired!”

Grandpa Wang looked at the shattered pieces, worried that he would be scolded badly and fired, his heart felt scared and felt bewildered.

Fortunately, the medium-ability students were quite good in their language skills and were able to make use of the helping words freely to write grammatically correct sentences. They would also put in some of their own vocabulary to enrich the compositions. The composition would still flow and the story, fairly vivid. However,

their performance would be limited by the helping words. It is therefore important to help the medium-ability students internalize as many new words as possible. Again, the Chinese game was a useful tool to achieve that.

Low-ability students used few helping words. The reason for this was that they were too difficult for them to form into sentences. They used their own simple vocabulary. When they used helping words, they would take the part of the phrase that they could manage to write sentences with. TT was a typical example (see Table 7.30). She wrote only with the simple and concrete helping words such as *cleaner*, *sweep the floor*, and *looked down*. She also tended to just use part of the helping phrases such as *cabinet* instead of *metal cabinet* and *rest* instead of *go home to rest*. The vocabulary TT used in her composition was simpler than the helping words, e.g., she used *ran over* instead of *came around*, *scared* instead of *worried*, and *scold* instead of *reprimand*. She ignored more difficult helping words such as *shattered glass*, *made all sorts of comments*, *bewildered*, *did not reprimand*, and *comfort*.

Table 7.30

An Example of the Helping Words Used by the Low Chinese Ability Student TT

Textbox	Helping Words	Student's Writing
1	<ul style="list-style-type: none"> ▪ <u>retired</u> ▪ company ▪ <u>cleaner</u> ▪ <u>this job</u> ▪ provide for the family 	Grandpa Wang was very hardworking. He woke up everyday and went to work at 7am. He <u>retired</u> his <u>job</u> [wrong grammar and wrong use of homophone]. He went to an office to work as a <u>cleaner</u> .
2	<ul style="list-style-type: none"> ▪ as usual ▪ <u>sweep the floor</u> ▪ <u>the boss' office</u> 	This day [Embedded linking phrase added by the teacher], Grandpa Wang reached the <u>office</u> . He went to <u>sweep the floor</u> at

- metal cabinet once. Swept till the boss' office. Grandpa
 - beloved vase Wang swept till the boss' cabinet. He
 - backed up backed up a little bit. The vase dropped,
 - accidentally was broken [Wrong grammar, literal translation from English].
- 3 shattered glass The colleagues [wrong use of homophone]
- other workers ran over quickly, said: "Grandpa Wang
- came around you are in trouble. This is the boss most
- made all sorts of comments beloved vase." Grandpa Wang was very
- frightened [wrong use of homophone]. He
- feared that he would be fired.
- 4
- looked at the shattered glass Grandpa Wang was very scared [wrong
 - worried he would be use of homophone] of being fired by the
 - scolded badly and fired boss. Grandpa Wang had a very scared
 - felt scared [wrong use of homophone] expression
 - bewildered then said: "if the boss fired me and my
- family what to do [wrong grammar]?"
- 5
- secretary Meanwhile, the boss came back
 - reported to the boss [Embedded linking phrase]. The boss'
 - panic secretary told him Grandpa Wang broke
 - looked down the vase. Grandpa Wang looked down
 - did not dare to look directly said: "Sorry boss".
- 6 did not reprimand The boss did not scold Grandpa Wang,
- gentle moreover said to him politely [wrong use
- go home to rest of homophone]: "never mind [wrong use

		of homophone], you take a good <u>rest</u> ".
7	praised	Grandpa Wang happily thanked the boss.
	care for the workers	The colleagues [wrong use of homophone]
	learn	were also happy for [wrong use of
	proud	homophone] Grandpa Wang.
	comfort	

Note. Underlining indicates helping words.

A separate set of helping words should be provided for low-ability students as they clearly could not write sentences with the existing set. The existing helping words were meant more for the medium-ability students. This points to the importance of scaffolding the students within their zone of proximal development. They would just ignore the scaffolding if it were set beyond their potential.

When the students simply answered the question prompts, strung up helping words to form sentences, missed out events, described only what were in the pictures instead of develop an enriched story, it indicated to us they were overloaded cognitively. They were struggling to figure out how to write grammatically correct sentences. It could also be due to their limited exposure to social situations either at a personal or vicarious capacity. Again, they struggled to describe situations that they had not experienced. All these would take up mental resources so they would not pay full attention to develop a detailed story. As such, they would take the easy way out of answering questions, following the instructions, make sentences with the helping words they understand, and just write what they saw in the pictures. Their compositions were therefore simple, lack of vividness except for those described by the helping words. They would also have missing events that were not depicted in the pictures. It seemed that high-ability students used the scaffolds as a guide. Medium-

ability students relied on them completely. Low-ability students were overwhelmed by them. As such, the weaker students wrote very simple compositions. They would also miss out linking phrases and events if they were not included or highlighted in the scaffolds provided in the e-portfolio.

In future interventions, the scaffolds provided in the e-portfolio composition writing application should be different for different types of students. It is because different students have their own potentials to achieve. The scaffolders should create the scaffolds based what his or her students can eventually achieve within the training period. In scaffolding the mixed ability students, there should be a minimum of three different scaffolds for the three ability groups. The aims of scaffolding the high-ability students will be to develop their independent learning, stimulate their passion for the Chinese language and help them to be imaginative and creativity in writing. To achieve this end, the teacher can actually reduce the scaffolds to let them write more freely. The teacher can create the same number of textboxes but the help provided in the textbox can be reduced. There may not be a need for question prompts. The teacher needs only to maintain the instruction prompts that will remind them where to apply their newly learned writing skills such as add a feeling chain. Furthermore, links to resources on vocabulary and example sentences will take the place of the helping words. The students are capable of looking up the vocabulary they need.

The aims for the development of the medium-ability students will be to expand their vocabulary so that they could write complete and vivid compositions. Since the current ICT-mediated environment was created for the medium-ability students, the current scaffolds can remain. However, the students should be able to practice the helping words in their social context so that they will internalize them. It is therefore important to create a social context in the Chinese language to immerse

the students. It will help them to recall and apply the words they have learned and increase their social experience. As such, it will free up their mental resources that were originally allocated to searching for vocabulary, writing grammatically correct sentences, and struggling to describe unfamiliar situations. The mental resources thus freed-up can be channeled to writing vivid stories.

The scaffolds for the low-ability students should help them to write with correct grammar, flow the sentences, and write without missing events. To help them in their basic writing skills, the teacher can let them play the Chinese language game. To help them write complete compositions without missing out events, the teacher may need to change the question prompts. They should prompt for more detailed answers such as *what were the events that led up to this point?* Instead of *what happened?* This will encourage the students to explain events in greater detail. The teacher should also prompt them when the backgrounds of two pictures have changed such as *what events had taken place between the previous picture and the current picture?* This will alert the students to include the relevant events to flow the story. In addition, the helping words should be easier. In this study, the helping words were too difficult so the low-ability students simply ignored them. It will be of great help if the students can be introduced to the helping words before writing the composition. If they had used the words in their social environment prior to the composition lesson, they will be more likely to use them.

Allowing peers to learn from each other and engaging peers mutually to help is an important component in the study as teachers could not scaffold all the students for each lesson. Peers could be an additional scaffolder that could not only help their classmates to improve in the Chinese language, but also share their social experiences, e.g., what to say in certain social contexts. When students worked collaboratively on

the ICT-mediated activities, the social interaction they engaged in contributed to transforming their mental language functions to a higher-level cognitive function. This is a result of drawing on and integrating many “intellectual abilities” when they acquired their peers’ language skills and life experience. Peers provided help mainly via peer editing environment in the e-portfolio.

The peer-editing environment.

After writing compositions or the sentence making activities using the computer, the students would edit one another’s work. Peer editing allowed the students to learn from one another, share their life experience, and free up the teacher’s time to work with weaker students to help them link up ideas and flow sentences. High-ability students, as mentioned before, did not require much help in their compositions. However, they still benefited from their peers’ comments and modifications. They would learn that they could further enrich their compositions if they put in more imagination. For example, a high-ability student TSA provided better characterization to GK, another high-ability student’s sentence. She changed it from “*A colleague* recounted the entire incident to the boss” to “*His secretary* recounted the entire incident to the boss”. Peer editing also helped the student learn to provide richer details by setting the tone of GK’s dialogue with feeling (underlining indicates details added by the peer TSA): “Grandpa Lin felt very surprised, then said: ‘Thank you, boss! Next time, I will not be that careless.’” (see Figure 7.20 and English translation in Table 7.31). Peer editing had shown the high-ability students that if they put in sufficient thoughts, they would be able to creatively link up otherwise unrelated mental concepts to make their stories more interesting.



Figure 7.20. A high-ability student TSA edited the composition of another high-ability student GK. English translation is in Table 7.27.

Table 7.31

A High Chinese Ability Student TSA Added Details to the Composition of Another High Chinese Ability Student GK

No	Sentence before Editing	Sentence after Editing
1.	A colleague recounted the entire incident to the boss.	<i>His secretary</i> recounted the entire incident to the boss.
2.	Not only did the boss not reprimand Grandpa Lin, he still asked Grandpa Lin, “Were you hurt? I gather you were petrified today. You better take the day off!” Grandpa Lin said, “Thank you, boss. In future, I won’t be careless.”	Not only did the boss not reprimand Grandpa Lin, he still asked Grandpa Lin, “Were you hurt? I gather you were petrified today. You better take the day off!” <i>Grandpa Lin felt very surprised</i> , said, “Thank you, boss. In future, I won’t be careless.” <i>After the boss heard it he nodded.</i>

High-ability students benefited from modifying the work of weaker students too. It gave them the opportunity to read and critically evaluate others’ work. When they compared what they had in mind and with what their peers had written, this would prompt them to either refine or reinforce their existing mental structures. When

they modify others' grammar or sentence structures, it would improve their own basic writing skills. When they add details to enrich others' stories, it would stimulate their creative thinking skills. For example, KC helped BY to improve his description of how Grandpa Wang behaved when the boss found out he had broken his favorite vase (underlining indicates the detail added by KC): “Grandpa Wang did not dare to look directly at the boss, lowered his head kept apologizing to the boss” (see Figure 7.21).

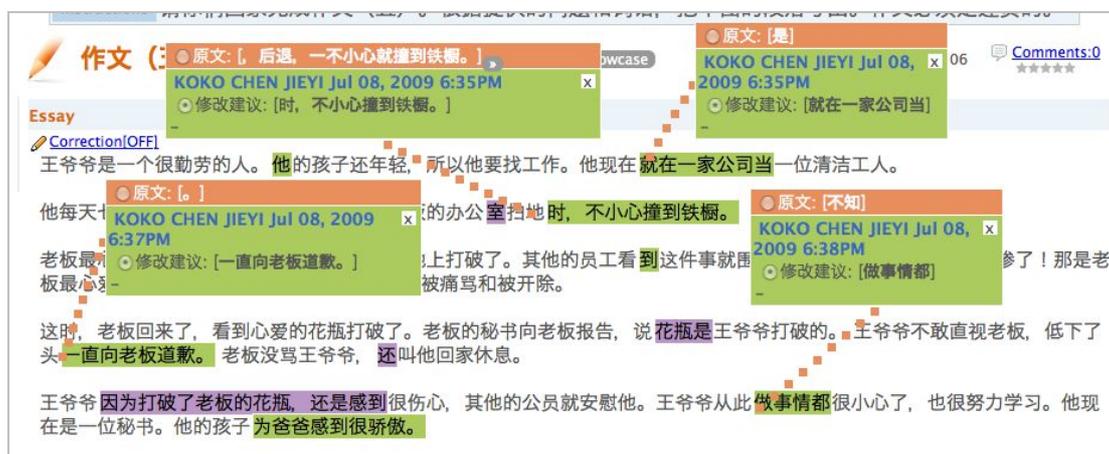


Figure 7.21. A high-ability student KC edited the composition of a medium-ability student BY.

Besides benefited from writing better flowing compositions, the medium-ability students also learned how to write vivid descriptions that were usually not depicted in the pictures. They learned that they had to think imaginatively if they wanted to write with vivid descriptions. For example, one of her high-ability peers showed TRT how to stretch her imagination to describe how glass broke and shattered with a clang (underlining indicates the peer's edit): “When he backed up, accidentally knocked onto the metal cabinet, knocked over the boss' most favorite vase, the vase dropped on the floor with a ‘Clang’ sound, shattered”. In addition, her peer also improved the vividness of TRT's dialogue (underlining indicates the peer's edit):

“Grandpa Wang said softly, “Sorry, I broke your vase accidentally, please forgive me.”

The writing challenge of the medium-ability students was that they had to spend much effort to flow the sentences. As such, they were not able to internalize the scaffolds and enrich the compositions with imagination. In future interventions, the teacher should again help medium-ability students improve their basic writing skills and encourage them to add vividness to the composition. After the students have completed their compositions, the teacher can let them add feelings, expressions, and dialogues at home. The teacher then conducts the peer editing the following day. This will give them more time to think and imagine.

