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The role of metacognitive skills in young ESL students' writing revisions

Kim, Weol-Soon, Ph.D.
University of Hawaii, 1991
THE ROLE OF METACOGNITIVE SKILLS
IN YOUNG ESL STUDENTS' WRITING REVISIONS

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
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OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN EDUCATIONAL PSYCHOLOGY

MAY 1991

BY

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Many people deserve special thanks for their contributions to this study. Most important are the students who participated enthusiastically in this study and helped me learn more about their thinking and writing processes. I am also grateful to their parents, teachers, and school administrators who helped make this project possible. A special thank you to Mrs. Tanaka who so willingly agreed to let me use her computer laboratory for the after school project.

I would like to thank the director, Dr. Melinda Kerkvliet, and staff members of Operation Manong at the University of Hawaii, through whom I had access to immigrant students as an ESL tutor. In addition, their financial and moral support allowed me to carry out this research with greatest ease.

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ABSTRACT

The two purposes of this study were: to investigate the role of metacognitive skills in young ESL students' writing revisions using the computer as a writing tool; and to examine the effects of training two metacognitive strategies on metacognitive, writing, and revision skills of young ESL writers in grades 5-6.

A case study design was adopted. There were two metacognitive training phases and four separate assessments. Success during the training phases was addressed by qualitative research approaches, while the assessment phases adopted an interrupted time-series design.

Among the four training subphases, the pretraining was mainly held to teach word-processing skills and the think-aloud procedure. The two metacognitive training subphases focused on teaching the self-questioning and the self-regulation strategies separately. The level of maintenance of the trained metacognitive strategies was assessed after a two-week interim.

The data collected were tape-recordings of classroom interaction and writing process, journals, protocols from think-aloud and responses to probing questions, and writing and revision samples.

The results suggest that metacognitive skills are important in identifying one's writing weaknesses and generating better alternatives. Both self-awareness and self-regulation training proved to be significantly effective in enhancing the young ESL students' metacognitive and writing skills. Although evidence during the revision process indicated positive changes
had occurred in the students' writing revision skills, such changes were not reflected by statistically significant improvements on the measures used.

Results were discussed in terms of the five specific research questions posed and in the context of previous research in the area of English as first or second language. Though there have been few reports of attempts to teach young ESL students metacognitive strategies, the results from this study were very promising. With the metacognitive training, the ESL students developed a problem-solving view of writing revisions. They learned to focus on semantic aspects of writing. Not only did their writing become more organized and coherent than before the training, but also student enthusiasm toward writing was evident.
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LIST OF ABBREVIATIONS AND SYMBOLS

The following is a list of the abbreviations to be used in this dissertation. At times, grammatical inflections will either be added or understood.

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<th>Description</th>
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<tr>
<td>ACD</td>
<td>Add, Change, &amp; Delete (used in the SR procedure in pp. 81-82)</td>
</tr>
<tr>
<td>BOL</td>
<td>Belong, Order, Long (used in the SQ procedure in pp. 75-77)</td>
</tr>
<tr>
<td>ESL</td>
<td>English as a second language</td>
</tr>
<tr>
<td>EFL</td>
<td>English as a foreign language</td>
</tr>
<tr>
<td>$F_r$</td>
<td>The value obtained for Friedman test</td>
</tr>
<tr>
<td>5W1H</td>
<td>When &amp; where, Who, What beginning, What goal, What try, and How end (used in the SQ procedure in pp. 75-77)</td>
</tr>
<tr>
<td>L1</td>
<td>First language (Italics in the text throughout this dissertation indicate translation from the participants' remarks in L1, Korean)</td>
</tr>
<tr>
<td>L2</td>
<td>Second language</td>
</tr>
<tr>
<td>OS</td>
<td>Own story written by the participating student</td>
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<tr>
<td>RS</td>
<td>Researcher-generated story</td>
</tr>
<tr>
<td>SA</td>
<td>Self-awareness</td>
</tr>
<tr>
<td>SLEP</td>
<td>Students of Limited English Proficiency</td>
</tr>
<tr>
<td>SQ</td>
<td>Self-questioning</td>
</tr>
<tr>
<td>SR</td>
<td>Self-regulation</td>
</tr>
<tr>
<td>$T$</td>
<td>Kendall rank correlation coefficient</td>
</tr>
<tr>
<td>$T^+$</td>
<td>The value obtained for Wilcoxon signed rank test</td>
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CHAPTER I.
INTRODUCTION

Background of the Problem

Second language (L2) learners experience difficulties in making the transition to a new culture, particularly in acquiring and using a new language. Given its high cognitive demands on comprehension and production in the L2 language, writing is considered the most difficult language learning task for L2 students among four basic language skills of speaking, listening, reading, and writing (Bialystok & Ryan, 1985; Chaudron, 1987).

One of the difficulties L2 writers have is dealing simultaneously with L2 linguistic knowledge and the high cognitive demands of writing tasks. L2 writers in the upper primary grades have acquired a degree of proficiency in writing skills and cognitive skills in their first language (L1): However, when they use a L2 with limited proficiency, they cannot fully access or utilize their mental capacity, since it is partially dependent on language (Bialystok & Ryan, 1985; Rice & Kemper, 1984; Vygotsky, 1986; Whorf, 1956). As a result, they feel helpless and lose control over their writing. Therefore, any instructional help that facilitates successful L2 writing can unlock many doors for L2 learners.

To improve writing skills, many instructional studies have focused on
the process of writing revision. Revision, as used in this study, refers to any changes in thoughts or text during the writing process (Beach, 1984; Bridwell, 1980; Hayes & Flower, 1983). During the last decade, the revision process has received a great deal of research attention because of its value in identifying writing weaknesses and because of its role in building higher level writing skills (Fitzgerald, 1987; Nold, 1981; Urzua, 1987; Witte, 1985).

The literature on writing revisions indicates many problems that converge on the following four points: (a) student writers seldom make spontaneous revisions; (b) emphasis is usually placed on form rather than content; (c) the instructional methods used usually have been product-oriented rather than process-oriented; and, (d) the potential of the computer as a writing tool has not been fully explored.

Regarding the first point, Cohen and Robbins (1976) studied three English as a Second Language (ESL) students whose L1 was Chinese and reported that they rarely kept track of the errors they had made. Zamel (1985) conducted a survey of the responding styles of fifteen ESL teachers and found that the ESL students made only a few voluntary revisions of their own. Also, their students rarely read through the teachers' corrections more than once and did not write subsequent drafts implementing the comments.

The relative lack of voluntary revision may be partially due to the traditional emphasis on the form rather than the content of writing. Zamel (1985), for example, found that feedback from ESL teachers was more concerned with accuracy in form than with meaning. Teachers are not ignorant of the importance of the content. However, teachers unintentionally emphasize form by evaluating grammatical or mechanical
errors more consciously than weaknesses in content (Cohen, 1987). This emphasis on form neither motivates L2 students to write nor necessarily improves the quality of their writing. If L2 teachers would give more feedback on content rather than on form, L2 students could utilize their L1 thinking skills to organize text and maintain more positive attitudes toward L2 writing. Another major advantage of content-oriented revisions is their direct relevance for enhancing writing skills. Writing quality tends to have a positive relationship with meaning-based revisions, but little relationship with surface-level revisions (Bernhardt, 1988; Grave & Murray, 1980; Nold, 1981).

The relative lack of spontaneous writing revision and the focus of teacher feedback on form could be a result of the product-oriented instructional methods for revisions. Teachers usually give feedback based on a written product and they rarely take the time to give advice on subsequent drafts (Beach, 1979) or as the writing takes place. While teachers may spend hours correcting their students' writing, the feedback is not as effective as teachers expect it to be. For example, Semke (1984) reported that teachers' corrections did not significantly increase students' writing skill in German as a foreign language class. This ineffectiveness of product-oriented instruction might arise from the fact that too much importance was allotted to the role of arbitrator assumed by the teacher and not enough to that of the student writer. If more attention is given to what needs to be changed and why, it would help the students to increase their awareness of good writing and possibly improve writing skills.

Spontaneous writing revisions are considered as a function of writers'
metacognition (Fitzgerald & Markham, 1987). Metacognition is a term used to refer to awareness and monitoring of one's cognitive processes (Brown, 1987; Duell, 1986; Garner, 1987). Optimally, a L2 writer could use metacognitive skills to recognize when a revising strategy has not been working and a new approach called for. This is the main reason emphasis has recently been placed on metacognitive skills for L2 writers. However, teachers seldom examine what a student writer is struggling to express during the writing process. This may be partly due to lack of time or the large class size.

Nonetheless, the importance of process-oriented feedback and writing instruction in improving writing skills has been indicated by researchers who have studied the cognitive processes of expert writers (Flower & Hayes, 1981; Hayes & Flower, 1983) and those who have investigated the differences between expert and novice writers (Beach, 1976; Bartlett, 1982; Bernhardt, 1988; Faigley & Witte, 1981; Sommers, 1980). These studies report that expert writers tend to explore several ideas and produce more multiple drafts than inexperienced writers.

Several researchers have argued that young writers can revise extensively and produce a competent piece of writing if guided by teachers or peers through conferencing, a form of process-oriented instruction (Calkins, 1980; Graves, 1983; Kamler, 1980). For example, Kamler (1980) described the role of a teacher in influencing the revisions of a child who worked on a story over a 3-week period. After writing the initial draft, the teacher had the student read and discuss the story with a peer. Later the student had two conferences about the paper with her teacher and, finally, one more peer-group conference. As a result of each conference, she made revisions in her
story. Her writing evolved from a few irrelevant, brief generalities about her bird to a much longer development of her topic including several accounts of the bird's activities. The student added information, deleted irrelevancies, clarified meanings, and supplied transitions in her revisions. Kamler reported that what was most notable about the student's experience was not the product, but the "process that helped develop an inadequate beginning into a competent end (p. 693)." One limitation of the conferencing studies is, however, that there is no measure of independent performance. The young writers are heavily dependent on their more competent peers or teachers. Process-oriented instruction should aim toward internalization of the conferencing skills, teaching the students how to monitor their own writing process.

Another flaw in recent studies on revising is the hasty assumption that technology can improve writing skills without any accompanying instruction (Matsuhashi & Gordon, 1985). Student writers using a word processing program tend to write and revise more, but the increase in the quantity of writing does not always indicate improvement in its quality (Bridwell, Sirc, & Brooke, 1985; Daiute, 1983). Aware of the fact that computer usage alone cannot produce better writing, researchers have started to use word processing programs accompanied with questioning prompts. They have found that the prompts encourage writers to make more sophisticated and content-oriented revisions, which often lead to improvement in the quality of writing (Daiute, 1986; Woodruff, Bereiter, & Scardamalia, 1981-82). However, these studies have left important questions unanswered. Although one might argue that repeated exposure to such word processing programs could lead to
internalization of the questioning skills, there is not yet evidence of
internalization in terms of independent writing performance or evidence
whether any such internalization can be attributed to the word processing
program itself. Further, there is no indication of the minimum length of
time one must use the programs to internalize the skills.

More recently, writing researchers have turned their attention to the
role of metacognitive skills and have argued that computers can be used to
overcome problems in mechanical writing, and that teachers should focus
instead on developing a higher level cognitive skills in order to improve
student writing skills (Daiute, 1986; Elias, 1984). Expert writers often develop
many sophisticated cognitive skills to generate and revise ideas and texts
efficiently (Collins & Gentner, 1980). If these skills could be taught explicitly,
the process of acquiring L2 writing skills could be facilitated. This is a major
argument for placing more emphasis on the metacognition of L2 learners.

There is some indication that training metacognitive awareness
enhances the detection of problems in writing (Bereiter & Scardamalia, 1983b;
Brett, Bereiter, Burtis, & Scardamalia, 1983; Daiute & Kruidenier, 1985;
Fitzgerald & Markham, 1987) and that training metacognitive regulation
enhances the remediation of such problems (Cohen & Scardamalia, 1983;
Fitzgerald & Markham, 1987). These studies imply that if metacognitive skills
are taught explicitly, the writing process of students can be facilitated.
However, the students in the aforementioned studies were all native English
speakers. Few studies have examined the relationship between the
metacognitive skills and reading comprehension of ESL students (Candelario,
1986; Casanave, 1988), and studies using ESL learners have not closely
examined the relationship between metacognitive skills and writing revision skills. This is the rationale for undertaking the present study.

**Purposes of the Study**

The two main purposes of the present study were to: (1) identify the role of metacognitive skills in the revising process of young writers who are learning ESL; and (2) investigate the effects of training two metacognitive strategies on metacognitive, writing, and revising skills of young ESL writers.

In order to fulfill the purposes and to resolve the problems described in the previous section, the present study focused on investigating the metacognitive skills of five ESL children as they performed spontaneous writing revisions. It was a process-oriented study with emphasis placed on content-level revisions, using the computer as a writing medium.

The potential significance of the study includes: (a) identifying metacognitive skills which can help ESL children cope with early L2 writing tasks; (b) providing ESL teachers with a practical demonstration of the application of metacognitive theories to instructional practices; and, (c) developing a grounded theory of metacognition to implement the use of metacognitive strategies in ESL students' writing revision.
CHAPTER II.
A REVIEW OF THE LITERATURE

This research review is divided into three sections. The first two sections deal briefly with the theoretical importance of metacognition and writing revisions. The third section will look at both naturalistic and training studies of metacognition in the revision process. This section will also examine effects based on language (English as an L1 versus L2) and age (adult versus young writers). Training studies with school-aged students will be discussed in great detail in terms of their methodology and effectiveness of training.

These will be followed by justification for the present study, with a consideration of the strengths and weaknesses of previous research investigating the effects of metacognition on the revision skills of school-aged students. Finally, the specific research questions which guided the present study will be addressed.

Metacognition

Definitions

Early metacognitive research focused on memory tasks, such as rehearsal of items to be memorized, by looking at various control processes. Several researchers found that children who were able to monitor their memory strategies performed better on experimental memory tasks (Brown,
During the past decade, the scope of metacognitive research has expanded to other processes like reading and problem solving. Multiple definitions of metacognition have been offered accordingly. Central to most of the researchers' views is the emphasis on two aspects of metacognition: (a) self-awareness of cognition; and (b) self-regulation of cognition (Baker & Brown, 1984; Brown, 1978, 1987; Brown & Palincsar, 1982; Duell, 1986; Flavell, 1979; Garner, 1987, 1988).