Low-ability students did not participate much in peer editing. They only read the changes their peers made in their compositions. They benefited by finding out where their weaknesses were so that they could modify their understanding of the language. They also improved by the social experiences their peers shared with them in their compositions. Solving the basic writing problems of low-ability students was the key to improving their writing performance.

Higher-ability peers modified language problems (e.g., grammar and sentence structure) in lower-ability students’ compositions. They also enriched other high-ability students’ compositions. They benefited by reinforcing their mental representations and connecting ideas creatively to help others write descriptively. Medium-ability students mainly benefited from changes that were made to their own compositions in the area of basic writing skills and flow. The learning process took place when they read others’ changes, evaluated them and refined their own mental representations to accommodate them. Low-ability students learned how to write grammatically better Chinese by reading their peers’ modifications. Similarly, from

the changes made to their sentences, they refined their mental representations to accommodate them.

It is important that the teaching of composition writing not only improved their performance, but also made students perceive that they had the ability to write better compositions. Becoming self-efficacious was the result. If students had higher self-efficacy, they were likely to try harder without easily giving up.

Students' Perception on whether they had Improved in their Ability to Write Compositions

Students perceived that their performance had improved in writing better compositions: “My composition is more interesting”; “I can do something well now that I could not do before”; “My marks improved”; “I learn to discuss ideas with my friends in group writing”; “My composition is more interesting - a little bit”; “My friends come to me for help now”; and “[I am] able to learn from others”.

The students also felt that ICT could engage them and help them to improve. Working on the computer had enabled them to learn more and write better compositions: “Give us more time on the computer to work on mind map”; “Give us more time on the computer”; “Give us more time on the computer to work on composition writing”. A low-ability student said that with more practice on the computer, his or her composition would improve: “Composition online - with more time and practice my composition will improve”; “My pinyin will improve”.

In addition, the students enjoyed doing peer editing. One high-ability student said peer editing was important as it made her more imaginative. As a result, her story was “more enriched, more ideas in story development”. ICT enabled the students to see how others work and learn from them. High-ability students were more concerned about the vividness of the compositions. They mainly focused on the writing skills of

their peers: “They know how to describe feelings and expressions”; “They know what to say in a dialogue”; “They know how to describe actions”. High-ability students enjoyed peer editing very much for various reasons: a) “I can read what others write and learn from them”; b) “After editing friends' work, it also reminds me to not make those mistakes”; “Their mistakes are also mine. So they remind me to not make those errors”; c) “can help friend improve their weaknesses”; d) “My marks improved”; e) “I learn from my friends’ suggestions”; f) “They also help me correct my errors”. The lower ability students were more concerned about basic writing skills: “They know where to add linking words - a bit”; “They are very detailed when doing editing”. When the students felt that their ability to write compositions had improved, they strove more in future training. In addition to evaluating their self-efficacy, the teacher also prompted their students to find additional ways that would help them write even better compositions. How did the students respond?

Students’ Perception on How to Improve in Composition Writing

High-ability students performed much better than the low-ability students. The teacher asked them why they could write good compositions in Chinese. They indicated in their comments that they were interested in the subject and they took the initiative to find out more about what they had learned in class. For example, ZY, a high-ability student said how she learned to describe the appearance of a character which was not within the scope of the Primary 4 composition curriculum: “I learn on my own from reading compositions”. Another student also mentioned a similar way of learning: “Teacher also mentioned about weather, dialogue opening. I went to find out more about such introductions”. Furthermore, when we asked them how the Chinese standard could be improved, higher ability students preferred more immersion with the language in a wider social context such as: “Speak in Chinese;

Read composition books”; “Have more real life activities for us to experience what we are asked to write”. They also had more support at home to motivate them to write: “My parents help me. My mom asked me to read”; and “Parents will help me to think of how to improve my writing especially on expression of contents and ideas”.

On the other hand, lower-ability students preferred an environment that allowed them to engage in deliberate practice and they required more scaffolds for learning. Their comments included: “copy marked compositions”; “Work on drafts”; “Use some English to explain meaning to the students”. They tended to rely more on their peers as they might not have the same level of parental support at home as the high-ability students: “I learn from my friends’ suggestions”. They said that their compositions improved due partly to “peer editing”.

The students also thought that it would help if the writing training could start early such as in Primary 1, 2 or 3. At the lower primary grades, the students could learn the simpler writing techniques such as “Big 4 and circling technique”. They could also learn to “combine sentences to [form] paragraph”. A low-ability student actually valued the circling strategy and said it should be taught in Primary 1 or 2: “Teach circling first. Previously teachers let us write the main points without teaching us how”.

Overall, training had to start as early as possible. This will allow time for the teacher to scaffold weaker students and for them to internalize the skills. In addition, when students were interested in writing compositions, they would take the initiative to find out more about how to write better compositions. Support to nurture their interest was necessary. Students would be more interested in their work if they could get advice, feedback, and encouragement from their teacher, parents and peers. However, different ability students prefer different support. While high-ability

students preferred an immersive environment in which they could interact with others by speaking and writing in Chinese, low-ability students preferred a deliberate practice environment in which they could keep practicing those skills they were weak in. This indicated that high-ability students had internalized the language. They wanted an environment in which they could apply their skills and reinforce them. Low-ability students were struggling to internalize the language. They wanted drills to help them master it. From what they commented in the interview, it was clear that the students knew what they needed to improve in composition writing. In future interventions, we need to look into the different needs and requirements of the students. It will ensure the students receive more individualized scaffolding. In addition to finding out if self-efficacy of students had increased, it was also necessary to find out which learning activity they enjoyed most. Then, the teacher can assign more of these activities to students in the future.

What students Enjoyed Most in the Composition Learning Process?

When the teacher asked the students what they enjoyed most in learning to write composition, all the high- and medium-ability students (eight out of ten) selected group work as the activity they like most. They said they “enjoyed working in groups”, “enjoyed circling in groups and why they [the group members] circle that way”, “like my friend to edit my work”, “interesting to learn with friends”. They also requested to “have more group work on sharing among friends” as it would enable them to “learn some good ideas/writing techniques”, “discuss on what to write”, “discuss on new vocabulary”, “play [act] out the pictures for understanding of them”. In our intervention, group work was predominantly ICT-mediated. It included peer-edit and collaborative mind map to brainstorm words and closely related actions. In

future interventions, ICT-mediated activities should again be integrated to scaffold students.

Low-ability students did not select group work as the activity they enjoyed the most. They selected Big Four instead. This was something they could do well. One of them also enjoyed circling the pictures. They did not find group work interesting probably because they did not contribute much to the group activities. It seemed that students selected the activity they could do well in.

Based on the analysis of the students' writing exercises, compositions and performance in exams, the teacher and students' feedback, I can conclude that the intervention had contributed to the improvement in the students' composition writing performance. However, different ability groups benefited differently. Therefore, in future interventions, it is necessary to adjust the scaffolding so that all students can benefit from it.

Refinements for the Current Composition Writing Intervention

Our two-stage model scaffolded the students in basic writing skills and micro-writing skills. It was effective in raising the students' writing performance. However, when scaffolding the lower ability students, the model required some refinements. The following sections will discuss these refinements within the theoretical framework of social constructivism and scaffolding. Let us revisit the theoretical underpinning of this study.

Recap of theoretical framework.

Learning, according to Vygotsky (1978), takes place first at a social level. The social interaction, for example, a child interacting with an adult, changes the child at the cognitive level. The adult will guide the child within his or her zone of proximal development (ZPD). ZPD is defined as "distance between the child's actual

developmental level as determined by independent problem solving and the higher level of potential development as determined through problem solving under adult guidance and in collaboration with more capable peers” (p. 86). Teaching beyond or under the child’s ZPD are undesirable. It will either be too difficult for the child to learn or the child loses interest because what is taught is too easy. When the learner is appropriately challenged, the learner will be motivated to learn. Learning takes place when the learner constructs mental representations of the social interactions and this type of learning is known as social constructivist learning.

Later, Wood, Bruner and Ross (1976) called the help that the adult provides within a child’s ZPD scaffolding. Just like a physical scaffold, it will be removed when the child can perform the skills to be learned independently. According to Puntambekar and Hübscher (2005), social constructivism and scaffolding entails an expert that provides teaching, modeling, and encouragement to the learners. The expert will provide support, highlight important concepts, ask questions, provide hints, and help the learner reflect. As such, the learning process is dialogic and interactive. To provide support adapted to the learner’s ability, it is necessary for the expert to continually assess the learner. Based on the assessment, the expert will guide the learner accordingly. The assessment is therefore just-in-time; the scaffolding adaptive; the learner, gradually taking more responsibility in learning. When the learner is able to perform the skills or apply the content knowledge independently, the expert will fade the scaffold.

The scaffolding concept has since been applied to the classroom setting. According to Puntambekar and Hübscher (2005), in the classroom, (a) The teacher has to provide scaffolding to multiple students. Each student has his or her ZPD. The teacher has to provide a scaffold for each of them. Because of time constraints,

ongoing assessment cannot be performed for every student. As assessment will not be just-in-time, scaffolding therefore cannot be adaptive. The scaffolding will very likely be standardized, one-size-fit-all. This is the issue of multiple ZPDs in the classroom;

(b) There are usually multiple scaffolders but none could provide adaptive scaffolding. Multiple scaffolders scaffold multiple learners. Scaffolders can be computer software, the students themselves (e.g., peer edit), and the teacher. According to Puntambekar and Hübcher, technological-based scaffolds are likely to be fairly standardized and assessment may also not be just-in-time. Although peers may provide some help, they were not able to perform assessment like the teacher and provide assessment-based scaffolding. As such, the assistance they provide may not be sufficiently adaptive. Multiple scaffolders may provide more guidance to the students, however, the major responsibility of guiding the students adaptively will still rest on the teacher;

(c) Fading takes place at specific times, usually just before the exam. The scaffold will fade regardless the students have internalized the skills before the exam or not. For those who have internalized the skills long before the exam, the scaffolds will likely to still be there.

In our study, we encountered similar experience. According to the teacher:

M should fall in between the H and the L. For topics they are unsure, they need to have someone to guide them, teach them. However, they also need to have the freedom to express their thoughts just like the H, except still need someone to correct them when they have errors.

Hence a structure of going through the main idea first, then get the M students to complete the activities independently, then check on their work, should work well with them. That is also why normally in school, we plan our teaching structure like this, so as to cater to the masses who are the M students (June 8, 2011).

The current study encountered similar issues found in prior studies. The following is a discussion on how to reduce these issues in future interventions.

Refinements for the Writing Environment based on the Social Constructivist Theory

The following are suggestions on how to refine the composition-writing environment as a whole. Future intervention should take into the following considerations:

1. Retain ICT but vary the ICT-mediated scaffolds to suit different ability students.

This is known as adaptable scaffolding. It can address the shortcoming of using a blanket scaffold for the entire class of students. The scaffolds in this study focused on medium-ability students as they represented the largest segment of the student population. Not much attention had been given to scaffolding the high- and low-ability students. In future, it is necessary to vary the scaffolds according to ability level. The new ICT-mediated writing environment should have a minimum of three difficulty levels, for the high-, medium-, and low-ability students. How these scaffolds should differ to fulfill the needs of the students was discussed in the subsection “Effectiveness of Writing Compositions in the E-portfolio”.

In addition, we now have a collection of the students’ compositions and assignments in the e-portfolio. They can be mined to provide positive and negative examples to the students. These examples can also be adapted to the students’ ability, for example, provide examples on vivid writing for high-ability students. Provide examples on flow, completeness, and sentence structures for low-ability students. We are working towards adaptive scaffolding where the process of assessing the students, mining, retrieving, and presenting past examples to scaffold the students will be automatized (Chung, Leong, Loo, 2006).

2. Improve the collaborative process by training students to do mature discussion and help one another out in peer editing. In the current study, both the teacher and the students commented group work, especially peer editing, helped to improve performance. Moreover, the students preferred group work. Group work encourages dialogic and interactive exchange (Puntambekar & Hübscher, 2005) that may be able to remedy the severe time constraints in composition training in this study. The time for scaffolding the students to write compositions was carved out from the regular Chinese lessons. By getting peers to help one another will free up some time for the teacher to work with low-ability students. This may provide a partial solution to the issue of multiple ZPDs in the classroom. The teacher is not able to guide and assess individual students. By engaging peer help, the students will receive some assistance that is within their ZPDs. However, we have to be aware that the students are not trained to collaborate properly. In future, the teacher may need to look into how to train the students in doing group work before the actual collaborative sessions.
3. Vary the time of fading the scaffolds based on the ability of the students. Fading should occur when the students have internalized the skills they are supposed to learn. At the beginning of the intervention, the teacher asked when she could fade the scaffold. Nobody had the answer. Unfortunately, in a classroom situation, fading sometimes occurs either too early or too late. For example, while the scaffold was removed too early for the low-ability students when they still could not apply the knowledge or skills, it was removed too late for the high-ability students when they ignored the scaffolds because they no longer serve any purpose. Future interventions should adapt the fading of scaffolds to the ability of the students' document when they can be faded. By systematically tracking

student learning, the teacher will be able to estimate when to fade the scaffolds. For example, in the case of medium-ability students, they relied heavily on helping words when they wrote compositions. They could perform as long as there were helping words to scaffold them. However, they are unlikely to internalize these words by just using them once. The teacher can provide them with a number of helping words and in subsequent lessons, repeat these helping words periodically to reinforce their learning. By keeping track of how much practice she has to provide them before they could use these words in their compositions, the teacher will find out how long and how much practice students require before she can fade the scaffold. Over time, the teacher will be able to estimate when to fade helping words. For low-ability students, the teacher can repeat this process but she has to give them easier helping words as the helping words for medium-ability students will be too difficult for them. High-ability students could internalize the micro-writing skills quickly. The teacher can therefore fade the scaffold and move on to a more challenging set of scaffolds, e.g., scaffold that is an integration of two micro-writing skills such as write action chains that contain feelings and expressions. This will help them attain their potential development.

Future intervention to scaffold composition writing should take into account the above suggestions. In the following sections, I will discuss specific refinements within my two-stage writing model. As the writing model was underpinned by social constructivist theory, the refinements to the writing model will also be in the direction of how to scaffold the students to write better compositions. In particular, I will discuss refinements for the Chinese language game, the micro-writing skills and the peer-editing environment.

Refinements for the Chinese Language Game

Our two-stage training model had two components, one was to help the students in improving their basic writing skills and the other, acquire writing skills. The training of basic writing skills included transcription, expansion of vocabulary, and writing sentences with better sentence structures. The methods of training included both the traditional pen and paper method and the ICT-mediated method. ICT was an important component of the writing model because they could provide adaptable help. The Chinese language game in the e-portfolio has been shown to engage the students in prolong practice. It could help the students improve in pinyin, vocabulary, and sentence structure. However, it was mainly played by a few medium-ability students and therefore was grossly underutilized. As such, it should be modified to cater to all students.

The main reason that it was not used was that it was not within the ZPDs of the high- and low-ability students. It was too easy for the high-ability students and too difficult for the low-ability students. In future design, the high-ability students should be able to skip the beginners' levels and go straight to the level that is challenging to them. For the low-ability students, the speed of the dropping characters or words should be slower than those in the current study. To help the students in writing, the teacher can also consider changing the vocabulary to words that are commonly used in the compositions such as feeling, expression, or action words. When the students make mistakes, an English explanation of the word can also be included to complement the Chinese explanation. This is especially beneficial to the low-ability students as they had already requested the teacher to include some English explanation in her lessons in the student interview done at the end of the current study.

Moreover, the game play should be modified. Currently, the students have to go through many levels of pinyin game before they could get to the phrase-making levels where they unscramble characters to make correct phrases. Instead, when the students have learned the pinyin of a word, a simple jumbled up phrase containing that word can be dropped for the student to unscramble. This would reinforce the learning of the word. These phrases should be repeated in future levels until the student can unscramble them correctly. This will ensure the student have adequate practice of using the word to form accurate mental representations. Then they are likely to use the word in future. Furthermore, the teacher must give the students sufficient time in class to play the game. They should be given time to play until they are able to unscramble the phrases. This will indicate they have formed mental representations of those words and are likely to use them in future. The game software needs to be able to track if the students are able to unscramble the phrases and therefore have internalized the new words for that level of game play. If they have, it should bring them to the next level. This will make the game adaptive to the abilities of the students. As my research findings showed that the poor composition performance of weaker students were most likely due to their poor basic writing skills, the Chinese game took on a more important role than it was originally conceived. It could help the students improve in the Chinese language and indirectly, help them to write vividly.

Refinements for the Scaffolding of Micro-writing Skills

In addition to helping the students improve in basic writing skills, the students were also scaffolded to learn the micro-writing skills which would help them write vividly. The micro-writing skills included Big Four, feeling chain, and action chain. The students did not have problem with learning and applying the Big four micro-

writing skill. However, the students did not perform well in writing feeling chains. One reason was that the students did not have adequate feeling and expression vocabulary. To help the students learn, feeling and expression words should first be introduced in the Chinese language game. The students should play the game until they have acquired proficiency in forming phrases with them. This should be conducted before the composition-writing lesson. The other reason that the students could not apply the feeling chain writing skill was they were not clear about the causal relationship between feeling and expression. The teacher can let the students tell short stories that contain feelings and expressions. Over time, the students will acquire the mental concept of the cause and effect relationship between feelings and expressions. When they have internalized the relationship, they will more likely to apply the feeling chain micro-writing skill in their composition.

When the teacher scaffolded the students to write feeling chains, she also encouraged them to write dialogues and monologues. Although the students found it easy to write dialogues and monologues, the weaker students were not able to empathize with the characters in the story. This indicated the students lacked social experience. The students were not guided to share and help others. As such, they are not able to feel for others. This requires metacognitive training in character building. This will be a large-scale, long-term project. It will involve effort from the entire school. To solve this problem at a more superficial level, the teacher can conduct regular story telling sessions. In the session, the students will role-play to learn how to be more understanding towards others.

When weaker students were scaffolded to write action chains, they were able to do so. When not prompted, they would not apply it. The reasons the students gave were they did not know where to add action chains; they could not visualize the action

being unfolded; and they did not have adequate vocabulary. To remedy the situation, the teacher will have to give the students pictures to identify where to add action chains. This activity should be conducted regularly. Moreover, in future intervention, software on mobile devices that allow the students to take video clips and annotate frames with Chinese text will be introduced. This will encourage the students to take video clips of actions and describe the unfolding actions. In addition, action vocabulary should be introduced in the Chinese language game. The students should be able to play the game throughout the year, not just be limited to the early part of the academic year.

The students were scaffolded to write their compositions in the e-portfolio. It is an environment in which the teacher could provide different writing aids such as question prompts, instruction prompts, helping words, pictures. It also contained the peer-editing and collaborative mind map software. I will first discuss the changes that are necessary for the writing aids. The current study found that different ability students responded differently to the writing aids. The high-ability students largely ignored the writing aids as they did not require them to write good compositions. Instead of using a blanket scaffold for all the students, the scaffold for the high-ability students can be more advanced. This will stretch the potential of these students. As they were concerned with making their compositions more vivid, the prompts can be more general and more abstract, for example, *provide more vivid details to bring the character to life*. The corresponding helping words should also be of higher quality, which can be mined from previous batches of students. The teacher can also consider providing them with additional reference materials so that they can look for what they need. The reference materials should include sentences or short paragraphs of text to demonstrate how the vocabulary is being used.

For low-ability students, the prompts have to be very specific. If we want them to write a feeling chain, the prompt has to tell exactly what they should write, for example, *what was the character's facial expressions and what feeling caused them?* The helping words must also correspond to the prompts so that the writing aids are integrated. The words should not be as difficult as those provided to the medium level students. And they should already be exposed to the low level students in the game. If the low-ability students do not have Internet access at home, the school can consider organizing a Chinese language after-school group to let them play the game and engage in other storytelling, drama, tagging action video clip activities. As said, this requires the determination of the school to make it happen.

Refinements to the Peer Editing Process

The ICT-mediated peer-editing environment played an important role in the current study. During the editing process, the students' group discussions may be valuable as they reflect the students' mental representations. The discussion can be recorded and analyzed. The teacher can select the appropriate discussions to be shared with the entire class. What is discussed in the group may be of relevance to the entire class. Moreover, the teacher can also pick examples from the students' work and discuss them in class. Sharing with the class will help to remedy the situation in which the teacher alone has to provide scaffolds for multiple ZPDs.

Most importantly, the training has to start early, in Primary 1. The effort should be regular and long term. Students should learn to input Chinese characters, allowed to play the Chinese Language game to improve their vocabulary and sentence making, engage in telling simple stories with linking events, and role-play to learn to empathize with others or support others. In addition, the training effort has to extend to Primary 6, the final year of the primary education. In the Primary 5 and 6 levels,

the teacher should build on what the students have learned in Primary 4. For example, the teacher can include characterization, reinforce the writing of higher level feeling chains such as enriching action chains with feeling chains, setting the tone of dialogues with feeling chains, facilitate the writing of the dialogue with more depth, encouraging the writing of more detailed information that will contribute to the vividness of the story. This will stimulate the students to link up existing mental structures creatively.

The findings from the current study complement previous research findings that students learn through engaging in social interactions with more knowledgeable others. They will scaffold the students to achieve their potential. Cognitively, scaffolding help students construct or modify their mental representations for the social context. With accurate representations, students will be able to apply them to solve problems successfully. Success in problem-solve will motivate students to engage in more challenging writing tasks. These findings have provided a challenging yet exciting direction to educate primary school children in Chinese language writing.

Answers to Research Questions

In this study, I attempted to find out answers to three research questions. First, “what are appropriate strategies for teaching writing for mid-level classes in a Singapore neighborhood school?” From the findings, several strategies have to be adopted to address different issues faced by students. In addressing the inadequacies of basic writing skills, an immersion strategy is necessary to create a Chinese environment to engage students. Students should be able to interact in a non-threatening manner in the environment. However, for a society or a school to create such an environment, it will require much determination. Fortunately, this is being done as I write. A bicultural taskforce has just been set up in Singapore to “promote

Chinese language, culture and social ties” (The Straits Times, July 16, 2011, p. A42). We have to bear in mind that such nation-wide initiative will take time to filter down to individual school/family. In the meantime, a mini Chinese immersive environment can be set up via ICT to provide immersion. I propose to build in games and simulations in this environment to engage students so that they will gradually get used to being in a Chinese environment. Furthermore, students can work on collaborative activities (e.g., brainstorming for synonyms) and learn to write compositions with prompts and helping words. After they have completed their compositions, their peers will edit their work. It will enable peers to share experience and learn from one another.

Furthermore, to improve students’ composition writing skills, writing instructors have to look into helping students to flow sentences, identify relevant events in the story and write vividly. The sentence-making strategy will help students in writing flowing sentences. The teacher can provide sentence-making activities either on pen and paper or on the computer. If it is ICT-mediated, the teacher can also conduct peer editing after students have completed making sentences. To help in identifying relevant events in the story, I propose the use of circling strategy. This strategy enables students to find out important events even if they are not depicted in the pictures. It also helps students specify the order of events before they write their composition. This will ensure students identify relevant events and sequence them in a short period of time.

In addition, to improve the vividness in writing, scaffolding strategy should play a central role as it will help students acquire skills gradually. I propose to scaffold students towards acquiring micro-writing skills so that they can apply these skills to write vivid compositions. Scaffolds can be both pen-and-paper based and

ICT-mediated. Pen-and-paper scaffolds include forms (e.g. for students to fill out Big Four elements, three related actions to write an action chain) and checklists (e.g., to monitor if students have accomplished the writing tasks). ICT-mediated scaffolds can also include forms but more importantly, they should include collaborative learning (e.g., brainstorming for vocabulary, peer editing one another's work). Peer's help can be additional scaffolding for weaker students and at the same time, higher ability students can strengthen their writing skills.

The second research question I attempted to answer was "What is an appropriate and effective software technology platform based on the writing program?" The software platform has to enable effective scaffolding of students towards writing competency. It should provide seamless integration of applications that will help students in their writing, e.g., collaborative mind map, peer editing, composition writing environment and games and simulations. Moreover, it should also be able to record the long term learning history of individual students. This allows future teachers to study the past performance of their students and create adaptable scaffolds for them. Furthermore, it should allow teachers to work efficiently, e.g., create and assign scaffolds easily, be able to share scaffolds and teaching recourses, as well as write and store observation notes.

The third research question was "How could scaffolding be effectively incorporated and used through the software technology platform?" When employing ICT as a strategy for writing instruction, their power should be tapped. ICT enables three important areas of activities that are not available with pen-and-paper. They are the perfect platform to mediate games, which would engage students in extended hours of fun-filled learning activities. This can be considered a form of deliberate practice to consolidate what students have learned. Moreover, ICT also mediate

collaborative activities that allow peers to share experience and help one another. Last but not least, they provide the capabilities for teachers to create adaptable or even adaptive scaffolds for individual students. This will remedy the situation where the teacher alone has to scaffold an entire class of mixed-ability students, usually with a blanket scaffold.