The self-awareness aspect of metacognition refers to knowledge about one's own cognitive resources, learning tasks, and the compatibility of learning tasks with one's own resources (Brown, 1978, 1987). The self-regulation aspect of metacognition refers to the way in which active learners control their cognitive processing. Examples of self-regulation include planning, monitoring, and evaluating the effectiveness of one's own cognitive strategies in the process of completing learning tasks (Brown, 1978, 1987; Duell, 1986; Garner, 1987).

Characteristics

There are three major ways in which self-awareness and self-regulation aspects of metacognition differ from each other. According to Brown (1987), self-awareness is stable over time while self-regulation is relatively unstable. For example, if Mary believes today that she can memorize pictorial materials better than text materials, it is likely she will continue to believe that tomorrow. She may or may not, however, try to use certain imaging strategies to memorize contents of given text each time. A second difference
is that self-awareness can be stated by the learner but self-regulation can rarely be stated clearly. In other words, learners might know and talk about their own cognitive resources accurately or inaccurately, but they usually cannot verbalize in detail how they regulate their performance. A third difference is that self-awareness seems to be late-developing and is more complete in the older learner while self-regulation is relatively independent of the learner's age.

**Acquisition of metacognition**

The metacognition research indicates that general cognitive development and instruction are the primary factors contributing to metacognitive development. Many studies show that learners in general become more knowledgeable about mental functions and more skillful in using appropriate strategies to enhance learning as they mature (Brown & Day, 1983; Kail & Hagen, 1982; Pressley & Levin, 1977). In a review of literature on the use of memory strategies, Kail and Hagen (1982) found a developmental trend among children under ten. For example, young children at five and six years of age tend to use strategies infrequently and inconsistently. Then children experience a transitional stage during which strategies become manifest, depending on factors related to the strategies themselves and on the context in which the strategies are to be used. By the time children are approximately ten years old, they become consistent in the use of strategies.

Brown and Day (1983) also found a significant difference between
younger and older students in their summarizing behaviors. Children of ages 11 to 14 used a simple strategy for taking notes and writing summaries of a text. They read and evaluated the text sentence by sentence. They copied or omitted a sentence depending on its perceived importance. Expert adults, on the other hand, used sophisticated strategies. They used a metacognitive strategy for finding or inventing a topic sentence to begin an abstract, and they looked for main ideas that spanned the paragraphs.

In addition to maturation, instruction appears to be an important factor in facilitating the acquisition of metacognition, as indicated in the numerous attempts to teach metacognition in the areas of memory (Brown, 1978), reading comprehension (Baumann, 1984; Brown, 1981; Brown & Palincsar, 1982), and problem solving (Champion, Brown, & Ferrara, 1982). Although these studies were varied in terms of topic, learner characteristics, strategy, and context, they invariably showed learners' improvement in performing the given cognitive tasks after a period of training. Based on the success of these instructional interventions, it has been recommended that metacognitive training include: (a) explicit explanation of the goal and usefulness of the strategy; (b) specification of when and how the strategy should be used; and (c) opportunities to practice varied learning tasks for generalization and maintenance (Baumann, 1984; Ghatala, Levin, Pressley, & Lodico, 1985; Palincsar & Brown, 1984; Paris, Lipson, & Wixson, 1983). There is evidence that if students are taught to be aware that a strategy enhances their learning, they are more likely to start using the strategy (Paris, Newman, & McVey, 1982) and continue using it (Ghatala, et al., 1985). Explicit explanations concerning why a strategy is useful are critical to elicit the
When teaching a cognitive strategy, teachers should make sure to include when and how to use the strategy, which has been referred to as "conditional knowledge (Paris, et al., 1983)" and an "executive skills (Sternberg, 1983)." Paris and associates found that readers who developed sophisticated "conditional knowledge" tended to use cognitive strategies effectively and to demonstrate good reading comprehension skills. This implies that a learner's understanding of why, when, and how to apply various strategies to a certain learning task is an important metacognitive skill that can improve independent performance. Bauman (1984) taught sixth-grade children a reading comprehension strategy by using direct instructional procedures similar to those advocated by Paris and his colleagues (1983). Through the analogy of a tabletop supported by legs, Baumann portrayed vividly the relationship between the main idea and the supporting details in each reading lesson and further emphasized when and how the cognitive strategy could be applied to various reading tasks.

The inclusion of instruction on how and when to apply the strategy is also very closely related to the issue of maintenance of the learned strategy. Elliott-Faust and Pressley (1986) studied three approaches of teaching third-graders to detect inconsistencies in stories they heard. The three different approaches were: (1) strategy instruction; (2) metacognitive training in addition to the strategy instruction; and, (3) traditional reading instruction. One group was taught a comparing strategy, in which the children were to compare each pair of sentences of the whole story they had just heard with earlier parts of the story to see if they made sense. With this comparing
strategy instruction, the second group was trained additionally to ask themselves a series of self-monitoring questions, which were designed to help them check their own strategy use. The third group was simply asked to find any parts of text that did not make sense, given feedback on their attempts, and provided an explanation of "making sense." Both strategy instruction groups correctly identified more inconsistencies in stories than did the third group, which had no strategy instruction. However, only the group that received self-monitoring training maintained that superiority on a delayed posttest one week later.

In addition to the issue of maintenance, effectiveness of strategy instruction is often evaluated by the degree of generalization and transfer. Generalization refers to the process by which a strategy trained on a given learning task is used in similar learning tasks. Transfer means using a learned strategy in new and different situations. To foster generalization of a reading comprehension strategy, Baumann (1984) stressed the importance of practice with many different texts.

A good example of strategy generalization and transfer can be found in two instructional interventions conducted by Palincsar and Brown (1984). Seventh graders who had extremely poor reading comprehension skills were taught four metacognitive skills: summarizing the content of a passage; asking questions; clarifying the difficult parts; and, predicting the content of the following passage. Control groups were involved in typical classroom reading instruction while training groups engaged in a process called "reciprocal teaching," where a teacher provides an interactive model for the correct usage of each metacognitive skill. Gradually, students take more
responsibility interacting with the text by imitating the model and obtaining feedback until they can perform independently. Reciprocal teaching sessions and assessments were conducted daily for several weeks. The generalization of students' reading comprehension skills was assessed using social studies and science texts in their regular classrooms. The transfer tests selected were novel tasks, quite distinct in surface structure from the training or the daily assessments, while demanding application of the trained skills. The students in the reciprocal teaching group made a significant improvement in the quality of the summaries and questions, and on the criterion comprehension tests. Results also indicated reliable skill maintenance over time, generalization to classroom comprehension tests, and transfer to novel reading tasks.

One important point in the studies above is that reciprocal teaching appears to be a special form of classroom interaction that may be central to the acquisition of sophisticated metacognitive skills. The theoretical basis of the reciprocal teaching originated in the writings of Vygotsky (1978), who argued that cognition develops in social situations, where a child shares responsibility for producing a complete performance with an adult or more competent peers. The child learns what s/he is lacking through the scaffolding provided by others, supporting the notion that sophisticated metacognitive skills are developed primarily through formal or informal instruction.

In summary, metacognition refers to both the self-awareness and the self-regulation of cognition, although it is often difficult to clearly separate
these two aspects. Metacognition appears to be an important factor both in learning and independent performance. Both maturation and instruction are considered to be primary factors determining the acquisition of metacognition.

Revision Process in Writing

Revision refers to making changes in the written text or in one's thoughts during the writing process (Bridwell, 1980; Faigley & Witte, 1981; Flower & Hayes, 1981). This definition reflects the most recent and predominant view of revision, but the definition of revision has undergone distinctive change during the last decade. These changes were brought about by the shift in research interest from product-focused revisions at the final stage of writing to process-oriented revisions throughout the writing process. In order to provide a necessary framework for the present study, historical development in the definition of revision is discussed in this section.

Changes in perspectives

The shifts in perspectives on revision reflect changes in the models of writing in general. Until the late 1970's, a linear model of writing, involving the three major stages of "prewriting", "writing", and "postwriting," was predominant (Britton, Burgess, Martin, McLeod, & Rosen, 1975; King, 1978). In this model, revision received little research attention with its meaning confined to relatively minor editorial changes on text after a draft was
completed, as the term "postwriting" implied.

Murray (1978a) attracted theoretical attention to the mental process of revision. He used the terms "prevision", "vision", and "revision" to explain the three main components of writing. More importantly, Murray further distinguished between "internal" and "external" revision. The specific term "internal" called writing researchers' attention to thought changes during the process of writing.

Along with Murray's consideration for internal revision, cognitive processes were given increasingly more attention in the study of writing (Beach, 1984; Bridwell, 1979 & 1980; Collins & Gentner, 1980; Flower & Hayes, 1980, 1981; Nold, 1981; Scardamalia & Bereiter, 1983b; Sommers, 1980). One of the predominant models was the cognitive theory of writing proposed by Flower and Hayes (1981). This cognitive model of writing process described three main subprocesses of "planning", "translating", and "reviewing". Unlike the linear model of writing, a subprocess in the Flower and Hayes model could occur in any order or could be embedded in another subprocess. In other words, writers would normally review their goals of writing while planning, change their plans while translating thoughts into text, and so on.

The Compare, Diagnose, and Operation(CDO) model presented by Scardamalia and Bereiter (1983b) was an attempt to illustrate a writer's mental processes while involved in a revision task. (See the following section of the literature review for a detailed discussion of a series of experiments based on the CDO model).

Fitzgerald (1987) summarized these influences of cognitive theories of writing on theories of revision. First, revision is now considered as occurring
at any time throughout the writing process. Second, revision is extended to include any meaning-based and macrostructure-related changes in addition to minor editorial changes (Faigley & Witte, 1981; Kintsch & van Dijk, 1978; Nold, 1981; van Dijk, 1980). Third, revision includes both the process and the product, both the thoughts go through in the writer's minds and the actual changes that are made on drafts (Beach, 1984; Bridwell, 1979, 1980; Flower, Hayes, Carey, Schriver, & Stratman, 1986; Scardamalia & Bereiter, 1983b).

Congruent with the recent cognitive perspectives on revision, the term "revision" in the present study refers to both making the actual changes in text and the mental processes underlying such changes. Further arguments on the role of metacognition in writing revisions will be presented in the following section.

**Metacognition in the Revision Process**

Although details of the views vary slightly, the cognitive models of revision discussed in the previous section include at least three common mental functions required in the process of revision (Beach, 1984; Bridwell, 1980; Flower & Hayes, 1981; Perl, 1980; Scardamalia & Bereiter, 1983b; Sommers, 1980). First, writers identify weaknesses by clarifying goals of their writing. Second, writers search for remedies or better alternatives to the diagnosed weaknesses. Third, writers cognitively operate to carry out the actual changes.

The cognitive subprocesses of revision are related to the major components of metacognition, awareness and regulation. The first
subprocess of identifying requires metacognitive awareness insofar as the writers must be aware of audience and writing constructs such as goals, genre structures, and grammar (Beal, 1987; Brett, et al., 1983). The diagnosing and operating subprocesses require metacognitive regulation insofar as the writers are able to generate adequate remedies or better alternatives (Bereiter & Scardamalia, 1983b; Scardamalia & Bereiter, 1983b).

The discussion of studies involving metacognition in the revision process will be divided into two parts: (a) naturalistic studies, focusing on qualitative descriptions of writers in natural settings; and (b) strategy training studies, the effects of which are measured by quantified dependent variables. Although the focus of the present research is ESL learners, the literature review will be extended to include the area of English as an L1 as well, for two reasons. First, many ESL researchers argue for the applicability of L1 findings to L2 research (Gaskill, 1986; Hudelson, 1984; Kelly, 1986; Raimes, 1978; Urzua, 1987). Second, very little research has been undertaken to investigate the metacognitive skills of ESL writers, making it difficult to condense any significant findings. The review will also cover novice and experienced writers of all ages.

**Naturalistic Studies**

It is very difficult to observe and measure writers' metacognitive skills, but many writing researchers have attempted to uncover major differences between the novice and expert writers through a variety of methods such as think-aloud protocols (Emig, 1971; Flower & Hayes, 1981; Perl, 1979),
retrospective interviews (Langer, 1986; Sommers, 1980), stimulated-recall sessions (Rose, 1980), process log questionnaires (Langer, 1986), and observations (Matsuhashi, 1981).

With regard to metacognitive awareness, expert writers rely on assessments of their cognitive action in order to make appropriate decisions about text produced so far (Bereiter & Scardamalia, 1986; Flower & Hayes, 1980, 1981). For example, experts assess what they know about several topics in order to decide which one best fits their writing goals. And they evaluate their comprehension level while reviewing the text, in order to decide whether a reader would understand what has been written.

Expert writers, compared with novice writers, also use refined metacognitive skills involving the selection and execution of cognitive actions, such as focusing on one subprocess of writing at a time rather than trying to deal with cognitive burdens of planning, transcribing, and revising all at once. For example, expert writers may decide not to revise until a first draft has been produced in order not to break the flow of thoughts. They may also focus on the development of an outline before actually producing any text.

Studies of inexperienced adults' and students' writing suggest that novice and/or young writers lack many of the skills that expert writers use to evaluate and revise their text. One possible reason is that the demands of generating ideas are so great that young writers may not have enough attention left to revise their writing (Bereiter & Scardamalia, 1985, 1987; Bruce, Collins, Rubin, & Gentner, 1982). Another possible reason is that these novice writers have difficulty seeing their text objectively, from other readers'
perspectives (Barlett, 1982; Kroll, 1978; Markman, 1982). For example, when children were asked for advice on improving essays that had logical contradictions, they suggested changing individual words or complained that the topic was not interesting, but failed to discover that readers would not be able to understand the essays due to the problematic way of presenting the written message (Markman, 1979). Even college writers sometimes reread what they thought they had written, rather than what they actually had in the text (Perl, 1979). Expert writers often recognize this problem and develop strategies for increasing the skill of objective evaluation, such as putting the draft aside for a few days, reading it backwards or aloud, or printing it in a new font by using a word processor.

Though it is often difficult to differentiate metacognitive awareness from regulation, Beal's studies (1987, 1988) demonstrate the different functions during the revising process. When children in an elementary school were asked to revise problematic text, the upper graders could make appropriate revisions while second graders had difficulty detecting the problems. The second graders were, however, able to find a better alternative once a problem had been detected. These results demonstrate the importance of metacognitive awareness in developing revision skills.