In conclusion, my study investigated the design of a suitable writing model to educate Primary 4 students in writing good compositions. The model was designed based on the social constructivist theory in which scaffolding was the main instructional strategy. It was also built upon Graham's SRSD model (2006a) that emphasized a proper instructional process to instruct students in acquiring knowledge and skills. The process included direct instruction, modeling, scaffolding, and deliberate practice until students could write autonomously. Both pen-based and ICT-mediated scaffolds were adopted. ICT-mediated scaffolds were employed because it enabled features that were not easily attainable using pen-and-paper. ICT were able to engage students in fun activities for a long period of time, enable collaborative work for students to learn from one another and enable teachers to assign adaptable scaffolds to individual students so that they would not be learning materials that were either too simple or too complex for their abilities. Findings from the study indicated the writing model was successful in raising students' writing performance. I have also included some areas of improvement for the writing model.

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Appendix A

Pinyin Acquisition, Vocabulary Building, and Phrase Making Game (VIP)

Write-up

1. Summary

The VIP (Vocabulary Improvement & Pinyin) game is designed to provide low to mid-level primary school learners with intensive practice to help acquire basic Chinese language skills such as Hanyu Pinyin, Chinese words and phrases, and sentential structure. The game works with students with different levels of language ability. It contains multiple levels of game play that increase in difficulty as the student progresses. The game has been trialed at a neighborhood primary school since October last year. Experts from the Curriculum Planning and Development Division (CPDD) of the Ministry of Education who examined it came back with highly positive reviews. Results from the trial shows that the game is very engaging, the students were excited about it, and it is an effective way to acquire and practice basic Chinese language skills. Successive refinements will be carried out to improve the effectiveness of the game.

2. Goals

The goals of the game are:

- a. Strengthen the learners' pinyin skills so that they are able to easily input Chinese characters onto the computer.
- b. Enlarge the learners' vocabulary, starting with single Chinese characters, then moving on to idioms and longer phrases.
- c. Improve learners' sentence making abilities.

3. Game Design*a. Chinese Language Content*

Currently, the game has three sets of content, increasing in difficulty and designed for learners at the Primary 2, 3, and 4 language abilities (see Figure 1). The characters, phrases, and idioms are sight words (i.e., high frequency words) in children's literature, school textbooks, and (to keep current) the Internet. Content can be continually added and adjusted to suit the students' grade and abilities. See Table 1 for details of current content in the game.

Table 1. Number of Characters and Words in the Game

Level	Single Character	Two-character Word	Three-character Word	Four-character Word	Five-character Word	Six-character Word
Primary 2	80	212	40	26	15	4
Primary 3	240	80	30	24	15	12
Primary 4	1000	90	35	60	16	21



Figure 1. Game List.

b. *Description of the Game*

The basic design of the game involves Chinese characters, idioms or phrases gradually descending from the top of the browser window. The learner has to type in the correct pinyin before the character reaches the bottom of the browser window (see Figure 2).

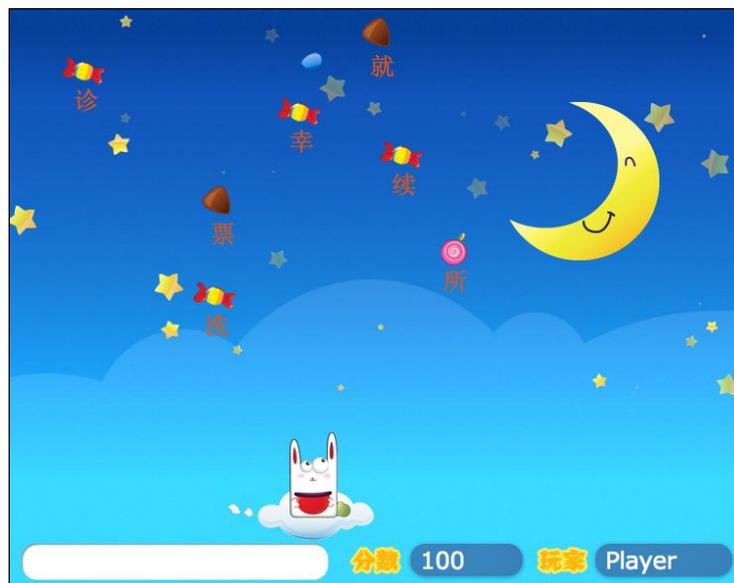


Figure 2. Single-character level.

When the learner types the correct pinyin, the character will disappear and marks will be allocated. If the user types in the wrong pinyin or if the character reaches the bottom of the bottom of the screen before the pinyin is entered, then marks will be deducted.

For phrases and idioms where there are more than one character, then the characters are jumbled and the learner has to unscramble them and type in the correct pinyin before the phrase touches the bottom of the screen.

Bonus marks are given if the learner types the correctly identifies the phrase and types its pinyin at the first try. This improves their familiarity with common phrases and encourages them to form those phrases quickly. If the student cannot identify the phrase, or if they are unable to type in the correct pinyin, then the system will display the phrase together with their pinyin to teach the student and then give them another try at the phrase to help consolidate their learning.

Each set of content has ten difficulty levels. The student can repeat a level as often as they like, and the words and phrases presented will randomly selected from the content set. When the student completes a level, a summary page is provided to help the student perform self-assessment. Wrong or missed characters with their correct pinyin are highlighted in red. Correct pinyin and their associated characters are shown in black (see Figure 3).



Figure 3. Level summary.

c. *Game Difficulty Levels*

As mentioned above, each content set has ten difficulty levels. The levels gradually build up the learners' skills in pinyin, character recognition, and sentence structure. The game play changes every two levels in order to provide different training in Chinese.

i. Levels 1 and 2

These two levels train the learners in recognizing single characters and the pinyin for these characters (see Figure 2).

ii. Levels 3 and 4

These two levels train the learners in recognizing two-character sight words and the pinyin for these characters (see Figure 4).



Figure 4. Two-character level.

iii. Levels 5 and 6

These two levels train the learners in recognizing Three-character sight words or idioms and the pinyin for these characters (see Figure 5).



Figure 5. Three-character level.

iv. Levels 7 and 8

These two levels train the learners in recognizing four-character short phrases or idioms and the pinyin for these characters (see Figure 6).



Figure 6. Four-character level.

v. Levels 9 and 10

These two levels consist of four- to six-character short phrases. From level 9 onwards, the goal of the training is to help the learners in improving their sentence structures. They have to form correct phrases quickly and type them out in correct pinyin. By now, it is assumed the students will be proficient in pinyin.

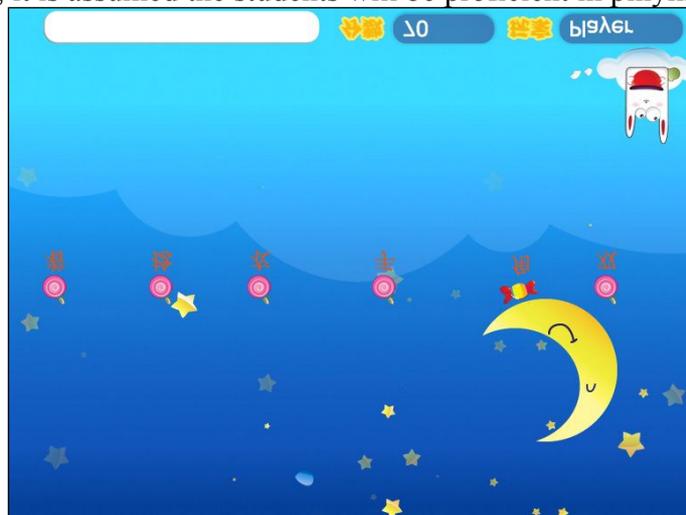


Figure 7. Six-character level.

4. Trials and Expert Reviews

The game was trialed in North Spring Primary School at the Primary 4 level in 2008 and at the Primary 3 level in 2009. Two teachers were involved in the trials. The goal of these trials was to find out if the game was effective and engaging. Chinese language experts from the Curriculum Planning and Development Division (CPDD) of the Ministry of Education (MOE) were invited to review the system. Feedback was collected from the MOE experts, teachers, and students. For a summary of trial details, see Table 2.

Table 2. Trial Details

Date	Level	Activity	No of Student	Conducted by	Observed by
Oct 23, 2008	Primary 4	Level 1 game	60	Teacher	
Nov 3, 2008	Primary 4	Level 1 game	29	Teacher	MOE CPDD officers
Feb 13, 2009	Primary 3	Level 1 game	27	Teacher	

a. Results, Feedback and Refinements

i. Primary 4

The trial was conducted on Oct 23, 2008 for two Primary 4 classes (Steadfast 4 and Kindness 4) and again on Nov 3, 2008 for Kindness 4 class. Altogether, there were 60 students. On Oct 23, Steadfast 4 played the game in the computer lab for about one hour. Each student had their own computer and played the game for 45 minutes after 15 minutes of setup and instructions. Kindness 4 did the trial in the classroom with only a single computer but with the computer output projected onto a large screen. The students were called up one by one to play the game. Fifteen students in total played the game. On Nov 3, MOE CPDD officers were invited to visit the class. The game was played for about 20 minutes while they were there.

ii. Effectiveness and Engagement

The students were very engaged in the game. According to one of the teachers, the students “love” the game. As such, they put in much effort to type fast and learn the pinyin so they could score better. The same teacher commented: “This game will really build up their typing and pinyin skills”. Observation showed that the game had raised the students’ self-efficacy in Chinese tremendously. A student said, “We are very poor in Chinese but we can get 300+ points.” And he actually copied the correct pinyin from the panel displayed at the end of the game so that he could score better in following games. Those who play games regularly scored well as they could type fast. The highest score for boys was 411 and for girls, 405. Even the teachers (three teachers played the game) themselves enjoyed playing the game. The teachers requested for more words and short phrases to be added to the game. The game now has many more words and phrases up to six characters in length.

iii. Expert Review

The curriculum planners from MOE were enthusiastic about the game. They requested the game to be sent to them for further evaluation. They also suggested some changes such as to vary the end of game comments so that they are performance-based.

iv. Primary 3

The trial was conducted on 27 students in the computer lab on Feb 13, 2009 for about 15 minutes. This is part of their training to access the Internet. Again, the students were excited playing the game. As the students are much younger and new to the computer keyboard, they were slow in typing and weak in pinyin. As such, the pace of the game had to be adjusted to their level. For the next trial, the teacher has suggested pairing students so that stronger ones can help out the weaker ones.

Issues arising from observation and expert comments are all taken into account in refining the game. New trials are planned and will start soon.

5. Conclusion

The VIP Game was designed and implemented to provide intensive training for learners to acquire basic language skills in a short period of time. The trials in school were very successful. The students were excited and engaged in playing the game. Chinese language teachers and curriculum planners provided valuable feedback in improving the game. Successive refinements will be performed after each school trial.

Appendix B

Ministry of Education Rubric for Primary School Composition Writing

Component		LVL 1	LVL 2	LVL 3	LVL 4
Language	Paragraphing	<ul style="list-style-type: none"> ▪ Paragraph not clearly defined ▪ There is severe problem with flow between paragraphs 	<ul style="list-style-type: none"> ▪ Paragraph not quite clearly defined ▪ There is problem with flow between paragraphs 	<ul style="list-style-type: none"> ▪ Paragraph quite clearly defined ▪ There is some problem with flow between paragraphs 	<ul style="list-style-type: none"> ▪ Paragraph clearly defined ▪ There is flow between paragraphs
	Vocabulary	<ul style="list-style-type: none"> ▪ Inappropriate use of vocab ▪ Very limited vocab ▪ Grammatical problems with sentence structure 	<ul style="list-style-type: none"> ▪ Use of vocab not quite appropriate ▪ Limited vocab ▪ Some grammatical problems with sentence structure 	<ul style="list-style-type: none"> ▪ Quite appropriate use of vocab ▪ Adequate vocab ▪ Not much grammatical problems with sentence structure 	<ul style="list-style-type: none"> ▪ Appropriate use of vocab ▪ Adequate vocab ▪ No grammatical problems with sentence structure
	Punctuation and use of appropriate words	<ul style="list-style-type: none"> ▪ Wrong punctuation ▪ Many inappropriate use of words 	<ul style="list-style-type: none"> ▪ Punctuation not quite correct ▪ A fair amount of inappropriate use of words 	<ul style="list-style-type: none"> ▪ Punctuation fairly accurate ▪ Few inappropriate use of words 	<ul style="list-style-type: none"> ▪ Accurate punctuation ▪ No inappropriate use of words
Content	Description	Content incomplete	Some content incomplete	Content rather complete	Content complete
	Storyline	Not vivid	Not really vivid	Quite vivid	Vivid

Appendix C

Student Survey

1. Default Section

1. 这是有关于我的资讯: **This is information about me:**

我的英文姓名是: My English name is:

我的华文成绩是band____: My result for Chinese is band____:

我最想写的作文题目: My favorite composition topic is:

2. 我就读_____班. **My class is _____:**

- Kindness4
- Noble4
- Steadfast4

3. 我在家里讲的语言是: **I speak _____ at home.**

- 华语 Mandarin
- 英语 English
- 华语和英语 Mandarin and English
- 方言 Dialect(s)
- 马来语 Malay

Other (please specify)

4. 我的家里_____。 **At home, I _____.**

- 有电脑但不能上网 have a computer but no Internet access
- 能上网及输入中文字 have Internet access as well as can input Chinese characters
- 能上网 have Internet access
- 没有电脑 do not have a computer

5. 我每个星期大约使用电脑_____小时(不论在哪里用)。 **I use computer about _____ hours per week (regardless of where I use them).**

- 超过5小时 more than 5 hours
- 3-5小时 3-5 hours
- 1-2小时 1-2 hours
- 少于1小时 less than 1 hour

6. 我对华文的看法: **My Attitude towards Chinese:**

	非常同意 Strongly Agree	同意 Agree	没意见 Neutral	不同意 Disagree	非常不同意 Strongly Disagree
a. 我觉得用华文写作能让我写出心里的感受。 I can express my feelings when I write Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 我对华文写作的兴趣越来越低了。 I have less and less interest in writing Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 如果我有选择, 我会放弃华文写作。 If I had a choice, I would give up writing Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. 我对以小组讨论的方法来写作的看法: My attitude towards writing and editing in a group:

	非常同意 Strongly Agree	同意 Agree	没意见 Neutral	不同意 Disagree	非常不同意 Strongly Disagree
a. 在小组里写华文作文时, 组员们总是争吵, 令我很烦。My group members kept arguing when we wrote Chinese compositions together. It was quite upsetting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 在小组里写华文作文, 能让我学习和组员们沟通。I learned how to communicate with my group members when I wrote Chinese compositions in small groups.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 我觉得两人一组写作或评估作文比四人一组有效。Two in a group to write compositions or to do peer-rating is more effective than four in a group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. 我觉得小组写作对我帮助不大, 因为我的写作能力比同学们强。Writing in groups does not help me much because I am already good in writing Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. 如果你有到电脑室写作文, 请回答以下问题。If you have been to the computer lab to write compositions, please answer the following questions.

我喜欢现在的写作环境 (电脑室或ePort), 因为:

I like my current Chinese composition writing environment (write in the computer lab or ePort) because:

	非常同意 Strongly Agree	同意 Agree	没意见 Neutral	不同意 Disagree	非常不同意 Strongly Disagree
a. 我可以在网上看到同学们的作文。I can read my classmates' compositions on the Internet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 在电脑上写作, 加强了我对华文作文的兴趣。I am more interested in writing Chinese composition when I write on the computer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 多了读者, 会让我尽力的把华文作文写得精彩。There are more people reading my Chinese compositions. This makes me put in extra effort in writing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. 我的拼音进步了很多。My pinyin has improved a great deal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. 在电脑上写作, 有能够帮助我写作的工具 (提示问题及提示词), 提高了我的写作信心。I have various writing tools (e.g., helping questions and helping words in the eport) to support my writing. It increases my confidence in writing Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. 我进行以下活动后，我的作文进步了： After participating in the following writing activities, my ability to write Chinese compositions has increased:

	非常同意 Strongly Agree	同意 Agree	没意见 Neutral	不同意 Disagree	非常不同意 Strongly Disagree
a. 写华文作文前，老师让我在图上圈出主要的人物及物件，我就不会漏写了事件。 Circling important people or things in the pictures before writing the Chinese composition help me spot all the events in the composition.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 我用了老师教导的写作技巧如写四大要素，行动链,对话等，我的作文进步了。 I can write better because my teacher taught me how to write Big Four, action chain, and dialogues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 与同学配对写华文作文或进行小组写作，可以令我写作能力提高。 Writing in pairs or small groups increases my ability to write Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. 在eport里用回答提示问题的方式写华文作文，让我能写出更好的作文。 Writing Chinese compositions by answering the helping questions in the eport helps me write better Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Eport里提示问题太多了，我回答不完。 There were too many helping questions in the eport. I could not complete all of them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. 用mindmap和同学一起讨论作文内容，可提高我华文写作的能力。 Using mindmap in group discussion has raised my ability in writing Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. 评估同学的华文作文后，我自己的写作能力也提高了。 Peer-rating my classmates' Chinese compositions can improve my own writing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. 老师让我们默写，可以令我写作能力提高。 After dictation exercises, my Chinese compositions writing ability has increased.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. 我的华文写作进步了是因为我有补习华文。 My Chinese composition improves because I went for Chinese tuition after school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. 我的华文写作能力: My skills in writing Chinese compositions:

	非常同意 Strongly Agree	同意 Agree	没意见 Neutral	不同意 Disagree	非常不同意 Strongly Disagree
a. 写行动链时，我头脑里总是空空的。 My mind turns blank when come to writing action chains.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 我觉得要把人物的感情，表情，或动作写出来，是很难的。 I find it very difficult to write about feelings, expressions, and actions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 我总是漏写了图里的事件。 I kept missing out events in the pictures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. 我能自己评估作文，看看我少写了什么内容。 I can assess my own compositions to see if I had missed out something.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. 我头脑里有点子，但我的华文词汇太少，写不出来。 I have ideas in my mind but my Chinese vocabulary is too limited to write them out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. 我评估不出同学的华文作文的好坏。 I am not able to peer-rate my classmates' Chinese compositions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. 我的句势不好，写出来的作文不理想。 My sentence structure is not good. As a result, my composition is not good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. 我写作写的不快，总不能在限定的时间内完成我的作文。 I cannot complete my Chinese composition within the given time limit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. 在这一年里，我的中文写作能力进步了不少。 My Chinese composition writing ability has improved a great deal in the past year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D

Student Interview

Instructions to teachers:

Let the students answer a question first. If they cannot come up with an answer, then prompt them with the choices given for that question.

If the student names something that is not in the prompts provided, it is ok. Ask them why they think so. Judge if this can be included in future research. If so, explore further. If not, lead them back to our prompts.

I have included lots of space for you to make notes.

No: _____ Name: _____ Class: _____

Ability: _____

1. What are the three most useful things you learn from your P4 composition training?

- Circle the events
 - Number the events
 - Sentence making
 - New words
 - Pinyin
 - Make the composition flow
 - Write Dialogues
 - Write action chains
 - Write Big four in introductions
 - Write feelings
 - Write expressions from feelings
 - Others:
-

2. Why do you find them useful?

- My composition is more interesting
 - I can do something well now that I could not do before
 - My friends come to me for help now
 - I can play the pinyin game well
 - I learn to discuss ideas with my friends in group writing
 - Others:
-

3. What parts of the training are **not** useful? Name two parts.

- Circle the events
 - Number the events
 - Sentence making
 - New words
 - Pinyin
 - Make the composition flow
 - Write Dialogues
 - Write action chains
 - Write Big four in introductions
 - Write feelings
 - Write expressions from feelings
 - Others:
-

4. Why?

- I don't understand
- It is too difficult
- Not enough time for me to learn

- It is too late. I can't catch up.
 - I can't learn because I keep arguing with my friends in group learning.
 - Others:
-

5. What parts of the training are useful but we have not spent enough time on?

- Circle the events
 - Number the events
 - Sentence making
 - New words
 - Pinyin
 - Make the composition flow
 - Write Dialogues
 - Write action chains
 - Write Big four in introductions
 - Write feelings
 - Write expressions from feelings
 - Others:
-

6. In what way can the teacher help you in your writing?

- Start the training in P1 / P2 / P3 to work on: _____
- Give us more time on the computer to work on:

- Have more group work to work on:

- Have more real life activities for us to experience what we are asked to write.
 - Others:
-

7. What do you think are useful but we are not teaching? **To Teacher**: can mention some of the things that their tuition teachers may do, such as:

- Memorize chengyu
 - Memorize phrases
 - Work on drafts
 - Speak in Chinese
 - Others:
-

8. When you worked on peer-editing, were there things that your friend could do that you wished you know how to do?

- Vocab
 - Write sentences with good structure
 - They know what to say in a dialogue
 - They know how to describe an action
 - They know how to describe feelings
 - They know how to describe expressions
 - They know where to add linking words
 - They know where to start a new paragraph
 - Others:
-

9. When you worked on peer editing, did you help your friends? How?

- I told them what words to use
 - I help them change their sentence structure
 - I change their dialogues
 - I help them to describe an action
 - I help them to describe feelings
 - I help them to describe expressions
 - I added linking words in their work
 - I started new paragraphs for them
 - I told them pinyin of words
 - I helped them with technical things such as how to cut and paste.
 - Others:
-

10. What do you find most useful from doing the mind map exercises on the computer?

- Learn new words
 - Write more vivid (精彩)sentences
 - Learn to discuss (instead of argue) with my friends
 - Write better than I otherwise could
 - Others:
-

11. What are the three best things in your writing?

- Circle the events
- Number the events
- Sentence making
- New words
- Pinyin

- Make the composition flow
 - Write Dialogues
 - Write action chains
 - Write Big four in introductions
 - Write feelings
 - Write expressions from feelings
 - Others:
-

12. Why do you do them well?

- Teacher breaks the training into many small parts e.g., circling, Big 4, dialogues. We include those parts we do well in our compositions.
 - I learn pinyin in P4
 - I learn sentence making in P4
 - I learn new words (e.g. in mindmap exercises)
 - I learn from my friends' suggestions (peer-editing)
 - When I write on the computer, I can get suggestions from my friends and teacher quickly
 - The worksheets in P4 are useful.
 - I learn from my tuition teacher at home
 - My parents help me
 - Others:
-

13. **To Teacher:** In relation to question 11, ask them more about the parts they are strong in (no need to ask them all the following parts):

Big Four in the introduction

- I can remember what big four are
 - It is easy to write introduction when I learned to include the Big Four
 - Others:
-

Flow

- I learned to use the linking words.
 - I learned to do paragraphing.
 - I learned how to combine sentences.
 - Others:
-

Dialogues

- I know where in the pictures to add dialogues.
 - I know what to say
 - Others:
-

Feelings

- I know where in the pictures to add feelings.
 - I can feel how the character feels, e.g., angry, happy, sad.
 - Others:
-

Expressions

- I know where in the pictures to add expressions.
- I can link feels with expressions e.g., when the character feels sad, she will weep 流泪.

Others:

Action chains

I know where in the pictures to add action chains.

I can imagine the actions.

I have the vocab to write action chains

Others:

14. What are the three weak parts of your writing?

Circle the events

Number the events

Sentence making

New words

Pinyin

Make the composition flow

Write Dialogues

Write action chains

Write Big four in introductions

Write feelings

Write expressions from feelings

Others:

15. Why are you weak in these few parts? **To Teacher:** no need to ask them about all the writing skills. Just ask them about those they think they are weak in (in relation to Question 13).

Big Four

- I need more vocab to write introductions
 - I need better sentence structure to express myself
 - I don't know what Big Four is.
 - I can't really see it in my mind's eye so I don't have anything to write about say I can't imagine how it is like to go on a picnic in one sunny morning
 - Others:
-

Flow

- I need more vocab to write introductions
 - I need better sentence structure to express myself
 - I don't know how to combine sentences.
 - I don't know when to break ideas into paragraphs
 - Others:
-

Dialogues

- I need more vocab to write dialogues
- I need better sentence structure to express myself
- I don't know where in the pictures I can include a dialogue.

- I can't really see it in my mind's eye so I don't have anything to write about say I can't imagine what to say when a character is angry, or how to console someone?
 - What I am asked to write has nothing to do with what I do in my daily life.
 - Others:
-

Feelings

- I need more feeling vocab
 - I need better sentence structure to express myself
 - I don't know where in the pictures I can include feelings.
 - I can't really see it in my mind's eye so I don't have anything to write about e.g., I don't know how is it like to be sad, angry, or kind.
 - Others:
-

Expressions

- I need more expression vocab
 - I need better sentence structure to express myself
 - I don't know where in the pictures I can include expressions.
 - I don't know the trick that I can write feelings then followed by writing expressions.
 - I can't really see it in my mind's eye so I don't have anything to write about e.g., I can't imagine how someone who is very angry will express himself?
 - Others:
-

Action chains

- I need more vocab
 - I need better sentence structure to express myself.
 - I don't know where in the pictures to add actions.
 - I can't really see it in my mind's eye so I don't have anything to write about e.g., I can't imagine how a thief steals a wallet, how someone trips and falls, how someone punches another person.
 - Others:
-

16. What did you enjoy the most in the P4 composition training?

Appendix E

Lesson Plans

The following lesson plans scaffold the teaching of the entire composition writing process for NSPS. It can address relevance and links in the composition.

Circling Lesson Plan

- Teacher demonstrate circling with pencil (for main events) and labeling of sequence on a composition picture
- Teacher inform pupils that they can circle as many detailed events as reflected in the picture
- Teacher inform pupils that they can also circle events that inter-link the pictures which are not reflected in the pictures
- Pupils to do hands-on, teacher to guide and go through

How to write a good introduction

Students should be able to write a good introduction to the composition they are going to write.