Children's metacognitive awareness skills were directly observed in several case studies (Graves, 1983; Hilgers, 1986). For example, Hilgers (1986) repeatedly observed four Hawaiian children as they moved from the second through the fourth grades. The children's ability to evaluate their own or peer's writing changed over time. Earliest evaluations during the second grade year were predominantly based on affective responses to elements in a
piece of text and evaluations were influenced by superficial aspects of the text. By the end of fourth grade, evaluations of quality were increasingly based on criteria such as the story structure. The young writers often referred to their teachers' comments for choosing expert-like criteria. This implies that teachers' input plays an important role for development of evaluation skills.

The ability to generate a better alternative is closely related to metacognitive regulation. Expert writers are seldom satisfied with the initial idea or the first draft. They often experiment with better alternatives throughout the process of making multiple drafts (Graves & Murray, 1980). They also add, delete, and substitute ideas or large portions of text while executing revisions. On the other hand, novice writers are likely to be satisfied with the first draft and their revisions are limited to substituting a few words or correcting mechanical errors (Bridwell, 1980; Faigley & Witte, 1981; Perl, 1979; Pianko, 1979; Sommers, 1980).

Several writing researchers have tried to categorize revision skills hierarchically. Mature revision skills are characterized as high level or macro-level revisions involving substantial changes in content and form, in view of the goals in writing (Beach, 1976; Faigley & Witte, 1981; Nold, 1981; Perl, 1979; Sommers, 1980). On the contrary, immature revision skills are characterized as low level or micro-level revisions, consisting of making local changes such as lexical substitutions and grammatical and mechanical corrections (Bridwell, 1980; Faigley & Witte, 1981; Perl, 1979; Pianko, 1979; Sommers, 1980). Such novice writers vary in age from young students (Beach, 1976; Calkins, 1980; Cranston, 1986; Daiute, 1986; Graves & Murray, 1980; National Assessment of Educational Progress [NAEP], 1977; Scardamalia
& Bereiter, 1983b; Russell, 1985) to college students (Bernhardt, 1988; Cohen, 1987; Sommers, 1980). This wide age range implies that chronological age and maturity are not sufficient to attain mature revision skills but that instruction and constant practice are also necessary (Beach, 1979; Bereiter & Scardamalia, 1982; Fitzgerald & Markham, 1987).

**ESL writers**

In this section, the main differences and similarities between L1 and L2 writers are discussed. Kelly (1986) and Zamel (1983) reported that adult ESL writers' cognitive processes were similar to suggested model of Flower and Hayes (1981). Similar to English as a L1 writers, ESL writers also went through the three main processes of planning, writing, and revising, in a constantly overlapping fashion. They not only proceeded to write in non-linear fashion but also were able to employ sophisticated cognitive strategies. Zamel (1983), for example, studied the ESL writing process of six freshman during a two-semester period. The college ESL students employed brainstorming or note-taking techniques during the planning process. The students were also able to revise entire chunks of discourse or clarify previously stated ideas. This implies that ESL writers may make grammatical mistakes more often than native English speakers, but they are capable of applying sophisticated metacognitive writing skills.

The relationship of L1 to L2 writing has been one of the major concerns of L2 writing researchers (Edelsky, 1982; Gaskill, 1986; Halsall, 1986; So, 1986). For college students, the approaches used for L1 writing can be integrated into
the L2 writing process (Gaskill, 1986; So, 1986). For elementary school children, both positive and negative effects of L1 on L2 writing have been observed. For example, Edelsky (1982) selected nine bilingual children in grades 1-3 and observed the behavior of switching languages between L1 and L2. Edelsky found that the frequent language switching to L1 interfered with fluency of L2 writing. Halsall (1987) found that thinking in L1 slowed down the process of L2 writing. The Spanish-English bilingual children were frequently talking while writing in order to make transition from Spanish phrases to English. Regardless of the negative effect on fluency of L2 writing, the two researchers agreed that using thinking skills in L1 facilitated content development (Edelsky, 1982; Halsall, 1987).

Feedback from teachers or peers is considered one of the main factors facilitating L2 writing. Watkins-Goffman (1986) found that the amount and quality of teacher input was directly related to the quality and quantity of ESL writing produced. She did not imply that any teacher feedback is effective, but suggested that content-oriented positive feedback was crucial to ESL writing improvement. Urzua (1987) reported a 6-month observational study of four ESL children from Southeast Asia. During the revising process of ESL writing, the children appeared to have developed an awareness of audience and of the communicative power of the written language through peer response sessions. In addition to peer response, factors such as regular and frequent writing, expectation of revision, and confidence in oneself as a writer were considered to be effective in improving ESL writing skills.

Many L2 teachers question whether all errors or weaknesses should be corrected. Ammon (1985) compared six Chinese-speaking with seven
Spanish-speaking children in terms of the content of their story writing, and found that all children lacked skills in developing adequate content regardless of their L1. Ammon argued therefore that feedback on ESL writing should focus on content, instead of trying to correct all errors made by ESL children.

**Training Studies**

Substantial research has been conducted to try and understand differences between expert and novice writers. In general, novice writers lack high level metacognitive skills involving the evaluation of their cognitive functioning and their texts in light of the global goals in writing. Accordingly, their revising skills are limited to minor changes, such as correcting mechanical and grammatical errors, or substituting words, which help little with improving the quality of writing. As presented previously, the wide age range of novice writers implies that instruction and practice are necessary for the acquisition of these metacognitive skills. In spite of this, researchers have rarely applied the theoretical concepts of metacognition to practical training as a means of enhancing revising skills. This section contains a detailed review of studies involving the training of metacognitive awareness or regulation skills in the revising process.

Fitzgerald and Markham (1987) studied the effects of instruction on sixth-graders' awareness in the revising process, ability to make revisions, and the quality of their writing. For about one month, fifteen experimental-group students received instruction, while the other fifteen control-group
students read good literature. Instruction was focused on teaching revision as a "problem-solving process" that involves identifying the problem, finding a better alternative or remedy, and making actual revisions. Afterwards, the children in each group had to write a story. The data collected were from interviews about potential revisions, the total number of revisions made from one draft to the next throughout the four stages of revision, and the scores obtained for the quality of the first and final drafts. The results showed that instruction did in fact affect knowledge of the revision process and enhance revision efforts. The quality of writing tended to increase with each revised draft for the experimental group, while it remained stable for the control group.

Daiute and Kruidenier (1985) investigated the effects of question-prompts from a word processing program on the revising process of fifty-seven junior high school students between the ages of 11 and 16. For five months, the thirty-one students in the control group used a word processing program only, whereas the twenty-six students in the experimental group used the program supplemented with 22 question-prompts. The results showed that the experimental group made statistically significant improvement in both number and nature of revisions, while the control group did not.

Scardamalia and Bereiter (1983b) employed an intervention technique called the CDO process in order to explore children's revision competencies. The three cognitive tasks in the CDO process are to: (1) compare each sentence using eleven evaluation phrases supplied by the researcher; such as "People may not understand what I mean" or "This is good."; (2) diagnose
the weakness by making a "tactical choice" of what to do with the sentence using the six directives supplied by the researchers, e.g., "I'd better say more."; and, (3) operate by either changing the sentence or generating the next one. A total of ninety students (thirty each from grades 4, 6, and 8) were divided into two experimental groups: the "on-line" group; and the "evaluation after" group. While composing text, the on-line group was asked to stop after each sentence and perform the CDO process. The other group wrote their drafts first and applied the CDO procedure afterwards, sentence by sentence.

Seventy-four percent of the students in the "on-line" group reported that the CDO process made the whole process of their writing easier. The "on-line" group, however, wrote shorter essays than the "evaluation after" group did. The quality of revision showed no significant difference between grades or conditions. The quality of the final writing was not significantly different from the original. Students' evaluations of their papers agreed to a large extent with the assessments of an adult rater, but their diagnostic abilities were not sufficient to specify problems with their own writing. There was no quality improvement from the original to the revised texts.

Subsequent research (Brett, et al., 1983) applied the CDO model above and conducted an experiment which focused on the "Diagnose" component in order to examine a more global means of detecting problems. A total of thirty-six students, twenty from grade 6 and sixteen from grade 12, were equally divided into experimental and control groups. Each student diagnosed five essays; four selected from other students' and one from her/his own writing. The experimental students were provided with thirteen cards with cuing phrases for the "Diagnose" phase, while control
students were simply asked to identify and explain all the problems they detected. The experimental group did not use the cards for the final essay so that the researchers could measure the transfer effect of treatment. The combined ratings for all five essays revealed significantly better diagnoses by the twelfth graders and by the students in the experimental condition. Significant grade and treatment effects were also found on the quality of revisions. A significant transfer effect for quantity and quality of suggested revisions was found only at grade 12.

Cohen and Scardamalia (1983) studied the "Operation" aspect of the CDO model to determine whether the "Compare" and "Diagnose" procedures could lead to remedial action. A total of thirty students from grade 6 received nine days of instruction on a simple notation system for indicating insertions and deletions to texts and also on remedying diagnosed problems in texts. Prior to instruction, each student wrote and revised an essay. After instruction, students revised their own original essays again. The results were based on comparisons of these three essays: original, revision 1, and revision 2. The revision 2 essay, collected after 9 days of training, was judged significantly superior to both the original essay and revision 1, but no significant difference was found between revision 1 and the original essay. The number of content level revisions also increased significantly from revision 1 to revision 2.

The studies summarized above introduced unique intervention techniques to enhance young writers' metacognitive skills in the revising process. The writers in these studies were all native English speakers. For
ESL writers, very little training research has been done. Johns (1986) described the process of teaching revision processes to a Chinese-speaking college student. This report was mainly written to illustrate how schema theory could be applied to ESL instructional techniques, but it is one of few studies explicitly describing teachers' interventions on revision skills relevant to metacognition. The researcher made the assumption that ESL writers could revise and process their text to meet the expectations of native readers if they have had the schema set equivalent to that of English-native speakers. Accordingly, Jones began by having the ESL student write his first draft. She then demonstrated how reader expectations were elicited as she drew a tree diagram, a schematic representation of reader expectations from the title to the content. As a result of the training, the ESL student could detect weaknesses in his text and generate better alternatives by himself. The researcher argued that instruction in revision and attempts to construct new cognitive structures based on the schema are much more beneficial for ESL students than teachers' marginal comments on each piece of draft.

In this section, both naturalistic and training studies concerning metacognition in the revising process were reviewed. The following section will discuss in greater detail the strengths and weaknesses of the research reviewed in this section, along with the rationale for undertaking the present study and for adopting both naturalistic and training approaches.
Justification for the Present Study

Research methodology

Naturalistic research has been dominant in investigating the role of metacognitive skills in the revising process. Naturalistic study is a research paradigm with ethnographic roots, while the training study has its basis in experimental physics (Kerlinger, 1986). The two methodologies differ in terms of their strengths and weaknesses.

One strength of naturalistic research is the qualitative description of revision skills as a cognitive process (Ammon, 1985; Graves & Murray, 1980; Perl, 1979; Sommers, 1980; Urzua, 1987; Watkins-Goffman, 1986). Many research problems of social science do not easily lend themselves to experimentation. A writer's metacognitive skills depend upon many variables (e.g., intelligence, motivation, home background, prior knowledge, and social context of learning) that are not manipulable. Further, the metacognitive skills themselves are not directly observable or measurable. It is not surprising, then, that there was very little metacognitive research prior to the 1970's, when experimental research dominated the field of writing.

As writing researchers became interested in the cognitive process of writing in the 1980's, there was very little hard evidence upon which one could start establishing scientific hypotheses and conducting controlled experimental research. Many researchers, therefore, began using the naturalistic approach based on the observation of a few writers, since the qualitative approach appeared to be most appropriate for the discovery of
grounded theory at the beginning stages of inquiry in the field. Naturalistic studies in the field of writing contributed greatly to the understanding of the cognitive functioning of writers through direct observation (Calkins, 1980; Graves, 1983; Matsuhashi, 1981), the taping of think-aloud protocols (Emig, 1971; Flower & Hayes, 1981; Perl, 1979), retrospective interviews (Langer, 1986; Sommers, 1980), and process log questionnaires (Langer, 1986). Since these methods require a lot of time and effort to collect and analyze data, researchers tend to focus on a few writers and study the processes in depth.

Although naturalistic research can give a general picture of a phenomenon of research interest, its major potential weakness is interpretation. Writing researchers, who advocate quantitative methods, criticize that the danger of improper or erroneous interpretations stems both from the plausibility of many different explanations of complex events based on a few samples, and from a lack of objectivity based on sampling bias (Hillocks, 1986; Humes, 1983). Researchers, who focus on qualitative methods, aware of this weakness have tried to involve their colleagues in the process of interpreting and quantifying their descriptive data so that their collaborative effort might better enhance the understanding of qualitative materials and the reliability of the research (Flower & Hayes, 1981; Langer, 1986).

On the other hand, training studies have tended to emphasize the quantifiable aspects of information and to ignore the behavior of the writer in the process (Humes, 1983). A few of the studies reviewed previously attempted to overcome this limitation by making conscious attempts to uncover the cognitive processes of young writers. For example, Fitzgerald
and Markham (1987) studied quasi-products during the four stages of revising so that they could interpret the results in terms of process. Scardamalia and Bereiter (1983) divided the revising process into the three phases of their "Compare, Diagnose, and Operation" model. This division, in addition to the two levels of "on-line" and "evaluation-after" interventions, allowed the researchers to identify the cognitive level at which young writers were functioning and the level at which they needed help. The examination of several quasi-products or divided mental processes was an alternative to studying the writing process. Nevertheless, faulty interpretation is also a potential liability of the approach in so far as interpretation may contain inferences made by researchers from the data collected. This is especially true in cases where researchers attempt to fill the gaps present in the process.

Training studies as well as naturalistic studies can be vulnerable to the pitfalls of misinterpretation, depending on the research design adopted. One should, therefore, examine the research design employed closely before accepting the results of a study. There are major weaknesses in the training studies reviewed in the previous section. Two studies employed a posttest only control group design (Brett, et al., 1983; Fitzgerald & Markham, 1987). The greatest weakness of this design is the threat to internal validity. If initial differences between groups still exist after random assignment, they go undetected and may actually explain any differences in posttest scores between the two groups. To reduce the margin of sampling error in the test results, one should work with as large a sample as possible, because the added sample size increases the normality of the distributions. A minimum of thirty subjects for each group is regarded as an acceptable sample size in terms
of minimizing sampling errors (Cates, 1985). However, researchers in the
above studies used less than fifteen students for each group. The relatively
small sample size in these studies may be partly due to the complexities of
data collection and analysis in the area of writing research. If a small sample
size is unavoidable, then nonparametric statistical procedures should be
applied or a multiple baseline established by collecting more than one writing
sample from the same subject. The two studies in question employed neither
nonparametric statistics nor a multiple baseline.