At the end of the lesson, the students will be able to:

3. Write a good introduction
4. Use the Big Four (BF) skill (who, what, when, where)

Instructional materials

4. Checklist for attributes of a good Introduction
5. BF parts checklist for the students to monitor their progress
6. Big Four template (with four nodes. “Who” is the parent and the rest are child nodes. The words “who” “what” “where” “when” are one in each node). There should be space to write notes for each BF element.

Fading the scaffold

4. Simplify the template (list of who what where when only)
5. Further simplify to just w w w w
6. Fade entirely

Pre-requisites

Learned “who” “what” “when” “where” vocabulary including phrases and idioms

Time required: 2 hours

Lesson Plan

Direct teaching of what a good introduction is:

16. Describe the goal of writing a good introduction: **to write better compositions.**
17. Describe what makes a **good basic** introduction:
 - (f) A good intro has “who”, “what”, “when”, “where” parts,
 - (g) fun to write and read,

- (h) include exciting, colorful, and descriptive words (we can call it million dollar words),
 - (i) short and sweet (if you are not sure then write one sentence. If you are confident, write up to three sentences.)
 - (j) connect your readers with the main story.
18. Show a few good Intros and identify the attributes of a good introduction.
 19. Show a few not so good Intros and ask the students to identify what's missing and modify it.
 20. Show a few Intros with irrelevant sentences and ask the students to point out sentences that do not connect with the main story. Then remove the sentences.

Direct teaching and scaffolding writing of Big Four

21. Teach one way of writing an Intro by using Big Four (I will teach you **one way** to write an introduction. Big Four helps you to write the different parts of the Intro.)
22. Introduce the Big Four elements (WWW) and what they stand for (a) **Who** is the main character; who else is in the Intro? (b) **What** is the main character doing? (c) **When** is he doing it? (d) **Where** is he doing it? Then they discuss what each letter stands for until they can recite the Big Four parts and what they stand for. Students then identify BF elements in existing stories and generate BF while looking at a picture. As the students identify a BF element, the teacher writes it in the appropriate place in the chart.
23. Practice finding BF elements and fill up the BF template.
24. Discuss why each element in BF is important to the intro: The Big Four in the intro prepares your readers for the main story... What happens if "who" is missing in the Intro? How about if "when" is missing? Etc.

Scaffolding writing of Intro

25. Show how to use the template to write an Intro: a. look at the first picture (or circles), b. write Big Four reminder Who What When Where in the node, c. relax, d. fill up vocabulary for each node in the template, e. think about what makes a good intro, f. write the intro, g. ask themselves is this a good intro, h. why? Answer using the "Attributes of a good intro checklist".
26. Practice writing intro with the eight steps mentioned above.
27. More practice (can be in group or individually) using the scaffold to write intros. For example, in groups, the students direct the process and the teacher provides support as needed. There can also be peer support. From the template they generated, each student writes their own Intro. They then read their Intro to each other. They work to improve one another's Intro. **Must** write and assess the intro, not the template.
28. (Optional discussion) Can they remember what makes a good Intro? They should include all four parts, each part is well done, the Intro makes sense, and it should be fun to read.
29. Fade the scaffold (automaticity is achieved when the students continue to plan and write good introductions without the scaffold).
30. Exception to the rule: Tell the students these are rules that help them write better but rules can be broken. Sometimes, we don't have to include all the four parts and yet the Intro makes a lot of sense and is fun to read. Give example to show this point. (But, if you are not sure, write with the four parts.)

Enhancements:

13. Higher ability students or higher primary students can write advanced intros with three levels of nodes. They can expand ideas and vocabulary on one or more nodes, e.g., “in a dark night” can be expanded to “in a dark and stormy night”.
14. Use collaborative mindmap to help in filling the advanced BF template. The collaborative mindmap is used *as a template* and *for peer collaboration*. The student must still write the introduction *on his own*. This is the meaningful task.

Checklist for Attributes of a Good Introduction

- (6) The introduction has these parts:
 - e. who
 - f. what
 - g. when
 - h. where
- (7) Fun to write and read
- (8) Million dollar words
- (9) Short and sweet (if you are not sure then write one sentence. If you are confident, write up to three sentences.)
- (10) Connect your readers with the main story

Big Four Parts Checklist (to delete)

Tick the circle if you have the part in your Introduction

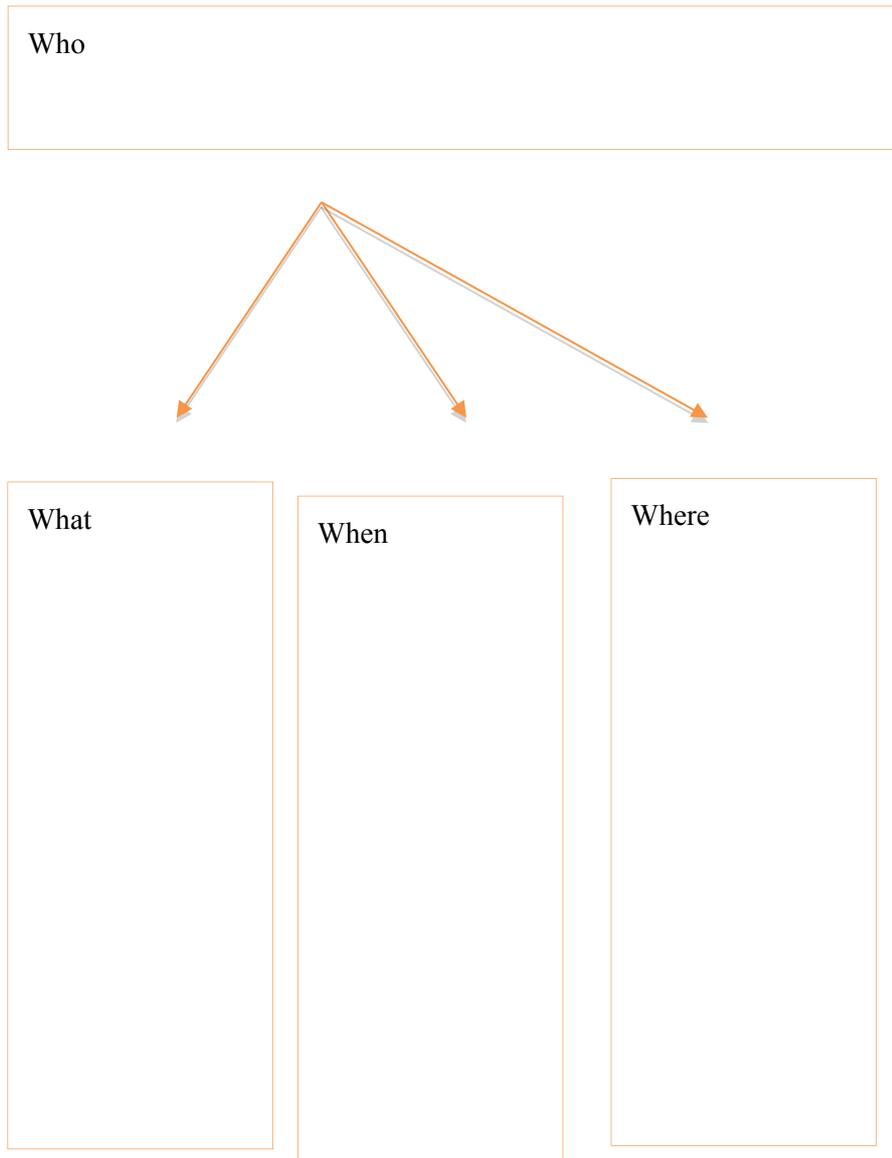
who

what

when

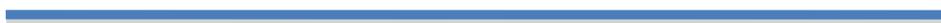
where

Big Four Template (1)



Big Four Template (2)

1W



2. W _____

3. W _____

4. W _____

How to Write Feelings and Expressions for Dialogues/Monologues

Goal: To write more vividly by including feelings and expressions for dialogues.

At the end of the lesson, the students will be able to:

1. Write feeling, how the feeling was expressed, and tone of voice for a dialogue or monologue.
2. Use the Feeling Chain skill for dialogues or monologues.

Instructional materials

1. Feeling chain parts checklist for the students to monitor their progress
2. Checklist for attributes of a vivid dialog/monologue
3. Feeling Chain templates for dialogues and monologues
4. Good and not so good examples

Fading of Scaffold

Ask the students to write the feeling chain parts and then fill out the parts.

Pre-requisites

1. Write a dialogue or monologue
2. Learned some basic vocabulary for feelings, phrases and idioms that express those feelings and tones of voice. E.g., 生气—红着脸—大声的说（或严厉的说），伤心—红着眼—哽咽的说，内疚—低着头—低声的说

(Lesson plan for learning feeling and expression words and phrases:

- Pupils given worksheet that required them to look at the emoticons, choose a suitable vocabulary, and categorized it under that emoticon.
- In the same worksheet, pupils completed second part

- Had to choose an emoticon that express their feelings and think of a sentence that explain them having that feeling and expression. For example, they are angry because their parents do not let them play computer games.
- Teacher to show video to pupils, wanting pupils to look out for the characters' expression and feelings
- Pupils to write down the characters' feelings, expression, and actions.

Teacher to explain briefly the difference of monologue (talk to oneself) and dialogue (talk to others).

Lesson Plan

Direct teaching of what the meaningful task is (to include feelings and expression to make dialogues/monologues more vivid) and how you know you have successfully accomplished it:

1. Describe the goal of including feelings and expressions for dialogues or monologues: **to write vivid dialogues or monologues.**
2. Tell the importance of vivid dialogues or monologues – makes the dialogues or monologues come alive. Vivid dialogues or monologues is good in compositions. Vivid dialogues or monologues have the following:
 - a. real life feelings and how those feelings are demonstrated
 - b. tone of voice
 - c. fun to write and read,
 - d. include exciting, colorful, and descriptive words (we call it million dollar words),
3. Stylistic imitation: Show some good dialogues or monologues and identify the feeling, demonstration of the feeling, and tone of voice. Then ask the students to identify them.
4. Show some not so good dialogues or monologues and ask the students to make it more vivid. This can also include dialogues that do not make sense (with irrelevant things said). Ask the students to take away these things.

Direct teaching to fill *feeling chains templates for dialogues or monologues*:

5. Indicate where to add feelings and expressions. (Most students want to write feelings and expressions but they don't know where to include them in the composition. Now I am going to teach you a place to add them. You add feelings and expressions just before dialogues or monologues.)
6. (Here's how you do it.) Introduce the feeling chain parts and what they stand for:
 - (a) **Character**;
 - (b) **Dialogue** or **monologue** that makes sense;
 - (c) **Feeling** is how the character feels;
 - (d) **Demonstration** is how the character demonstrates the feeling. Can have more than one item;
 - (e) **Tone of voice** is the way the character speaks that shows his feeling.
7. Then the students discuss the feeling chain parts and what they stand for. Students then identify feeling chain parts in existing dialogues and monologues. Then, they generate feeling chains while looking at a picture. As the students identify a feeling chain part, the teacher writes it in the appropriate place in the template.

8. Practice finding feeling chain parts and fill up the feeling chain templates.
9. Discuss why each part in the feeling chain is important to the dialogue: what we do and say comes from what we think and feel. If we are happy, we will smile and say pleasant words. If we are sad, we will have sad facial expressions and say unhappy words, e.g., His face is red with anger. Her cheeks were blanched by fear.

Practice the meaningful task with the feeling chain scaffold:

10. Show the students how to use the feeling chain template and write dialogues or monologues with feelings and expressions. These are the steps:
 - a. write feeling chain parts (subject, event, feeling, expression, tone of voice) reminders,
 - b. relax,
 - c. fill up feeling chain parts (can have more than one item for how feeling is expressed),
 - d. brainstorm and write vocabulary for each node in the template,
 - e. think about what makes a vivid dialogue or monologue,
 - f. write out the dialogue with the help of the filled template,
 - g. ask themselves is this vivid writing,
 - h. why? Answer using the “Checklist for Attributes of a Vivid Dialogue or Monologue”.
11. Practice writing feelings and expressions with the eight steps (a – h) mentioned above.
12. More practice (can be in group or individually) using the scaffold to write feelings and expressions for dialogues or monologues. For example, in groups, the students direct the process and the teacher provides support as needed. There can also be peer support. From the feeling chain they generated, each student writes their own dialogues or monologues. They then read their writing to each other. They work to improve each other’s writing. **Must** write and assess the writing, not the template.
13. (**Optional** discussion) Can they remember what makes vivid dialogues or monologues? They should include all the parts, each part is well done, the writing makes sense, and it should be fun to read.
14. **Fade** the scaffold (automaticity is achieved when the students continue to plan and write vividly without the scaffold).
15. Tell them **exception to the rule**: Tell the students these are rules that help them write better but rules can be broken. A good dialogue need not include feeling or expression of the speaker. It can be good if the dialogue itself makes a lot of sense. A good monologue need not include tone of voice. Give examples to show the point.