Daiute and Kruidenier (1985) adopted a pretest-posttest control group
design, but they did not take the necessary steps to ensure that both tests were
parallel. In particular, the tools for writing varied across the tests; pen was
used for the pretest and computer for the posttest. This may cause a
confounding of the effects of the writing tool and prompting on the quality of
writing. Since the research was originally designed to examine the effects of
prompting questions, the writing tool should be the same for all the tests
conducted.

Scardamalia and Bereiter (1983) employed a posttest-only study without
any control group. They did not give any pretest before imposing the
arbitrary CDO procedures, although they were aware of the fact that children
usually do not revise their own writing under ordinary circumstances. They
compared their data with the norms of the National Assessment of
Educational Progress (1977). Their subjects did better than the norms, but this
superiority may have already existed even before the intervention of the CDO
procedures.

Another weakness is related to the issue of control. Since there was
neither any control group nor any pretest in the study cited above, it is
difficult to evaluate whether or not the two treatments influenced the
subjects' revisions in positive directions (Scardamalia & Bereiter, 1983). The
two treatments, "on-line" and "evaluation-after," differ in their cognitive
demands. An "on-line" revision may have an advantage for text generation,
by providing suggestions for additional things to write. The interruption
inherent in "on-line" revision may be a disadvantage if the writer loses sight
of the intended goal. The "evaluation-after" approach has the advantage of
preserving the original idea, but confines the task of revision to the text
already written. If the researchers had used a control group and collected data
in a natural situation, they would have been able to establish a more valid
and reliable argument concerning the factors involved in facilitating or
inhibiting the normal cognitive process of revision.

One training study used a pretest-posttest design without any control
group (Cohen & Scardamalia, 1983). With this design, it is difficult to
eliminate effect of pretesting. Familiarity with testing might be confounding
with training effect. It is also difficult to claim the effect of the nine-day
training because there is no comparison group to eliminate the effect of
maturation. One may argue that the duration of nine days is not long
enough to reveal a threat of maturation, but there is evidence that elapsed
time alone without any training has a significant effect on the revisions (Ash,
1983). Ash compared revisions done one day later with those three days later
and seven days later, as a factor of elapsed time. The longer the interval, the
better were the revisions in terms of both quantity and quality. This result
supports the hypothesis that, given more time to review their text, writers
tend to perform the revising task better by becoming more objective (Beal, 1989).

**Metacognitive skills**

In this section, the awareness and regulation aspects of metacognition will be discussed in two separate sections: (1) weaknesses of the training studies reviewed in the previous section; and, (2) the types of instructions employed by the training studies.

Metacognition in the revising process has been considered as a form of problem-solving skill (Flower & Hayes, 1981; Fitzgerald & Markham, 1987), a questioning skill (Daiute & Kruidenier, 1985), or a process of going through one or more of the CDO procedures (Brett, et al., 1983; Cohen & Scardamalia, 1983; Scardamalia & Bereiter, 1983). Naturalistic studies have indicated that young or inexperienced writers are generally lacking in sophisticated metacognitive skills. Thus, training studies have attempted to provide novice writers with instruction that might enhance their metacognitive skills.

The weaknesses of training studies are mainly the result of focusing on only one aspect of metacognition. Three studies (Brett, et al., 1983; Daiute & Kruidenier, 1985; Scardamalia & Bereiter, 1983) attempted to enhance the awareness of the writers by using questions or phrases as a tactic for procedural facilitation. This training method limits the writers' revisions to awareness level. For example, the students could detect the weaknesses in their writing, but most of them were unable to remedy their problems in a
positive direction (Scardamalia & Bereiter, 1983). It appears to be difficult to expect a higher quality of writing as a result of this intervention, as reflected in these results showing no quality improvement (Brett, et al, 1983; Scardamalia & Bereiter, 1983).

The study conducted by Cohen and Scardamalia (1983) was based on training the regulation aspect of metacognition, that is, the operational level of revision skills. Results showed a significant improvement in the quality of writing. It is important to note that the operational level of revision skills is required to produce a better quality writing. However, another factor to note here is the duration of the training. The total time for the operational level training was nine hours (Cohen & Scardamalia, 1983), while the awareness level training was held for only one hour (Brett, et al., 1983). Due to the different duration of training, it is difficult to compare the two studies in terms of training effectiveness.

Beal (1987, 1988) argued that training only the regulation aspect of metacognition was not sufficient to make high level revisions since the primary reason for children's limited revising skills was their inability to detect problems. Similarly, Fitzgerald and Markham (1987) were concerned with training both facets of metacognition in order for children to be able to detect and remedy their own writing problems. With this training, the children's performance became more competent and stable throughout the revising process.

It is important to reexamine the training studies to determine which types of metacognitive instruction might be most effective. The use of self-
questioning strategies has proven to be one of the most effective metacognitive strategies for improving reading comprehension among school-aged children (Haller, et al., 1988; Kendall & Mason, 1982; Palincsar & Brown, 1984) and in making proofreading revisions (Schumaker, et al., 1982). The weakness in the metacognitive awareness of young writers' revision has often been attributed to their inability to see their text from the reader's point of view (Kroll, 1978). Therefore, a writing conference with teachers or peers is often used to provide beginning writers with feedback and to help them evaluate more objectively their own text by being exposed to the perspectives of others (Crowell, et al., 1985; Graves, 1983). This external feedback, mainly questioning the clarity of what has been written, enables children even in the primary grades to make substantial revisions of their writing (Calkins, 1979; Graves, 1978, 1983). Since awareness of writing problems requires objective evaluation of text (Kroll, 1978; Langer, 1986), extensions of teacher feedback to self-questioning strategies for effective writing revisions might be worthwhile exploring because there might be some overlap between external feedback and self-questioning.

One way for young writers to attain a high level of metacognitive awareness is to internalize the questions asked by others so that they can use similar questions to find weaknesses in their own writing. In this regard, Daiute and Kruidenier's (1985) title, "A Self-Questioning Strategy to Increase Young Writers' Revising Processes", is misleading because they did not teach self-questioning. Instead, they used only computer prompts to guide the revisor. Other researchers have also used researcher-generated prompts throughout the training and posttesting (Brett et al., 1983; Bereiter &
Scardamalia, 1983b). If they had measured the writers' revision skills independent of these researcher-generated prompts, they might be able to obtain a measure of how well students had internalized the previously prompted questioning strategies. These issues of internalization and independent performance of learned skills are important since one of the main goals in education is to enable students to use learned skills autonomously (Vygotsky, 1978).

Two approaches have been commonly used to teach metacognitive regulation strategies. One approach involves using a fixed set of remedial sentences to facilitate mental executive functions of writers in grades 4-12 (Bereiter & Scardamalia, 1983b; Cohen & Scardamalia, 1983). Examples of the sentences used were, "I'd better give an example", or "Idea said in a clumsy way". Using such sentences, significant improvements in quality of writing as well as in quality of individual revisions have been reported (Cohen & Scardamalia, 1983).

A second approach involves teaching four basic components of self-regulation: criterion-setting, self-instruction, self-assessment, and self-reinforcement (Harris & Graham, 1984). This self-regulation strategy, along with a writing strategy for including different action words in a piece of writing, helped learning-disabled students improve their composition skills. Using a fixed set of self-regulating phrases (examples shown in the previous paragraph) has the advantage of focusing writers' attention on the revision task (Bereiter & Scardamalia, 1983b; Cohen & Scardamalia, 1983). One disadvantage of the method, however, is its limited generalizability to other
cognitive tasks. On the other hand, teaching the fundamentals of self-regulation is a rather open-ended technique which might be generalized to other cognitive tasks (Harris & Graham, 1984).

**Writing and revising skills**

The main goal for teaching revising skills is to improve writing skills. Most qualitative studies imply that there is a positive relationship between metacognition and writing revisions. In quantitative studies, writing skills and revision skills are measured to see whether the improvement of those skills can be seen as a result of metacognitive instruction.

Writing and revising skills have been most commonly measured by three types of variables: number of revisions, quality of revisions, and quality of writing. One of the operational definitions for the quantity of changes was the total number of revisions per 100 words (Fitzgerald & Markham, 1987; Daiute & Kruidenier, 1985). It is good to count numbers based on 100 words since it makes the number, like a percentage, comparable across studies. However, the studies which count the number of revisions made on the writer's own writing have a limitation for comparison. A subject who writes well or carefully in his/her first draft does not have to make too many corrections or improvements as compared to one who is likely to make a quick draft and elaborate on it later. In this case, comparison of the number of revisions does not provide useful information. In order to be able to compare students' revision skills, the same text should be used across all students. In this way, the number, variety, and problems contained in the text can be
controlled. Only one study (Brett, et al., 1983) had subjects revise both others' and their own writing.

The operational definitions for quality of revisions vary in two ways. In two studies (Fitzgerald & Markham, 1987; Daiute & Kruidenier, 1985), a revised version of the classification of revisions developed by Faigley and Witte (1980) was used. In other studies, the categorization system developed by Scardamalia and Bereiter (1983) was employed. The two systems classify globally meaningful changes as a higher level of revising skill, and superficial changes as a lower level. Instruction for revising should be geared to semantic changes since they are considered as a mature revising skill, which is positively correlated with improving writing quality (Faigley & Witte, 1980).

Operational definitions for the quality of writing differ in two ways. First, some are based on an analytic scoring system, while others use a holistic scoring system. For example, Fitzgerald and Markham (1987) used an analytic scale based on the work of Diederich (1974) and Beach (1979). A total quality score was derived from the sum of eight subscores, each ranging from 1 to 6. This type of scoring system has a weakness insofar as equal weight for different traits of writing implies that no priority is given to high level revisions compared to low level revisions. This is the main reason why many writing researchers argue that content factors (such as organization and coherence) deserve heavier weights than surface factors like the grammatical and mechanical aspects of writing (Hall, 1988). In the other four studies, a holistic scoring system was used, judging the overall quality of writing instead of taking the subscores. Many writing teachers consider holistic
evaluations as the most valid because they measure what they are supposed to measure, that is, the total ability to communicate in writing. On the other hand, this technique can be the least reliable, since it remains very much open to the subjectivity of the raters (Hillerich, 1985). However, this weakness in holistic scoring has been addressed by some researchers who have carefully established standards for their raters to follow and practice (Brett, et al., 1983; Cohen & Scardamalia, 1983; Scardamalia & Bereiter, 1983).

**Optimal age for training**

Another consideration in planning metacognitive training concerns the optimal age of the students. Students start to learn to write in elementary school and they tend to be less afraid to make mistakes than older students. If teachers wait until children enter high school or college, it might be too late to restore their motivation to learn writing skills. Later, students tend to give up on improving their writing skills due to the cumulative experiences of frustration with their poor writing skills over time. The earlier the training of metacognitive skills is initiated, the greater the benefits may be. Writing research with native English speakers has shown that children as young as the fourth grade are capable of learning metacognitive skills (Brett, et al., 1983; Cohen & Scardamalia, 1983; Daiute & Kruidenier, 1985; Fitzgerald & Markham, 1987; Scardamalia & Bereiter, 1983b).

Two studies investigated the effect of age on the quality of writing or revisions produced (Brett, et al., 1983; Scardamalia & Bereiter, 1983). Writing researchers are often interested in studying the differences between young
and adult writers or between expert and novice writers. The findings from this developmental research provide writing teachers with valuable insights when establishing goals for instruction. For instance, Brett and her colleagues (1983) found the transfer effect of using cards only in twelfth grade writing. This implies that younger children may need a longer time span for training.

**The computer as a writing tool**

One way to deal with the writing frustration that L2 learners face and make their writing tasks more interesting is by using computers. The use of computers may be instrumental in providing L2 writers with the motivation to write. An increasing amount of research has shown that technologies could facilitate the entire writing process, or at least many of its subprocesses (Pea & Kurland, 1987). Word processing itself, without any sophisticated software, has been praised as a useful writing tool which can motivate students to write and revise more than when using a pen (Daiute, 1986; Solomon, 1986). One interesting assumption about the writing tool is that the cognitive processes of writing in an individual writer will vary depending on the tool (Pea & Kurland, 1987). However, few researchers have examined the issue of the writing tool and its effects on cognitive processes.

One issue writing teachers and researchers should be attentive to is that computer technology cannot automatically lead novice writers to become expert writers. Several writing studies using the computer to facilitate writing provided young writers with prompting questions, in order to help the users make outlines, generate contents, or revise drafts. The results
showed that the computer promptings motivated students to write more (Daiute & Kruidenier, 1985). One of the limitations of these studies is that researchers have not typically assessed transfer effects of computer-prompting on independent performance. In this regard, Daiute and Kruidenier's study (1985) was misleading since they did not measure self-questioning but used only the computer-promptings. They should have measured the possible transfer effects of repeated exposure to revision categories on the self-initiated questioning strategy, because the degree to which children can internalize a learned skill and use the skill autonomously is an important educational issue (Vygotsky, 1978). Only one study actually measured the transfer effect (Brett, et al., 1983) and indicated that the duration of training and the age of students are important factors in determining the effectiveness of training. The longer the training, the more the prompting questions are transferred to independent performance. The older the students, the lesser the time needed for training.

Summary

The first section of this chapter dealt with metacognition as it refers to the mental ability to be aware of or to regulate one's own cognition and learning tasks. Metacognition is considered an important factor for both learning and independent performance. In addition to maturation, explicit instruction in metacognitive skills is critical for the acquisition of sophisticated metacognitive skills.

The second section covered the historical development of the
conception of revision. The most current and comprehensive definition of revision includes changes, not only in the products of thinking but also the processes of thinking, that occur throughout the writing process.

The third section reviewed studies on the role of metacognition in the revising process. The revising process requires metacognitive awareness and regulation, insofar as good writers are aware of the factors in good writing in order to detect weaknesses and are able to generate adequate remedies or better alternatives. Naturalistic studies found that expert writers, both L1 or L2, have a high level of metacognitive skill usage and perform extensive and meaning-based revisions in order to make a piece of writing better. Training studies have focused on teaching novice writers a few metacognitive strategies and measuring the effects of metacognitive training on writing and revising skills.

Finally, the fourth section discussed the strengths and weaknesses of the literature in the area of metacognition during writing revisions. Little research has investigated young ESL writers' metacognitive skills. Further research is needed to explore the following question: What is the role of metacognitive skills in young ESL students' writing revisions? Metacognitive training studies have shown that enhanced metacognitive awareness and regulation have helped novice writers perform high-level revisions, and in turn produce a better quality of final draft. Very few studies have attempted to teach metacognitive skills to ESL writers in elementary schools. This leads to the second major question: What are the effects of
training two metacognitive strategies (one is a self-questioning strategy and the other is a self-regulation strategy) on the metacognitive, writing, and revising skills of young ESL students?

Specific Research Questions

The specific research questions are divided into two categories with five specific questions.

A. The role of metacognitive skills in young ESL students' writing revisions

1. What is the level of metacognitive skills in the revising process of young ESL writers?

2. What is the role of metacognitive skills in the writing skills of these writers?

3. What is the role of metacognitive skills in the revision skills of these writers?

B. The effects of training two metacognitive strategies (one is a self-questioning strategy and the other is a self-regulation strategy) on the metacognitive, writing, and revising skills of young ESL students

4. What are the effects of training a self-questioning strategy on metacognitive, writing, and revising skills?

5. What are the effects of training a self-regulation strategy on metacognitive, writing, and revising skills?
Since very few studies focus on the metacognitive skills of young ESL writers' revising process, the present study explores the issues surrounding Question A. Question A was divided into three specific questions. Question 1 was asked specifically in order to observe young ESL students while they were involved in writing revisions and to make inferences regarding their current metacognitive skills under natural settings. Question 2 was asked in order to investigate the role of metacognitive skills in writing, which were judged based on both the holistic and analytic quality. And Question 3 was asked in order to examine the role of metacognitive skills in revisions, which was rated based on both the quantity and quality of revisions. Expert writers with good metacognitive skills tend to make high level revisions and produce good quality writing (Bereiter & Scardamalia, 1986; Faigley & Witte, 1981; Flower & Hayes, 1980, 1981; Sommers, 1980). In other words, Question A explores the possibility that metacognitive skills could predict quality of writing and revising skills. The issues in Question A need to be addressed prior to introducing instructional intervention.

Question B was posed in the present study as an attempt to explore the appropriateness of training metacognitive skills during ESL writing instruction. The training of metacognitive awareness has enhanced writers' skill in identifying problems in writing (Bereiter & Scardamalia, 1983b; Brett, et al., 1983; Daiute & Kruidenier, 1985; Fitzgerald & Markham, 1987) and the training of metacognitive regulation has enhanced skill in remedying problems (Cohen & Scardamalia, 1983; Fitzgerald & Markham, 1987). The portion of the present study that examines training effects will help clarify these two aspects of metacognition.

The metacognitive training studies cited above were conducted with students whose L1 was English. The positive results of the aforementioned
instructional techniques might be applicable to L2 writing research and pedagogy. Few studies have taught young ESL writers metacognitive skills systematically. Jones' study (1987) with college ESL students described the importance of metacognitive skills in ESL writing. Consequently, Question B was raised to assess the effects of metacognitive training with young ESL writers, after the initial observations of metacognitive skills. Question B was divided into Question 4, which examines the effects of the self-questioning strategy training, and Question 5, which examines the effects of the self-regulation strategy training. In an attempt to assess the effectiveness of training statistically, the quasi-experimental approach was adopted. Through systematic data obtained under circumstances whereby extraneous variables were controlled as the situation permitted, this study might be able to provide ESL teachers and researchers with tentative evidence regarding the applicability of metacognitive instruction. Accordingly, Questions 4 and 5 were posed so as to specify further the relationship between variables. The independent variables were: (1) training the self-questioning strategy for Question 4; and (2) training the self-regulation strategy for Question 5. The dependent variables were (1) metacognitive skills, (2) writing skills, and (3) revising skills for Questions both 4 and 5. The two independent variables, two types of training, were the presumed cause of changes in the dependent variables, according to the previous experimental research (Cohen & Scardamalia, 1983; Fitzgerald & Markham, 1987). However, these studies did not measure the effects of training self-regulation independent of self-awareness on writing and revising skills. Separate training of the two strategies might help specify further the role of metacognitive skills in the process of ESL writing revisions.
CHAPTER III.
METHODS

This chapter describes the research design, participants, and settings for the present study. The procedures and materials used for training and assessment, and the methods for collecting and analyzing data are also discussed.

General Statement of Research Design

The two main purposes of this research were to identify ways in which young ESL students use metacognitive skills in revising their writing and to examine how the two metacognitive strategies training affect the participants, from a holistic and process-oriented perspective. The traditional pre-post test experimental design is not appropriate for these purposes. Little research has examined closely young ESL writers' metacognitive skills. Because of this, it was necessary to collect a lot of process data on relevant variables through an intensive observation of a few ESL learners over a long period of time. The case study design has been a favored approach for studying cognitive strategies or writing behaviors (Ammon, 1985; Edelsky, 1982; Graves, 1983; Halsall, 1986; Raimes, 1978; Zamel, 1983). Accordingly, a case study focused on five ESL writers was employed as the main research design. The case study was divided into two phases (Chamot, 1987): (1) the training phase which employed mainly qualitative and descriptive approaches; and (2) the assessment phase which
employed mainly quantitative and quasi-experimental approaches.

Another advantage of adopting a case study approach was to increase the ecological validity for the present study. The participants in this study were ESL learners whose L1 was Korean. Most of the Korean children did not receive any formal English instruction before they emigrated to an English speaking country. Consequently, they could not function properly in regular classrooms and were usually placed in a special class for supplementary English lessons. The size of these special classes is relatively small, less than ten per group, and faculty members are usually bilingual or at least have some knowledge of the mother tongue of their ESL students. The participants had arrived in the United States about 2 years previously and had also studied in the special class for Students of Limited English Proficiency (SLEP), where the researcher had served part-time as an English-Korean bilingual instructor.

The SLEP class enabled the researcher to establish a rapport with the participants and to observe their surrounding environments without intruding into their regular school activities. This well-established relationship allowed the researcher to employ several data-collecting techniques adopted from microethnography and socio-linguistic approach in order to address the first research question: What is the role of metacognitive skills in young ESL students' writing revisions (Au & Jordan, 1981; Carrasco, 1981; Ness, 1981)? For example, the participating students did not display any unusual reaction toward the researcher throughout the dissertation project. They talked and participated in their usual activities. These naturally-occurring behavioral patterns were observed in order to investigate and describe the participants' baseline performance of metacognitive skills, before introducing specific metacognitive
The qualitative approach allowed the development of detailed descriptions of metacognitive skills in these ESL learners. Quantitative analyses then were used in an attempt to establish a strong relationship between metacognitive and revising skills, which was the second major purpose of this research. Hillocks (1986) criticized case studies for failing to provide hard evidence to support its pedagogical recommendations. In order to make this case study more informative for pedagogical purposes and further research, there was a need to make the assessment of training effects systematic rather than selective. Accordingly, a quasi-experimental approach, more specifically an interrupted time-series design using multiple probes (Tawney & Gast, 1984, pp. 269-293), was adopted to address the second research question: What are the effects of training two metacognitive strategies on the writing and revising skills of young ESL students?

The interrupted time-series design using multiple probes was particularly effective in terms of evaluating instructional programs used in special educational settings. Using multiple-probes saved time by eliminating the need to collect baseline data on a continuous basis. It also enabled the investigation of the relationship between metacognitive skills and revising skills in a systematic manner by manipulating independent variables and controlling many extraneous variables, such as time and genre for writing. The two independent variables for this phase of the study were: (1) training the metacognitive awareness strategy; followed by (2) training the metacognitive regulation strategy. The three dependent variables were: (1) level of metacognitive skills, (2) level of revising skills, and (3) level of writing skills. The data for
metacognitive skills were collected through the multiple methods of think-aloud, retrospective-interview, observation, and tape-recording of classroom interactions. The process data for revising skills was collected by video-taping the computer screen during the writing process. Multiple drafts were also collected to assess changes in the written product over time. The data for writing skills were multiple writing samples for holistic and analytic quality analyses.

Participants

Participant selection

Participants were selected based on four criteria. First, all were ESL learners whose native language was Korean. This was to help ensure ecological validity and to eliminate the confounding effects of having various L1 users. By selecting only native-Korean speakers for this study, it was possible to analyze the L1 and L2 relationship in the L2 writing process and also to elicit active interaction and verbal explanation of thinking through the use of the L1.

Second, only immigrants who had been less than 3 years in the United States were selected. Although there was no minimal length of stay, six students who had been in the United States less than one year were later excluded due to their low reading scores obtained in the Metropolitan Achievement Tests (6th edition [MAT6]: Balow, Farr, Hogan, & Prescott, 1986).

The third criterion was a score on the reading portion of the MAT6 above the 10th percentile (Balow, et al., 1986). The MAT6 had been administered in
April, 1988, prior to this study. The reading score criterion was used to attain a minimum level of reading skill, which was considered as a significant language skill preceding the ability to write. The students who obtained lower than the 10\textsuperscript{th} percentile scores for reading were unable to produce writing of more than a few sentences.

The fourth criterion was age. Students in grades 5-6 were selected because this grade range seemed to be the optimal age for combining instruction on both writing and metacognitive skills, as suggested by the positive results obtained from studies on children whose native language was English (Bereiter & Scardamalia, 1987).

Using the four criteria, six students were selected from a total of twenty-eight Korean ESL learners in the SLEP class at the school. Letters written in Korean were sent to the parents of the potential participants to inform them of the schedule and purposes of the study. Permission was obtained from the parents to allow their children to remain after school. Only one student refused to participate because he did not want to stay beyond regular school hours. The other five students were excited about the project and their parents were appreciative of the opportunity to improve their children's writing skills.

Description of participants

A total of five Korean ESL learners, two boys and three girls in grades 5-6, participated in the dissertation project. Demographic information on the participants is provided in Table 1.
# Table 1

Demographic information of the participants

| Name | Sex | Age | Grade | U.S.A. | MAT6 (4/88) | Class  
|------|-----|-----|-------|--------|-------------|------
|      |     |     |       |        | L. | R.   | (1988-89) |
| Suk  | m   | 10  | 5     | 12/87  | n/a | n/a | LEP      |
| Ran  | f   | 10  | 5     | 12/87  | 4   | 12  | LEP      |
| Mi   | f   | 10  | 5     | 9/87   | 4   | 10  | LEP      |
| Ja   | f   | 11  | 6     | 9/87   | 27  | 23  | FEP      |
| Hun  | m   | 10  | 5     | 9/86   | 89  | 39  | MS       |

a: pseudonyms were used to preserve the participants' anonymity.
b: the month and year of arrival in the United States.
c: 4/88 - the month and year MAT6 was given prior to this study
   L.- Language percentile score and R.- Reading percentile score.
d: the classification of the student for the 1988-89 school year, according to the results of MAT6 taken in 1988; LEP - Limited English Proficiency; FEP - Functionally English Proficiency; MS - Main Streamed.

All of the participants came to the United States in 1987 except for Hun, who came in 1986. When the participants first enrolled in the school, they were all classified as non-English-speaking students. This is common for most, if not all, Korean elementary students, since English is not taught in Korea until the seventh grade. The participants had been in this country approximately one to two years, at the time of initiating the dissertation project in September, 1988.

The participating students' level of English language proficiency and reading skills varied. For example, the result of MAT6 (Balow, et al., 1986) was an indicator of their English proficiency. Language scores (English grammar)
ranged from the 4th to the 89th percentile and reading scores ranged from the 10th to the 39th percentile in terms of the U.S. national norms for students at their grade level. A score at or above the 25th percentile is required by the Department of Education, State of Hawaii, for a SLEP student to be completely mainstreamed into regular classes.

According to the results of the MAT6 given in 1988, three students - Suk, Ran, and Mi - were classified as LEP students and thus they had to take a one-hour special English lesson daily at the Students of Limited English Proficiency (SLEP) class. Ja was classified as an FEP student and she had to take a one-hour session at the Language Enrichment Program (LEP) class. This class was funded by the Federal Government and about one-half of the class consisted of English native-speaking children whose reading score was low. Putting ESL children together with slow learners in the English reading class seemed to have developed misconceptions of ESL students as learning-disabled among teachers and students in the school. However, students at the SLEP class considered this LEP class as an advanced English class and they were proud of being transferred to the LEP class in the shortest possible period. Hun was mainstreamed completely to regular classes in the spring semester of 1989.

All of the students spoke Korean at home because their parents experienced difficulty conversing in English. All parents had graduated from high school except for Ja's parents who had graduated from college in Korea. When the children's parents were in Korean schools, they were taught only the grammatical aspects of English and reading with little emphasis on English conversation. Being unable to incorporate the grammar and vocabulary learned into conversational English, the participants received little help from their
parents in learning English.

However, Ja had a home tutor who had been teaching her English for one hour daily since last year. The tutor was a college student who could speak both Korean and English. He assisted Ja with her homework and reading. Once in a while, Ja explained certain aspects of grammar and pronunciation by referring to him. Hun also had a home tutor, who happened to be the researcher, for the first six months when he arrived in the United States. Since he had had no previous English experience at all, he had been taught mostly how to pronounce English words and how to read. As a third grader, he had often expressed frustration in Korean, "I want to go back to Korea. I was the best in the class when I was in Korea, but now I can not even say a word with my regular classroom teacher and classmates."

However, he was very enthusiastic about science, so he borrowed science books from the State or school library. Although he could not read the books, he looked at all the pictures and tried to learn some scientific vocabulary terms and their pronunciation.

**Researcher as a Participating teacher**

The researcher, born and raised in Korea, had nine years of elementary school teaching experience in Korea. While the researcher was teaching, she conducted an experimental study and wrote her first master's thesis entitled, "A study on the effects of pictures as stimuli in learning foreign language responses (1982)." She came to the United States in 1983 to pursue her graduate studies, and started to work with SLEP students in 1985 as a part-time bilingual tutor from the University of Hawaii at Manoa. Her second master's thesis was a quasi-
experimental study entitled, "The Effects of Teaching Word-processor Aided Sentence Combining on ESL Elementary Students (1986)."

The present study had grown out of the researcher's teaching and research experience over a decade with children learning English as a Foreign Language (EFL) or ESL. However, her research interest has switched from teaching English subject matter, to seeking cognitive strategies which can facilitate the process of acquiring the L2. In her role as a part-time bilingual instructor, the researcher observed that many ESL learners were under-utilizing their cognitive skills due to limited L2 proficiency. She noticed that her ESL students benefited more from learning cognitive strategies than from direct lessons on subject matter. Some of the cognitive strategies were mnemonics, such as using an L1 key word to memorize an English word or connecting the sound of an English letter to an L1 letter. Many of the students could generalize the strategies to memorize or pronounce new English vocabulary words.