Enhancements

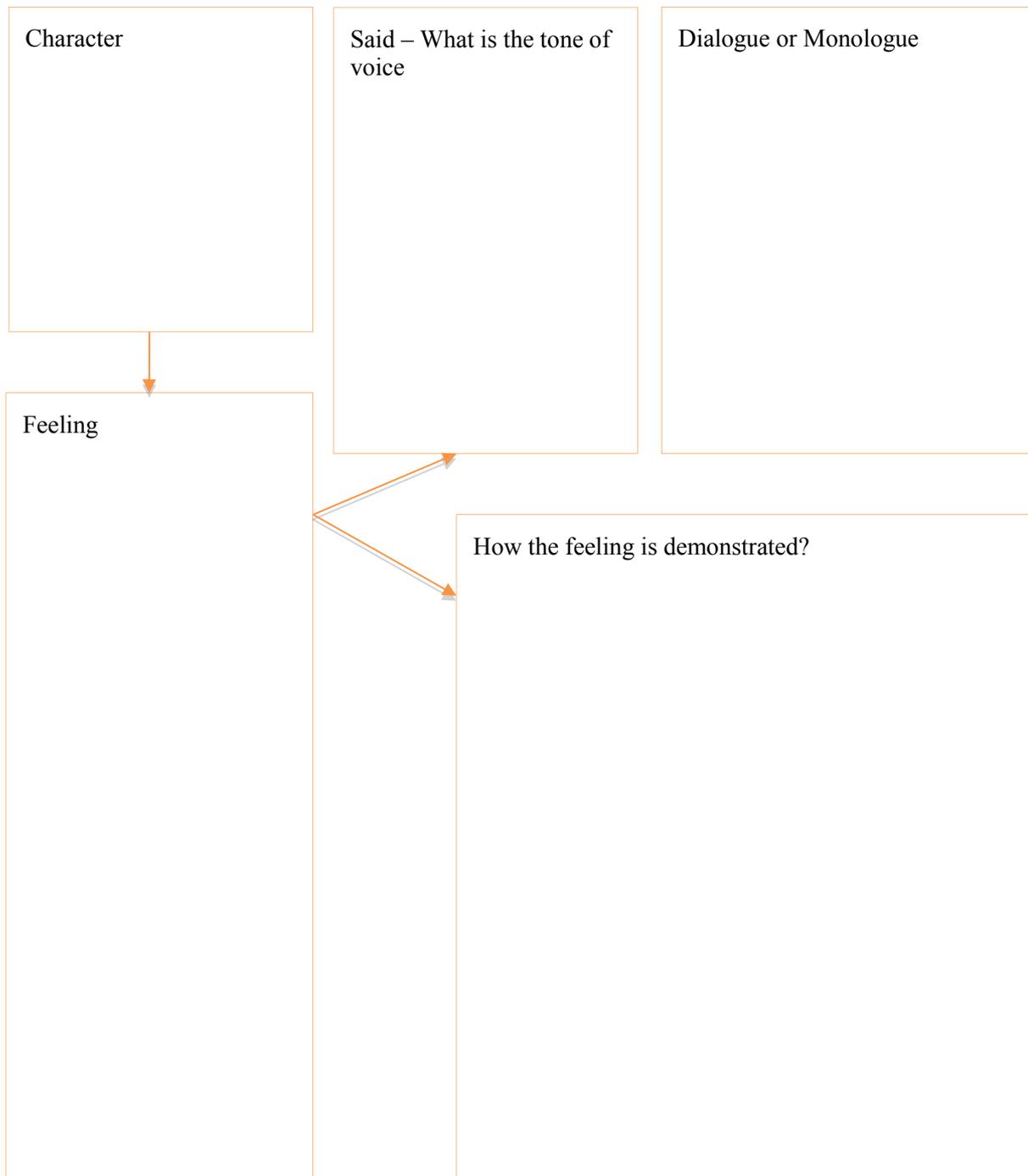
Use collaborative mindmap to help in filling the feeling chain template. The collaborative mindmap is used *as a template* and *for peer collaboration*. The student must still write the descriptions *on his own*. This is the meaningful task.

Checklist for Vivid Dialogue or Monologue

1. A vivid dialogue or monologue has these parts:
 - a. Character
 - b. Feeling
 - c. How the feeling is expressed
 - d. Tone of voice
 - e. Dialogue or monologue that makes sense
2. Fun to write and read
3. Has million dollar words

Feeling Chain for Dialogue or Monologue Template (1)

(Example for teacher: Father's very angry. His face was red. He sternly reprimanded me, "Don't ever do this again!" or Ah Hock was bored and sat listlessly on the sofa. He thought to himself naughtily, "I will play a prank on my sister.")



Feeling Chain for Dialogue or Monologue Template (2)

Character

Feeling

How the feeling was demonstrated

What is the tone of voice

Dialogue or Monologue

How to Write Vivid Actions

Goal: To write more vividly by including description of actions in the composition.

At the end of the lesson, the students will be able to:

1. Identify actions to write about in a set of pictures
2. Write vivid actions
3. Use the Action chain skill (Action, Before, During, Sound, After)

Instructional materials

1. Sets of pictures
2. Action chain parts checklist for the students to monitor their progress
3. Action Chain template
4. Checklist for attributes of vivid actions
5. Good and not so good examples

Fading of Scaffold

Let the students write main points for the three action chain parts. Based on the main points, write the vivid action.

Higher level Scaffolding

Make the action more vivid by adding sounds, adverbs, e.g. 慢吞吞的。。。, 一个箭步冲上去, 在无精打采的写功课。

Pre-requisites

Identify the character and action to write about.

Learned some vocabulary that describes actions, including phrases and idioms.

(Learning action adjectives lesson plan:

- Pupils to learn list of action adjectives and do sentence making
- With action vocabulary worksheet on hand, pupils to discuss in groups or as class and fill in the worksheet
- Worksheet has 4 main columns where pupils categorized the vocabulary that they are taught into them
- The columns were action words involving the legs, action words involving in hands, action words involving the head/face and action words involving the body.
- Pupils complete simple action worksheets in class in groups
- Pupils must add in descriptive words before or after the action words in several given sentences.
- For other part of the worksheet, pupils to exchange simple and commonly used action words in sentences for more detailed and precise ones.)

Time required: 1.5 hours

Lesson Plan

Direct teaching of what the meaningful task is (write vivid actions) and how the students know they have successfully accomplished it:

1. Describe why we need to describe actions: **to write more vivid actions.**

2. Tell how to identify which action to describe: It usually happens to the main character(s) (Some of you may want to describe actions but you do not know which action to describe. I am going to tell you how to look for actions in a set of pictures). It also happens quite quickly, e.g., fall down, leap from the room, punch someone, burst into tears. Practice identifying actions. Select some obvious pictures and not so obvious ones (such as the cleaner broke the vase accidentally, the bully snatch the balls in the basket ball court, ...)
3. Tell the importance of vivid actions – makes the action comes alive (when we read, we can actually see the action taking place, like watching a video in our minds eye). A vivid action has these parts:
 - a. The **character**
 - b. The **action** broken down into three tiny actions (give examples). This makes the action more detailed, more vivid.
 - c. Is fun to write and read,
 - d. Have exciting, colorful, and descriptive words (we call it million dollar words),
4. Show some good paragraphs of action chains and identify the attributes. Then ask the students to identify them. (Example for teacher: The old man did not notice the piece of rock in his path. He stepped on it, lost his balance, his body bent forward 身体向前扑, and fell heavily on the ground.)
5. Show some not so good paragraphs and ask the students to modify them.

Direct teaching of action chain.

6. What students usually do in their compositions? (Students tend to name the action only, e.g., He fell down or she cried. Now I am going to teach you how to write vivid actions.)
7. (Here's how you do it.) Introduce the action chain parts and what they stand for:
 - (a) **Character**;
 - (b) **Action**: Action has three tiny parts, tiny actions 1 to 3.
 Then the students identify a character and an action in the sets of four pictures and generate action chains parts. As the students identify an action chain part, the teacher writes it in the appropriate place in the template.
8. The students can take turn to act out certain frequently occurring actions in compositions like falling down. Rest of the class participated by verbally describing the individual falling down actions that the pupil acted out before he/she really falls.
9. Teacher encouraged and acknowledged descriptions like tripping over a stone, losing his/her balance and fall forward. Practice breaking actions into tiny parts and fill up the action chain templates.
10. Discuss why it is more vivid to break an action into smaller parts. Also talk about augmenting smaller actions with sound and adverbs, e.g. walk wobbly, fell heavily with a “thud”.

Scaffolding writing of vivid actions

11. Show the students how to use the template and to write vivid actions. These are the steps:
 - a. choose one action from the pictures to write about,
 - b. break down the action into smaller (three) parts,
 - c. relax,

- d. fill up vocabulary for each node in the template,
 - e. think about what makes a vivid action,
 - f. write the vivid action,
 - g. ask themselves is this vivid writing,
 - h. why? Answer using the “Attributes of vivid action checklist”.
12. Practice writing action chains with the eight steps (a – h) mentioned above.
 13. More practice (can be in group or individually) using the scaffold to write vivid actions. For example, in groups, the students direct the process and the teacher provides support as needed. There can also be peer support. Then, from the template they generated, each student writes their own sentences. They then read their writing to each other. They work to improve each other’s writing. **Must** write and assess the writing, not the template.
 14. (Optional discussion) Can they remember what makes vivid actions? They should include all the parts, each part is well done, the writing makes sense, and it should be fun to read.
 15. Fade the scaffold (automaticity is achieved when the students continue to plan and write vividly without the scaffold).

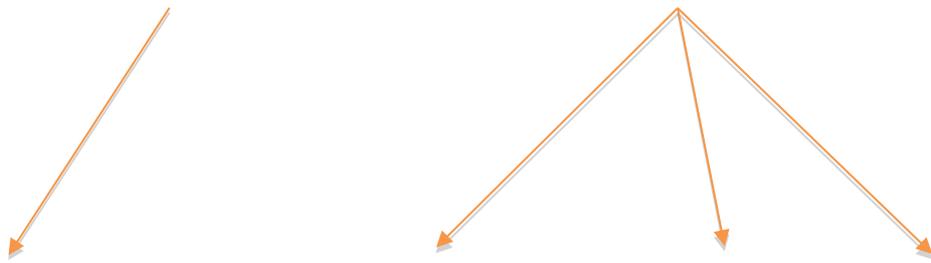
Enhancements:

Higher ability students or higher primary students can:

1. Combine character portrayal with the action, e.g., the old man with grey hair, fading eyesight, walked wobbly with a cane, stepped on the rock, lost his balance and fell heavily on the ground with a big “thud”.
2. Sequencing events. The students can learn to imagine what happen just before and right after the action. Feeling and expression can also be added, e.g., The old man was cheery as the park was breezy and the lane was lined with shady trees. He was humming his favorite song. He did not notice the piece of rock in his path. He stepped on it, lost his balance, and “thump!”, he fell heavily on the ground. The sprain was so painful that his face was distorted. He grabbed his ankle and kept moaning. He struggled to stand up but could not make it.
3. Use collaborative mindmap to help in filling the template. The collaborative mindmap is used *as a template* and *for peer collaboration*. The student must still write the descriptions *on his own*. This is the meaningful task.

Action Chain Template

Character	Action
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<p>In future, the students can do character portrayal here. You can delete this box and the arrow when you give this worksheet out.</p>	Tiny action 1	Tiny action 2	Tiny action 3
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Meaningful task
(vivid action):

Action Chain Template (2)

Tiny action 1

Tiny action 2

Tiny action 3

Meaningful task (vivid action):

Checklist for Attributes of Vivid Actions

A vivid action has these parts:

1. Did you break the action into smaller (three) actions?
2. Do they still link together to describe the action?
3. Is the action fun to write and read?
4. Does the description have exciting, colorful, and descriptive words (we call it million dollar words)

Action Chain Part Checklist

1. Character
2. Tiny action 1
3. Tiny action 2
4. Tiny action 3

Scaffolding Vivid Action Sequences

Goal: Add description before and after an action to make the action vivid.

At the end of the lesson, the students will be able to:

Use the filled Action Sequence template to describe a vivid action sequence, that is, what happens just before or right after an action.

Instructional materials

1. Sets of four pictures;
2. Good and not so good examples;
3. Action Sequence checklist for the students to monitor their progress;
4. Action Sequence template.

Fading of Scaffold

Give the students sets of four pictures. Ask them select an action and list the *before* and *after* main points for the action. Then write the action sequence.

Higher Level Scaffolding

1. Write feeling chains for the before and after parts.
2. Write action chain that breaks down the action into smaller units.

Pre-requisites

Learned general adjectives.