The researcher had known the participating students since their arrival in the United States. She taught English vocabulary, grammatical structures, and reading three times per week. She did not teach vocabulary or grammar separately, but pointed out repeated patterns in reading materials which were meaningful to ESL children. For the present study, the researcher was the main teacher who conducted a voluntary after-school class in order to train prerequisite skills and two metacognitive skills. This was an attempt to have the researcher, acting as a teacher, gather more naturalistic data in a realistic classroom situation with a minimum of detrimental experimental effects.
Settings

Computer laboratory

The computer laboratory was the primary setting for all training and assessments. There were fifteen Apple computers and two printers along the three walls of the laboratory. In the middle of the room were two tables for the computer teacher and 18 desks for the students coming from their own regular classes to receive special computer instruction for two hours per week. The participating students liked this laboratory better than the SLEP classroom because they enjoyed working with computers. Even when they were engaged in discussions and exercises at their desks, the expectation that they could go to the computer at any minute motivated them to accomplish non-computer activities as quickly as possible.

The laboratory was located on the second floor in a building that was ideally located away from the main street and traffic noise, although an occasional siren or the lawn mower noise could be distracting to the students. The laboratory was partitioned from the other half of the room by several screens. Often the students could not settle down to do their work immediately and had to wait until the occupants from the preceding class had left. The room was hot and stuffy with no air-conditioning. The school decided to move the computer lab to another classroom with air-conditioning only at the end of the semester, which was the last week of the dissertation project. The classroom became cluttered with packed boxes as the computer teacher prepared to move the materials and equipment. Fortunately, the teacher did not disconnect the
computer facilities until the last day of the dissertation project.

The SLEP Classroom

The SLEP class offers new immigrant children a complementary program to help them gain English language proficiency. Approximately one hundred and fifty students were enrolled in this class and took English lessons for one or two hours daily. There were three full-time English speaking teachers and three part-time bilingual teachers, whose native languages were Chinese, Korean, and Vietnamese, respectively. Since September in 1985, the researcher had been working the SLEP class as a part-time English-Korean bilingual tutor from the University of Hawaii. Through the class, the researcher was able to establish a rapport with the participants prior to the dissertation project.

Although the part-time teachers were bilingual, they tried to use English as much as possible. Since the main goal of this class was to facilitate ESL acquisition by the non-English speaking students, speaking the student's L1 was discouraged, unless special assistance in understanding a certain concept was necessary.

The classroom environment was, in general, student-oriented and conducive to learning. A large class was divided into four or five smaller sections so that each teacher could be in charge of different groups of students without disturbing each other. The classroom walls were decorated by different ethnic ornaments, greeting words in the students' diverse native tongue, English alphabet letters, English words with pictures, and progress charts with each student's name on it. About ten pieces of screen, used for partitioning the
classroom, were also decorated by pictures from the students' book reports or English vocabulary words according to the current festive season. The book reports and English words on the poster-board were changed monthly.

On the bookshelves, there were many story books and work books students could read at school or borrow to read at home. Although some story books were old publications from the 1960's, they were still sound reading materials with pictures to motivate ESL learners to learn new vocabulary and expressions in the relevant contexts. Some of the books were Series of Animal stories (Dolch & Dolch, 1959) and Cuddles (Granowsky, 1983) and many monographs. Workbooks included Sprint reading skills (1979), Specific skills series (Boning, 1982), and Multiple skill series (Boning, 1979). These work books were developed sequentially from a beginning to an advanced level, so they were used for individual students to practice and progress on their own. The main teacher in the SLEP class kept the record of each student and occasionally rewarded the students who made rapid progress.

There were shelves for keeping other learning materials, educational games, and references. Some of the learning materials used were flash cards for vocabulary, synonyms and antonyms, phonetics, and short sentences. Educational games included Scrabble, Life, and Bingo games; it was helpful for ESL children to learn vocabulary and useful expressions while they were having fun.

The school and the community

The school setting for this study was an elementary school located in the Honolulu public school district on Oahu, Hawaii. The school was one city block
in size, on land spanning approximately four acres. The school was a multi-racial school, the majority of its students were either immigrants or children of immigrants, mainly from Asian countries and South Pacific Islands. The 1987-88 school report about ethnicity distribution at the school indicated: Japanese, 19.2%; Korean, 17.9%; Part Hawaiian, 12.6%; Indo-Chinese 12.3%; Chinese, 10.6%; Caucasians, 8.5%; Filipinos, 6.8%; Samoans, 1.6%; and others, 10.8%. Many of the new recent immigrants were Korean or Indo-Chinese.

This school was selected for the present study partly because it had the largest Korean immigrant student population in the Honolulu District. There were approximately one hundred English-Korean bilingual students at the time of this study, and twenty-six recent immigrant students were receiving special English survival skills on a one- or two-hour-per-day basis at the SLEP class. There were one-hundred and fifty-six students enrolled in the SLEP program.

There were approximately eight hundred students in grades K-6. However, students in grade 6 were being sent to other schools for the 1989-90 school year. This elimination of sixth-grade students was due to the increase in the number of kindergartners and the need for more classrooms and teachers. This meant that all of the participants for this study would leave this elementary school at the end of this study, whether they were in the fifth or sixth grade. This made it difficult for the researcher to schedule a longer interim period in order to evaluate the maintenance effect of the two trainings.

There was no information available about family income or the educational status of the parents. In general, the school reported that many students were from single-parent households, where the parents were either divorced or separated. Many mothers moved into this district with their children.
during the adjustment period following a divorce or separation. The high transiency rate, 77% for 1986-87, was an indicator of the instability of family life. In the 1987-88 school year, 13.4% of the families were federally supported; 9.5% received public assistance; and 28.6% received free meals or meals at subsidized prices.

The school district was located in a community of businesses, hotels, and apartments. This had resulted in a rather high mobile and transient community with little or no solidarity of purpose. Thus, little interaction between parents took place except at school-organized functions. However, as individual family units, the school teachers found that parents were very interested in the school and their children's education. A majority of the parents participated in every activity organized by the school and the PTA (Parents and Teachers Association). Boy Scouts sponsored by the parents met weekly in the school cafeteria. A physical culture group provided Tai-Chi lessons for the parents of the community two evenings a week in the school cafeteria. The school district was in need of playground and park facilities. There was only one park located two blocks away from the school. A serious lack of organized recreation for the youths of this community had existed for a long time.

Materials and Instruments

The Master Type (Scarborough, 1985) program was used for the purpose of training typing skills on the computer. It had both training and game features. The training feature was useful to teach beginners the proper fingering and the timed practice used attractive graphics contained in the computer program. The
students were intrigued by the graphic feature of the program, which illustrated the finger movement simultaneously with a typed letter. It was a well designed educational program appropriate for students at any level because there were many options available for lessons in speed and letter mastery.

The main writing instrument was the Apple IIe computer with The Milliken Word Processor (Milliken, 1986). The rationale for the choice of this specific computer and software program was their availability and ease of use. Most elementary schools in the Honolulu District in Hawaii had Apple computers in their computer laboratories because of the availability of a variety of educational software for the computer.

The Milliken Word Processor (Milliken, 1986) had basic word processing features for text entry and revision. The screen display, using graphics and simple words to describe processes, made this program an appealing choice for the young ESL writers. For example, all file handling was done at a "File Cabinet" shown on the screen. Another appealing feature of the program was the availability of the other modules, including "Prewriting" and "Postwriting." However, the extra features were not used for the present study due to the inconvenience of rebooting separate disks every time one wanted to move from one module to another.

In addition to the computer and software, prompts for prewriting and revising were used throughout the assessment phases. Prewriting prompts were adapted from Creative writing rocket (Schwartz, 1976). The topics for writing the child's Own Story (OS) were selected from this book in order to make the degree of topic familiarity equivalent throughout the assessments. The pictures in the book were used to stimulate the participants' idea-formation process on a
given topic (see Appendix A).

Eight Researcher-generated Stories (RS) were devised by the researcher. These RS were generated to make revisions standard. The average length of a RS was approximately two hundred words, into which the researcher inserted the twenty specific problems related to organization, coherence, and grammar and spelling errors. The original short stories were adapted from Specific skill series (Boning, 1982). A total of eight RSs for four assessments was devised and saved on a separate file in the computer so that the students could retrieve and work on the file as if it were their own story. To help ensure the reliability and validity of the RS materials, three independent raters were asked to judge their equivalence of the stories in terms of readability level and comparability of researcher-generated errors. The correlation coefficient for inter-rater agreement was .87.

In order to collect process data, an audio-tape recorder and a video-tape recorder with a tripod were used. Often the children's think-aloud protocols during the writing process did not provide sufficient information. Consequently, probes were adapted from Fitzgerald and Markman (1987) for use after the writing and revising activity had been completed (see Appendix D). These probes allowed the researcher to examine the awareness and regulation aspects of the student's metacognition, after writing revisions had been made.

**Procedures**

A two-phase study was conducted for both the training and the assessment. There were eight subphases in total, including four subphases of training and assessment respectively (see Table 2). The division of the study into
eight subphases enabled the researcher to explore further the identification, classification, and application of metacognitive skills to ESL writing revisions at various points during training and assessment.

As shown in Table 2, the training phase consisted of four subphases: (1) pre-training; (2) Self-Awareness (SA) training; (3) Self-Regulation (SR) training; and (4) no training, called interim. The training phase was qualitative and conducted in an environment as natural as possible so that the students' perceptions and reactions toward training could be observed without major constraints and that the scheduling could be flexible, based on student responses.

On the other hand, the assessment phase was quasi-experimental, using a multiple-probes design. It was designed to reliably assess in a controlled situation, the participants' performance after the various levels of training intervention. Across the four assessments, at least six factors were standardized, insofar as possible: (a) a narrative writing genre, selected as most appropriate writing task for children in elementary school (Graves, 1983; Langer, 1986); (b) topic for story, (c) time allowed for prewriting, writing, and revising; (d) prewriting prompts; (e) one-half of the revising prompts, from the researcher-generated stories (RSs); and (f) number of writing and revising activities per each assessment, four.
Table 2
Brief Schedule of the Study

<table>
<thead>
<tr>
<th>Phase</th>
<th>Duration (session)</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-TRAINING</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| <First period>: General training (twice weekly - during Fall, 1988) | 24 days | Typing skills
|              |                    |                                                        |
|              |                    |                                                        |
|              |                    | <Second period>: Intensive training (every day after school - from April, 1990: Starting this period, a complete daily schedule is presented in Appendix A). | 6 days | Word-processing skills
|              |                    |                                                        |
|              |                    |                                                        |
|              |                    |                                                        |
|              |                    |                                                        |
| ASSESSMENT I | 4 days (sessions 7-10) | Writing OS1, Writing OS2, Revising RS2, OS2            |
|              |                    |                                                        |
|              |                    |                                                        |
|              |                    |                                                        |
| SA TRAINING  | 3 days (sessions 11-13) | Self-questioning (SQ)                                |
|              |                    |                                                        |
|              |                    |                                                        |
| ASSESSMENT II| 4 days (sessions 14-17) | Writing OS3, Writing OS4, Revising RS4, OS4           |
|              |                    |                                                        |
|              |                    |                                                        |
| SR TRAINING  | 10 days (sessions 18-27) | Self-regulation (SR)                                  |
|              |                    |                                                        |
|              |                    |                                                        |
| ASSESSMENT III| 4 days (sessions 28-31) | Writing OS5, Writing OS6, Revising RS6, OS6           |
|              |                    |                                                        |
|              |                    |                                                        |
| No TRAINING  | 10 days (sessions 32-41) | Writing OS7, Writing OS8, Revising RS8, OS8           |
|              |                    |                                                        |
|              |                    |                                                        |
| ASSESSMENT IV| 4 days (sessions 42-45) |                                                       |
The total time needed to complete the eight subphase study was about two semesters of the 1988-89 school year. Between two and five sessions were held each week. All sessions were held after school so that the training and data collection could be completed without interference from regular curricular activities. The exact meeting time in the afternoons was from 2:30 to 3:30, except for Wednesdays, when the sessions held from 1:45 to 2:45.

The following sections describe the activities and their durations, materials, instruments, and students' reactions for the eight sub-phases. There was considerable repetition in terms of activities, materials, instruments, and data generated. For the subphases that were repeated, only the first instance is described in detail.

Pre-training subphase

The objectives of pre-training were: (1) to have the participating students use the computer as a writing tool efficiently; and (2) to familiarize students with data-collecting procedures. The pre-training phase was divided into two periods (see Table 2). The first period took twelve weeks, a total of twenty-four sessions held twice weekly. Pre-training involved teaching prerequisite skills for the present study, such as practicing computer keyboard typing skills and getting familiarized with the various commands of a word-processing program, The Milliken Word Processor (Milliken, 1986), on the Apple IIe computer.
During the fall semester of 1988, the first period of pre-training was held. During this period, there were an additional eleven Korean immigrant students besides the five participants described earlier. The reason for starting the project with a larger group was to observe and search for general patterns of Korean ESL learners' attitudes toward training, computers, and writing behaviors, before evaluating the base-line performance of the five participants. This was the method used by Calkins (1980), who started by observing the whole class when conducting a case study of four children's rewriting strategies.

However, this group of sixteen students in grades 4-6 were divided into two groups; eight students participated in sessions on Mondays and Wednesdays and the remaining eight participated in sessions held on Tuesdays and Thursdays. The total group was divided due to the shortage of computer facilities and to facilitate the researcher's interaction and observation with a smaller number of students.

In order to ensure the efficient use of the computer as a writing tool, training typing skills preceded writing assignments. Previous studies comparing the computer and the pen as writing tools had failed to ensure basic typing skills prior to the experiments (Burns & Culp, 1980; Daiute, 1983, 1986; Elias, 1984). Since students are more familiar with pens than with computers or typewriters, using the computer, with its prerequisite typing skills, would take longer than using pen and might have a negative effect on the generation of writing content. Therefore, familiarization with the keyboard is necessary before proceeding with any serious writing task. Otherwise, the lack of typing skills may be a major inhibiting factor for the cognitive process of writing (Daiute, 1986). This is why
the present study placed emphasis on the pre-training.

Typing speed was measured by using Lesson 9 in *The Master Type* (Scarborough, 1985) program. The average number of letters each student could type in a minute progressed as follows in the one month interval: Suk, from 5 to 10; Mi, from 6.5 to 14; Ran, from 9 to 18; Hun, from 24 to 32.5; Ja, from 12 to 16.5. Hun's typing skills greatly exceeded the others; he had a home computer and used it every day. Ja had a typewriter at home and she had practiced typing, so her typing in the beginning was faster than the remaining three students. However, Ja did not progress as much as Ran, Mi, and Hun did. Suk was the slowest and he made the least progress. The progress made in one month may have reflected the students' attitudes toward training. Hun and Ran progressed rapidly, while others progressed in a slow, steady manner.

Use of the computer made writing a more positive task in many ways: the game-like character of typing, the ease of correction, the neat printouts, and the absence of penmanship concerns. All the students who participated in this period were fascinated by the computer. Even those who were excluded for the intensive training sessions of the dissertation project intended to continue their computer literacy lessons.

<Second Period>

Intensive training started from this period. These sessions took place everyday after school, except for weekends and holidays. The subsequent training and assessment subphases became more intensive and were more directly relevant to the specific research questions. Therefore, a detailed daily timetable was prepared (see Appendix A). In particular, the process data on
classroom interaction were all recorded on audio-tapes or video-tapes. And journals of both the students and the researcher were collected as a form of free writing from this period to the end of the project.

The second period of pre-training took six sessions held every day an hour after school. Pre-training activities included practice on The Milliken Word Processor and in thinking-aloud, and getting familiarized with being audio-taped and video-taped. These were more closely relevant prerequisite skills to the present study than the skills trained during the first period. New training introduced in this period was practicing in thinking-aloud. Thinking-aloud protocols were used as a way of gathering metacognition data during the writing process. The think-aloud protocols, in addition to a number of resources like probes or researcher-prompted questions, provided the researcher with a rich and multifaceted database for making inferences about metacognitive skills.

During Sessions 4-6, the participants were trained to verbalize all their thoughts by using the method adopted from Bereiter and Scardamalia (1987). One difference in this study was using two languages, either the students' L1 or L2, so that the students could verbalize their thinking with minimal language difficulty. (see Appendix C for a detailed outline of the think-aloud training).

An audio-taperecorder and a video-taperecorder were used throughout the sessions in order to more fully capture interaction and verbal behavior. The data collected from the taping was particularly useful in analyzing the training and writing process without interruption. During the initial sessions, the students over-reacted toward the taping by asking questions about parts of the video-camera, talking too loudly or too softly, turning their heads toward the camera or avoiding it, or making funny faces. However, the students soon
became disinterested in the taping and ignored it, especially when they became absorbed in the project assigned during the session.

Assessment I

The objective of this subphase was to assess baseline performance before introducing any metacognitive training. It took four sessions (see Sessions 7-10 in Appendix A). The method of repeated measures was used to collect double samples of writing, revising, and metacognitive skills from each student. Thus, the activities for the first and second sessions of this subphase were equivalent to the third and fourth sessions. The rationale for using repeated measures was to reduce the intra-individual variation.

During the first session, the students wrote their own story (OS1). A picture prompt, "Rockets Away" (Schwartz, 1976, p. 26), was shown to activate brainstorming. Each student then said a word that came to his or her mind: viz., "space", "rocket", "boy", "star", and "flag." These five words were written on the blackboard so that the students could further discuss the topic for about ten minutes. After the discussion, all students moved over to their assigned computer to begin writing their Own Story 1 (OS1) independently for thirty minutes. When the student finished his/her writing task, the student met with the researcher. Both of them then moved to a corner of the classroom in order for the researcher to interview the student individually by using the probes (see Appendix D). This retrospective interview was done at the end of each session throughout the four assessment subphases.

During the second session, each student revised two stories: one was the
OS1 written by the student during the first session; and the other was the RS1 (Researcher-generated Story 1) stored in a file in the word processor. Unlike OS1, RS1 presented the same revising task to everybody since it was a draft with known writing problems, generated by the researcher.

During the third session, the students wrote their second story (OS2) following the same procedures as they did during the first session. The only difference was using a different picture prompt, "A Skunk in the Class" (Schwartz, 1976, p. 23).

During the fourth session, the activity was the same as the third session except for the reversed order of the revising tasks; specifically, the RS2 was presented for revision first, followed by the OS2. The reason for reversing the order was to counterbalance the influence of order in presenting materials; participants typically paid more attention to the story presented first and got tired and became less attentive to the second story.

During this subphase, the participants also took MAT6 (Balow, et al., 1986) in their regular SLEP classroom, as a part of their annual testing for placement of the SLEP students for the coming school year. The results of MAT6 taken in both 1988 and 1989 are presented in Table 3.

It is interesting to note that the improvement made by each participant during the one school year partly reflect the students' English language aptitudes and attitudes toward learning in general. Suk came to the United States at the same time as Ran did in December 1987, but his scores in language and reading were much lower than Ran. Mi arrived three months earlier than Ran did, but she made slower progress than Ran as far as English was concerned. It is
inappropriate to compare Ja's scores in 1989 with other students' scores because Ja took the elementary level test given to the sixth graders, unlike other students who took the primary level test for the fifth graders.

Table 3

Results of MAT6 taken in 1988 and 1989 by the participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Grade</th>
<th>MAT6 (4/88) a L.</th>
<th>MAT6 (4/88) a R.</th>
<th>MAT6 (4/89)b L.</th>
<th>MAT6 (4/89)b R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suk</td>
<td>5</td>
<td>n/a</td>
<td>n/a</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>Ran</td>
<td>5</td>
<td>4</td>
<td>12</td>
<td>45</td>
<td>31</td>
</tr>
<tr>
<td>Mi</td>
<td>5</td>
<td>4</td>
<td>10</td>
<td>33</td>
<td>23</td>
</tr>
<tr>
<td>Ja</td>
<td>6</td>
<td>27</td>
<td>23</td>
<td>37</td>
<td>11 c</td>
</tr>
<tr>
<td>Hun</td>
<td>5</td>
<td>89</td>
<td>39</td>
<td>25</td>
<td>75</td>
</tr>
</tbody>
</table>

a: 4/88 - the month and year MAT6 was given prior to this study
   L.- Language percentile score and R.- Reading percentile score.

b: 4/89 - the month and year MAT6 was given during Assessment I subphase of this study

c: Ja took the elementary level test given to students in 6th grade, while the previous year she took the primary level test given to students in 4th and 5th grades.

It is worthy to noting that Hun's scores in Language (English grammar) and Reading are very unstable. The results between the two areas varied over 50 percentile score within the test taken in the same year. In addition to the variation within the test, the changes occurred between the 1988 and 1989 tests were drastic. One reason might be the fact that Hun took the MAT6 in 1989.
alone after school under the researcher's administration of the testing. Hun was not serious in the beginning while he was taking the Language portion of the test because he knew that he had already been mainstreamed during the previous year and did not have to take the MAT6, which was given only to students in the SLEP class. He kept asking questions irrelevant to the test, indicating that he was not paying full attention to the test. For the Reading portion of the test, he calmed down and seemed to enjoy reading. The high percentile scores show that Hun had fair English language and reading skills, while the sudden changes in the scores indicates that his performance could be easily influenced by his attitudes.

<General Rationale and Instructional Steps for Training Two Metacognitive Strategies>

The subsequent two subphases of training involved teaching two metacognitive strategies, a Self-Questioning (SQ) strategy followed by a Self-Regulation (SR) strategy. For native English-speaking writers, various types of SQ strategy have proven to be effective for enhancing the writers' metacognitive awareness of weaknesses in writing (Bereiter & Scardamalia, 1983b; Brett, et al., 1983; Daiute & Kruidenier, 1985; Schumaker, et al., 1982). The SR strategy has been effective in improving the writer's ability to remedy writing weaknesses (Bereiter & Scardamalia, 1983b; Harris & Graham, 1984). The two metacognitive training subphases for the present study were designed to investigate the applicability of the SQ and SR strategies to ESL writing at an elementary school setting.

The subsequent sections dealing with training two aspects of
metacognition, Self-Awareness (SA) and Self-Regulation (SR), are organized into two parts. The first part describes the SQ procedure for SA training and the SR procedure for SR training, respectively. The second part illustrates the general instructional steps for training SA or SR. The general instructional steps in training the two metacognitive strategies were adapted from those suggested by Harris and Graham (1984), Palincsar and Brown (1984), and Schumaker and her colleagues (1982). The general instructional steps were as follows:

Step 1: Assessment of current level of metacognitive skills
Step 2: Explanation of the goal and usefulness of the strategy
Step 3: Modelling of the strategy
Step 4: Verbal rehearsal of the strategy
Step 5: Assisted learning
Step 6: Feedback

Detailed descriptions for each step are provided in the second part of the SA and SR training subphases, along with activities of the teacher and the students during the training process. This is followed by a discussion of issues concerning instructional effectiveness.

**Self-awareness training subphase**

The objective of the SA training subphase was to enhance self-awareness skills through training in the self-questioning (SQ) strategy.

**The SQ procedure** was as follows:

1. Read the whole story as many times as is necessary to understand.
2. Ask yourself the "5W1H questions" (see description below).

3. Rate the story from 0 to 5, compared to Model 1 story. (See Appendix E for Model 1 story used). [Note: The other stories, Model 2 and 3, were constructed after Assessment II for particular reason (see p. 85)]

4. Put the underlined word(s) of each question and the score of that question on the right margin of the story; and if the score is below 3, underline the question (e.g., if the fourth question in the "5W1H" is asked and the rated score is 2, then write "What goal - 2.")

5. Ask yourself the "BOL questions" (see description below).

6. When you find a problem, underline it and identify the "BOL" initial for each question.

7. Ask yourself other questions so that you can find more problems.

8. If you think there is a problem, but you are not sure of what the problem is, put a question mark next to the suspected problem.

The "5W1H" questions were devised after reviewing many writing samples of ESL children, and story-grammar structures suggested by writing researchers (Dreher & Singer, 1981; Solomon, 1986; Wall & Taylor, 1982). The questions dealt with the idea level of the written piece, assumed to be the most important factor in good writing (Bereiter & Scardamalia, 1987; NAEP, 1977; Scardamalia & Bereiter, 1983b). This was not meant to ignore the other aspects of writing, but to emphasize that the idea level should be given priority when teaching revision (Jones, 1986). When the students in this study were asked to revise for the baseline assessment, none of the students were concerned with the content they wrote. Their revisions were limited to just a few grammatical and spelling errors. The "5W1H" questions were:

(1) When and Where did the story take place?
(2) Who was the main character(s)?
(3) What happened in the beginning?

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(4) What was the goal of the main character(s)?
(5) What did the main character try to get the goal?
(6) How did it turn out at the end?

In the third step of the procedure, the numbers from 0 to 5 were generated as follows: 0 = no relevant information; 1 = just a word without any description; 2 = relevant information, but less description than the Model 1 story (see Appendix E); 3 = same as the Model 1; 4 = better description than the Model 1; and 5 = better description than the Model 1, with extra plot development (Fitzgerald, 1984, p.26).

In the fifth step of the procedure, the "BOL" questions dealt with the content level: The "B" question was devised for coherence, the "O" question for organization, and the "L" question for length, respectively. The "BOL" questions were:

   B - does any part of the story Belong well with the rest?
   O - is the story in the best Order?
   L - is any part of the story too Long or too short?

The questions of "B" and "O" prompted the students to reflect so that they could revise texts in view of an overall goal. When a topic was given to the students, they tended to type in whatever came to their minds without considering the main topic. This often resulted in the writing of irrelevant information or writing in an illogical or uninteresting sequence. Writing researchers have also observed that disorganized text is a problem for English as L1 children. This has been attributed partly to the children's lack of awareness of an overall goal in writing (Rubin, 1983), in contrast to the skilled writer's assessment and selection of material in view of an overall goal. This problem
also occurs partly as a result of using a simple "knowledge-telling strategy" (Bereiter & Scardamalia, 1987), in which children produce one sentence after another without trying to interrelate them.

The last question "L" was concerned with the length of each sentence and paragraph. This question was devised after screening the writing samples collected from fifty Korean ESL students in regular, SLEP, and LIP classes during the first period of pre-training phase. More than eighty percent of these writing samples contained either run-on sentences (e.g., having four or more conjunctions in one sentence) or short and dry sentences composed of only a single subject and verb, without any descriptive words. Ninety-four percent of the writing samples contained only one paragraph. Some short paragraphs were as short as two sentences. By asking the question "L," the students were reminded that adequate length in writing was also a target.

The SQ strategy training subphase took three sessions. (See Sessions 11-14 in Appendix A for a complete outline of activities and data collected.) The general instructional steps in training the SQ were equivalent to those outlined earlier in the introduction of the two metacognitive training. First of all, diagnostic questions specifically relevant to the SQ were asked. Although the current level of metacognitive skills of each participant was assessed during the first and second subphases of the study, it was helpful to start the SQ training based upon the students' previous knowledge by asking such questions as "How do you review your writing when making improvements?" and "Do you have any strategy you are using?" The students' answers varied and gave the researcher clues about their metacognitive skills regarding writing revisions: For
example, Mi said, "I don't know. I don't want to look at it again." Hun hastily added, "Read again and correct when there is a spelling mistake." Ja answered, "If I don't know how to spell a word, I sometimes make that up, or ask teachers or friends."

Second, a handout showing the SQ procedures and "5W1H" and "BOL" questions was distributed. The students read line by line and asked questions about the new vocabulary words: For example, strategy, procedure, rate, compare, initial, margin, and suspected. At first, the students seemed overwhelmed by the many unknown words. However, they understood when the procedures were translated into Korean or explained with easy English words. For example, Hun knew the meaning of "strategy" and explained in Korean. Ja wondered whether the "strategy" could be replaced by an easy English word like "method." Ja knew the meaning of "compare" in Korean and explained. When nobody knew the meaning, they referred to dictionaries written in either English-English or English-Korean. If they still did not understand, the researcher explained by giving examples of usages for the vocabulary.

The goal and usefulness of the SQ strategy were explicitly explained. The goal of the SQ strategy was to enhance the students' awareness on factors contributing to good writing. The usefulness of the SQ was emphasized in terms of the practical step-by-step manner of finding suspected problems in a piece of writing, which otherwise might be overlooked by the student.

Third, the researcher demonstrated the use and procedures of the SQ with a sample story. It took about twenty minutes to complete the first three instructional steps, but the rest of the steps were relatively easy. Then, for the
fourth step, the students rehearsed the SQ by using the grouping technique, one of metamemory strategies taught by the researcher. For example, Procedures 2-4 could be simplified as a procedure of "asking, rating, and marking." Then, except for reading in Procedure 1, Procedures 5-6 and 7-8 were almost identical to Procedures 2-4 in terms of "asking, rating, and marking." The rest of memorizing tasks were very easy because all the students already learned the "5WIH" questions when they were in Korea. The "BOL" questions were also simple because the acronym "BOL" sounded like "ball" and represented the key word, "Belong," "Order," and "Long." The researcher was pleasantly surprised by the way the students handled the memory task so quickly. In less than five minutes, Hun, Ja, and Ran were able to recite the key words of procedures and questions.