Lesson Plan

Direct teaching of what the meaningful task is (write vivid action sequence imagination) and how do you know if you have successfully accomplished the task:

1. Describe the goal of writing action sequences: **to write vivid action sequences.**
2. Tell the importance of action sequence – to make the character comes alive. A vivid action sequence has these parts:
 - a. Character
 - b. Action
 - c. Action sequence parts – What happens *just* before and *right* after the action. Fill in the relevant parts:
 - i. What did the character think or feel?
 - ii. What did the character say?
 - iii. What did the character do?
 - d. What they think or feel, say, or do has to make sense in the story.
 - e. Fun to write and read,
 - f. Include exciting, colorful, and descriptive words (we call it million dollar words),
3. Show how to select the character and action to write about.
4. Show some good paragraphs of action sequence and identify the attributes. Then ask the students to identify them from your other examples.
5. Show some not so good paragraphs and ask the students to modify them.

Direct teaching on how to generate the filled Action Sequence template:

6. You need to look for one character to describe. You don't need to describe everyone in the pictures.
7. You need to find an action to describe.
8. (I am going to teach you how to write vivid action sequences to make the character come alive). (Here's how you do it.) Introduce the Action Sequence parts.
 - a. **Character**;
 - b. **Action**
 - c. **Action sequence parts** – Fill in only the relevant parts:
 - i. What did he think or feel before the action?
 - ii. What did he say before the action?
 - iii. What did he do before the action?
 - iv. What did he think or feel after the action?
 - v. What did he say after the action?
 - vi. What did he do after the action?

Then the students recite the action sequence parts. Students then identify action sequence parts in existing compositions and generate action sequence parts while looking at a set of pictures. As the students identify a action sequence part, the teacher writes it in the appropriate place in the template.

9. Provide sets of four pictures. Teach the students how to select a relevant character and an action to describe. Then ask them to select the relevant parts (e.g., In “old man fell down and felt very painful” action. There may not need to have the thinking part). As the students identify an action sequence part, the teacher writes it in the appropriate place in the template.
10. Discuss why each part in the action sequence part template is important to the action sequence description: it makes the character and his action more vivid.

Practice writing vivid action sequence with the help of the filled Action Sequence part template:

11. Let the students practice selecting characters, relevant parts, and fill the template. These are the steps:
 - a. select character
 - b. select relevant parts
 - c. write action sequence parts (think or feel, say, do) reminders,
 - d. relax,
 - e. fill up vocabulary for the selected boxes in the template,
 - f. think about what makes a good action sequence,
 - g. write the parts for the action sequence,
 - h. ask themselves is this a vivid action sequence,
 - i. why? Answer using the “Attributes of vivid action sequence checklist”.
12. Practice writing vivid action sequence with the nine steps (a – i) mentioned above.
13. More practice (can be in group or individually) using the scaffold to write action sequences. For example, in groups, the students direct the process and the teacher provides support as needed. There can also be peer support. From the template they generated, each student writes their own sentences. They then read their writing to each other. They work to improve each other's writing. **Must** write and assess the writing, not the template.
14. (**Optional** discussion) Can they remember what makes a vivid action sequence? They should include all the parts, each part is well done, the writing

makes sense, and it should be fun to read. Tell the students not all parts are needed. What is important is to link up the picture. If you can show it without describing a Transition part, then you don't need to write that part.

15. **Fade** the scaffold (automaticity is achieved when the students continue to plan and write well without the scaffold).

Enhancement

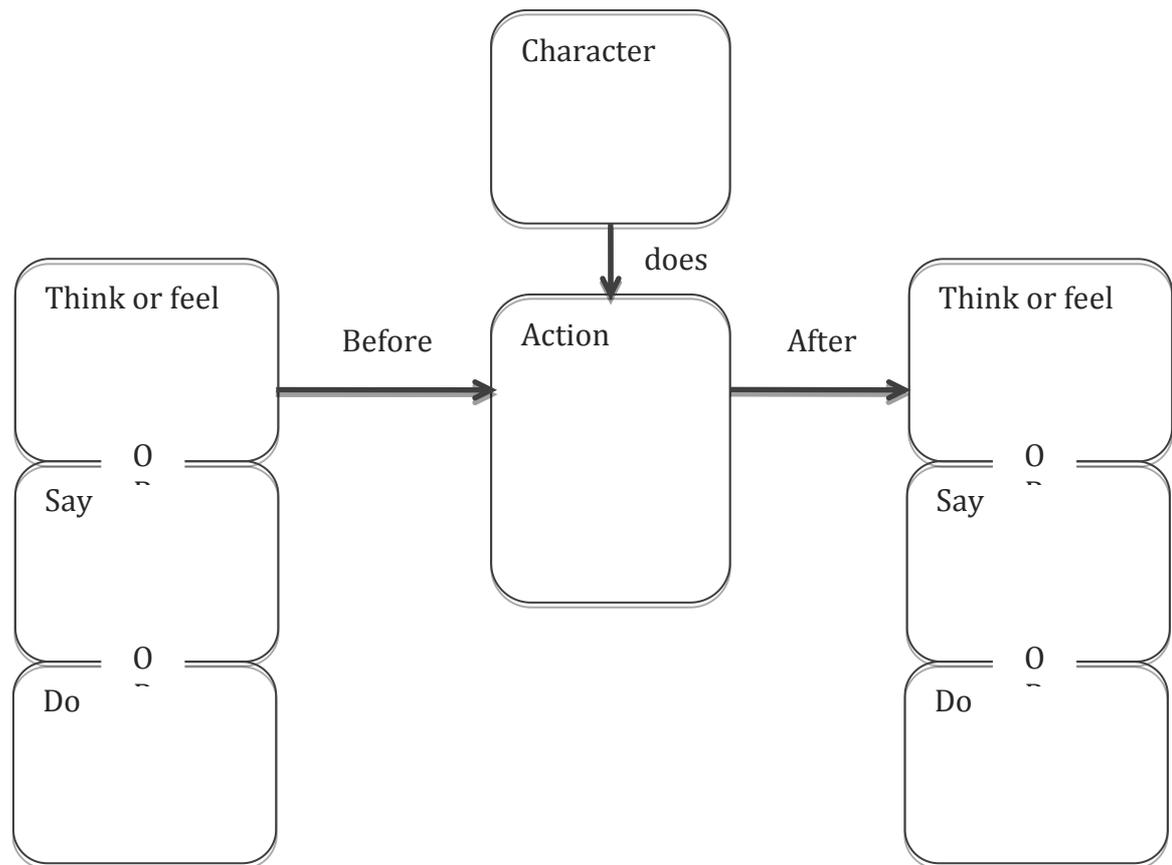
Use collaborative mindmap to help in filling the Transition part template. The collaborative mindmap is used *as a template* and *for peer collaboration*. The student must still write the descriptions *on his own*. This is the meaningful task.

Checklist for Vivid Action Sequence

A vivid action sequence has these parts:

1. Character
2. Action
3. What took place before the action? Fill in the relevant parts:
 - a. What did the character think or feel?
 - b. What did the character say?
 - c. What did the character do?
4. What took place after the action? Fill in the relevant parts:
 - a. What did the character think or feel?
 - b. What did the character say?
 - c. What did the character do?
5. What the character think, say, or do before and after the action have to make sense.
6. Fun to write and read
7. Has million dollar words

Meaningful Task: write a vivid action sequence:

Action Sequence Template

Scaffolding the Portrayal of Characters

Goal: Describe characters vividly and the vivid descriptions make sense in the story.

At the end of the lesson, the students will be able to:

1. Select an appropriate character to describe;
2. Describe features of the main characters that are relevant to the event;
3. Select relevant nodes in the character template to fill in;
4. Use the filled Character feature template to describe a character.

Instructional materials

1. Sets of four pictures;
2. Good and not so good examples;
3. Examples with relevant character features;
4. Examples with both relevant and irrelevant features;
5. Character features checklist for the students to monitor their progress;
6. Character feature templates.
7. Attributes of vivid character checklist

Fading of Scaffold

Give the students sets of four pictures for identification of appropriate character(s) and relevant features for the story. List the relevant features. Then write a vivid description of the character.

Higher Level Scaffolding

Scaffold for more complex writing when the children is competent in writing with the basic structure. This includes portraying the trait by the character's thoughts, speech, and actions, and use of comparisons such as similes and metaphors to create an imagery of the character.

Pre-requisites

Learned adjectives for describing people including phrases and idioms, e.g., 勤劳, 懒散, 温柔, 白发苍苍, 恶霸, etc.

Lesson Plan

Direct teaching of what the meaningful task is (describe vivid characters) and how do you know if you have successfully accomplished the task:

1. Describe the goal of including character description: **to write vivid characters.**
2. Tell the importance of vivid characters – makes the character comes alive. Vivid writing is good in compositions. A vivid character has the following:
 - a. Features:
 - i. What kind of person is the character 性格?
 - ii. Build
 - iii. Facial features
 - iv. Accessories
 - v. Manners
 - b. Has descriptions of features that make sense in the story (features have to be connected to the story, make the story better);

- c. Fun to write and read,
 - d. Include exciting, colorful, and descriptive words (we call it million dollar words),
9. Show some good paragraphs of vivid character descriptions and identify the attributes. Then ask the students to identify them from other examples.
 10. Show some not so good paragraphs and ask the students to modify them.
 11. Show examples of character descriptions with relevant features and show how they make the story better. Then, show some other examples and ask the students to tell why the features make the story better.
 12. Show examples of character descriptions with both relevant and irrelevant features and ask the students to identify the irrelevant features. Ask them how to modify the example so that it will make the story better.

Direct teaching on how to generate the filled character feature template (Teacher to note – teach the features first, then how to select relevant features):

7. You need to look for a character to describe. You don't need to describe everyone in the pictures. Look for the main character in the story.
8. (I am going to teach you how to describe a character vividly to make your character comes alive). (Here's how you do it.) Introduce the character feature parts. It is easier to show a figure of a human being together with the template. The parts and what they stand for are:
 - (a) **Character**;
 - (b) **Trait** 性格 is what kind of person is the character;
 - (c) **Build** is the size of the character;
 - (d) **Face/Hair** can be a fierce looking face or facial features such as big eyes;
 - (e) **Accessories** is the things the character wears or uses such as clothes (e.g., clean or dirty), glasses, cane, umbrella, hairpins, etc;
 - (f) **Manners** is the way the character acts (rough), talks (politely, softly, respectfully), walks (slowly, wobbly), etc;

Then the students discuss what each feature stands for until they can recite the character features and what they stand for. Students then identify character features in existing compositions and generate character features while looking at a set of pictures. As the students identify a character feature, the teacher writes it in the appropriate place in the template.

9. Provide sets of four pictures. Teach the students how to select relevant character features. As the students identify a character feature, the teacher writes it in the appropriate place in the template.
10. Discuss why each part in the character feature template is important to the character description: what we do and say comes from what kind of person we are.

Practice writing vivid characters with the help of the filled character feature template:

11. Let the students practice selecting characters, relevant features, and fill the template (Teacher to note select relevant features before filling in the feature parts. This order is reverse in the Direct Teaching section). These are the steps:
 - a. select character
 - b. select relevant features
 - c. write character feature parts (character, trait, build, face/hair, clothes, talk, act) reminders,

- d. relax,
 - e. fill up vocabulary for the selected boxes in the template,
 - f. think about what makes a vivid character,
 - g. write the parts for the character,
 - h. ask themselves is this vivid writing,
 - i. why? Answer using the “Attributes of vivid character checklist”.
12. Practice writing vivid characters with the nine steps (a – i) mentioned above.
 13. More practice (can be in group or individually) using the scaffold to write vivid characters. For example, in groups, the students direct the process and the teacher provides support as needed. There can also be peer support. From the template they generated, each student writes their own sentences. They then read their writing to each other. They work to improve each other’s writing. **Must** write and assess the writing, not the template.
 14. (**Optional** discussion) Can they remember what makes vivid writing? They should include all the parts, each part is well done, the writing makes sense, and it should be fun to read. Tell the students not all parts are needed. What is important is to show the trait of the character. If you can show it without say describing the hair, then you don’t need to do it.
 15. **Fade** the scaffold (automaticity is achieved when the students continue to plan and write vividly without the scaffold).

Enhancements

1. Incorporate character portrayal to action chain (see action chain template).
2. Higher ability students or higher primary students can learn to portray the trait by the character’s thoughts, speech, and actions, and use of comparisons such as similes and metaphors to create an imagery of the character.
3. Use collaborative mindmap to help in filling the more advanced character feature template. The collaborative mindmap is used *as a template* and *for peer collaboration*. The student must still write the descriptions *on his own*. This is the meaningful task.

Character Feature Template

Character

Face/Hair

Build

Accessories

His manners

What kind of person (trait)?

Meaningful Task – Write a vivid character:

Checklist for Vivid Character

1. A vivid character has these parts:
 - a. Character
 - b. Trait – what kind of person the character is
 - c. Build
 - d. Face/hair
 - e. Accessories
 - f. Manners
2. Fun to write and read
3. Has million dollar word