Afterwards, the researcher asked the three students to help Mi and Suk as a means of assisted learning, but this did not work out well. Mi and Suk were too proud to appreciate help from the other three, which was accompanied by some teasing, which in turn only made the situation worse. Creating a cooperative atmosphere was one of the problems the researcher had to deal with throughout the entire training phase. It might be only an outward expression and a developmental phenomenon at this age, but the boys and girls tended to speak against each other. They often argued over little matters, which usually resulted in irrelevant and off-task behaviors for the session.

The scheduling for the remaining training days was flexible, based upon the degree of mastery of the SQ procedure by each student. By the end of the third session, everybody was reciting the procedures and the "5WIH" and "BOL"
questions in the SQ. Consequently, there was no need to extend the SQ strategy training. This was possible partly because some of the terms were simplified by the students' own vocabulary words and partly because the L1 was used by Suk, who had the least English proficiency among the participants.

Assessment II

The second assessment was designed basically to test the level of performance in applying the SQ strategy to writing and revising tasks. It took four sessions (see Sessions 14-17 in Appendix A). The procedures, activities, materials and instruments, and data collected were parallel to those of Assessment I.

The only major differences were in story section. For the OS3, "A Visitor from Outer Space" (Schwartz, 1976, p.28) was used as a prewriting prompt. Hun, Ran, and Suk used the title of the picture as the title of their story, but Ja gave her story a different title saying, "A Special Friend from Out of Space," and Mi entitled it, "A Friendly E.T." The following day, the draft of OS3 was revised first and then RS3 was presented to revise. For the OS4, "Give Me a Home" (Schwartz, 1976, p.29) was used as prewriting prompt. The following day, RS4 was given first for revision and then the draft of OS4 was revised.

Self-regulation training subphase

The objective of the SR training was to enhance the self-regulation aspect of metacognitive skills through training. The SR strategy developed for the
present study was a fusion of the two approaches: (1) teaching basic components of self-regulation, that is, criterion setting, self-assessment, and self-reinforcement (Harris & Graham, 1984); and (2) teaching the applications of a fixed set of self-regulating phrases to facilitating revision activities (Bereiter & Scardamalia, 1983b; Cohen & Scardamalia, 1983). [See the fourth section of Chapter II for a discussion of the advantages and disadvantages of these two approaches].

The SR procedure was as follows:

1. Read the portion of text identified as problematic.

2. Choose the matching remedial action from among the "ACD methods." (see description below).

3. Think of a goal for the sentence chosen (criterion-setting in terms of the technique used by Harris & Graham, 1984)

4. Revise the text according to the tactic and goal chosen.

5. Reassess the revised portion of text (self-assessment).

6. Recycle through steps 1 to 5 until the piece of writing reaches a satisfactory level.

7. After each practice story is completed, you independently rate your own writing by asking self-questions learned through the SQ strategy, graph that rate on your own charts (see Appendix F), and compare your performance to the criterion scores in Model stories. As you improve the quality of your writing, the goal becomes "to do as well as or better than I have been doing." (self-reinforcement).

In the second step of the procedure, the ACD methods were:

A - I'd better Add more.
C - I'd better Change this part.
D - I'd better Delete this part.
The SR training subphase took ten sessions. (See Sessions 18-27 in Appendix A for a complete outline of activities and data collected.) The general instructional steps in training the SR were similar to those for the SQ described in the SA training phase (see pp. 78-80). That is, the students' current level of self-regulation skill was first assessed. The students were asked to provide solutions for improving a piece of writing after they found weaknesses through the use of the SQ procedure. All of the students agreed that the main reason for using SQ and SR was to improve writing, but no one knew exactly how to improve the weaknesses found. Ja said, "Add more information," but she could not determine how much and what to add when she was given a sample text with problems.

Then printouts of the SR procedure and the "ACD" methods were distributed. The students read the handout to see what SR was like. New vocabulary words and sentences were discussed together in easy English words and in Korean: For example, Mi read Procedure 6 and asked for the meaning of "recycle." At first, Hun proudly gave an example of recycling old newspapers and cans. Everybody laughed. The other students could tell Hun's explanation was inappropriate in this context, but they began to understand the meaning of "recycle." When the researcher asked Hun to reread the sentence and think again the meaning in the context, he was able to answer, "Do steps 1-5 over and over." Having the students explain the concepts was very helpful to the researcher when evaluating their level of understanding.

After everybody understood what SR was, they were asked to infer the goal and usefulness of SR. According to Ja, the goal was "to improve writing."
When Mi asked for the meaning of "improve," Ja added, "to make the story better." However, none of the students could explain the usefulness of SR. The researcher reminded the students of their own revising experiences. Ran said that she did not know exactly what and how to improve. The researcher added that SR would be a useful strategy in guiding the students' writing revisions in a step-by-step manner. The usefulness of the SR strategy was intentionally emphasized to make the strategy training effective. As with the SQ procedure, providing the trainees with explicit explanation of the usefulness of the SR strategy was assumed to increase the students' intrinsic motivation to learn (Harris & Graham, 1984; Palincsar & Brown, 1984; & Schumaker et al., 1982).

Next, the researcher modeled the procedures of the SR procedure by using the model 1 story. Approximately forty minutes had elapsed at this point. Then the students rehearsed the procedures. Everybody simplified SR as an ongoing procedure of "reading, making a choice of ACD, setting a goal, revising, and reassessing". The rehearsing of SR appeared to be easier than the SQ procedure because it took only eight minutes (five minutes less than SQ). Assisted learning was omitted since everybody completed almost simultaneously the task of verbal rehearsal. Finally, feedback was given to individual students at the end of the activities for the first session of the SR training. Although everybody rehearsed the simplified SR procedures correctly, Hun, Ja, and Mi made spelling mistakes and Suk used Korean and also made spelling mistakes in Korean.

The following nine training sessions (Sessions 19 - 27) were spent practicing the SR procedure. The training activities were organized into two
parts: (a) creating model 2 and 3 stories and (b) practicing SR through individual writing revisions. These exercises were designed to provide the students with concrete learning experiences using SR.

The creation of model 2 and 3 stories was deemed necessary after the SQ training and Assessment II was completed. After Assessment II, the improvement made in the students' writing after the SQ strategy training was so remarkable that Model 1 above (used as criterion score of 3) was not sufficiently complex to motivate the students to write better. Accordingly, Model 1 was used as a draft to create model 2 and 3 stories, which could be used as criterion scores of 6 and 9, respectively. The criterion value 3 for Model 1 remained the same. The self-evaluation checklist in Appendix F was also revised to have 10 as the maximum score so that it could adequately accommodate criterion score of 6 for Model 2 and criterion score of 9 for Model 3. This was a practical way to demonstrate writing as a process: a piece of writing could be improved as each writer took the time to revise several drafts and put in extra effort in the revising process.

The activities of creating model 2 and 3 stories took three sessions (Sessions 19 to 21). On Session 19, the objective was to create the model 2 story that could be used as a criterion score 6. The students could practice the SR procedures while making improvement on the Model 1 story. At first, the Model 1 story was distributed to enable the students to identify the weaknesses in the story by using SQ. Next, the students and the researcher went through the SR procedures together by criticizing and suggesting ideas to improve the story. While going through steps 2-4 in the SR procedure, the researcher encouraged the students to contribute their own ideas along with the rationale for their
particular choice among the "ACD" options. In such a way, the researcher could evaluate each student's self-regulation skills and provided each with feedback. At the end of the session, the model 2 story (see Appendix E) was produced as a result of collaborative effort.

The objective of the next two sessions (Sessions 20-21) was to create the Model 3 story that could be used as a criterion score. The activities were the same as Session 19, but they took 2 sessions because of the amount of discussion held concerning what to add, change, and delete. As a result, the model 3 story became longer with more vivid descriptions (see Appendix E).

The second part of the SR training took five sessions (Sessions 22 to 27). The instructional method used for this part of training was similar to reciprocal teaching (Palincsar & Brown, 1984). The students took turns practicing the SR strategy using the students' own stories, while the researcher was assisting them with skills they were lacking. Applying the SR strategy to one's own story was necessary to foster the main goal of the metacognitive training, enhancing the ability to detect weaknesses in one's own writing and to find remedies for them. This practice provided the students with concrete examples of monitoring their own revising process, while obtaining feedback from the researcher and other students.

Each session utilized the story of a student. For example, the main source of the day's practice was based on Suk's story on Session 22, Mi's on Session 23, Ran's on Session 24, Hun's on Session 25, and Ja's on Session 26. The activities of going through the SR procedure were similar to the first part of the training. However, the writer of the story used during the session was in charge of the
session's discussion. As with reciprocal teaching, this type of assisted learning was more active and relevant for each of the participants in turn. The writer's self-evaluation and revisions were encouraged in the beginning of the session, followed by feedback and suggestions from other participants. Suk had the most trouble with the procedures while the other four students went through the SR procedures smoothly with the assistance. Even though Suk was allowed to speak Korean most of the session, he hardly explained what weaknesses he found or how to change them. This was partly due to his lack of competence using the SR procedure and partly to his personality. He was very shy and seldom asserted his own ideas loudly and clearly.

One issue to note in this SR training was incorporating the SQ strategy into the SR strategy. It was difficult to make the SR independent of the SQ. For example, if a student have a draft of writing to revise, s/he could begin with step 7 of the SR procedure. This step 7 used the SQ strategy to first evaluate one's own writing, and then was followed by steps 1-6 in the SR procedure (refer to p. 82 for the list of steps). There was variability in terms of students' self-evaluation. Hun was most generous about rating his story, but Ran was more critical and gave her story the lowest score possible. The variability was reduced by having three model stories available for the students' comparison of the criterion scores. The three model stories created during the previous three sessions served not only as scoring guides but also as examples of the "ACD" methods. By referring to the model stories, the students actively engaged in adding, changing, and deleting information.

As an important part of the SR training, introduced was an activity for
expanding the students' vocabulary, to be used for the "ACD" methods. During the SR training, the researcher handed out a list of ninety verbs, fifty adjectives, and fifty adverbs for the students to use in their writing. During the first ten minutes of each session, about ten new words and meanings were illustrated through the activity of making short sentences. The students liked this activity because it was arranged in a game format. The students obtained five points as they added each sentence and the student with the highest score won the game of the day. Stamps or stationery were given to the winner as positive reinforcement. Ran was most enthusiastic about the game and she did additional practice at home by making short sentences using the new vocabulary.

Assessment III

Assessment III was designed to assess the effects of training the SR strategy to metacognitive, writing, and revising skills. It took four sessions (see Sessions 28-31 in Appendix A). The activities, materials and instruments, and data collected were parallel to Assessments I and II. Major differences are discussed below.

For the first session of this subphase, the OS5 was written using the picture entitled, "The Day It Rained Candy" (Schwartz, 1976, p.30) as a prewriting prompt. For the following session, the draft of OS5 was revised first and then the RS5 was presented for revision. For the third session, the OS6 was written using the picture entitled, "Freddy Frog" (Schwartz, 1976, p.31) as the prewriting prompt. During the final session, the RS6 was given first to revise before the draft of OS6 was revised.
Interim subphase

The interim subphase, with no metacognitive training, was planned to assess the maintenance level of the effects of two metacognitive strategies training after a period of two weeks. Since it was near the end of the semester, when all the students would be graduating from the school, it was impossible to lengthen the interval. During Sessions 32-41, there was no metacognitive training. However, the students continued to meet after school because they wanted to learn more about computer skills. The researcher also thought that teaching what the students liked to learn would be a way of compensating the students for their participation in the dissertation project, as well as helping the students keep their regular daily schedules until Assessment IV was completed.

During the interim subphase, the students had the opportunity to learn the following: computer art through the Koala Painter (Koala Technologies, 1983) and The Printshop (Balsam & Kahn, 1985); educational games through The Master Type (Scarborough Systems, 1985) and Spellicopter (Designware, 1983); programming languages such as "BASIC" and "Logo" through Logo Writer (Logo Computer Systems, 1986); and simulation for social studies through The Oregon Trail (The Minnesota Educational Computing Consortium [MECC], 1985). The students displayed unique reactions toward the various packages of educational software. Hun enjoyed the programming environment most while Ja was impatient to learn new programming languages. Suk was skillful at playing educational games, and he was the first person to safely cross The Oregon Trail.
The last day of this subphase was used to review the SQ and SR procedures. The students first wrote the procedures on the computer to see how much they remembered. All the students were correct in answering "5W1H" and "BOL" questions and "ACD" methods, but they were not sure when to use them in the revising process. They reviewed the SQ and SR procedures, using the handouts in their own folders. The session was closed with a summary account; the SQ is used to find writing weaknesses through asking "5W1H" and "BOL" questions, and the SR is to improve the problems found through using "ACD" methods.

Assessment IV

Assessment IV was designed to assess the maintenance of the effect of training the SQ and SR strategies on writing and revising tasks. It took four sessions (see Sessions 42-45 in Appendix A). The activities, materials and instruments, and the data collected were parallel to the previous assessments. The major differences are discussed below.

For the OS7, the picture entitled, "The Crazy Critter" (Schwartz, 1976, p.32) was used as a prewriting prompt. The following day, the draft of the OS7 was revised first and then the RS7 was presented for revision. For the OS8, the picture entitled, "In the Middle of the Night" (Schwartz, 1976, p.33) was used as a prewriting prompt. One thing to note for this topic was that the students insisted to choose the topic, rather than "Away on a Kite" (Schwartz, 1976, p.35), given by the researcher. The researcher was at first reluctant to give the students a free choice of topics because she was concerned about the parallel of this
assessment to previous assessments. However, the students' demands for their own choice for the final story were so strong that she could not force them to write on the topic they were supposed to. She only hoped that the students' free choice on one topic would not make the big difference in results, since the choice was still made within the book used throughout the project. The following day, the RS8 was given first to revise and then the draft of OS8 was revised.

Data Analyses

Data collected

The main sources of data for the analyses were organized into three parts: (1) background information; (2) training phase; and (3) assessment phase. First, the background information data included: (a) standardized tests scores on the MAT6 (see Table 3); (b) interviews with the students, parents, and teachers (see Appendix B); (c) reviews of relevant school reports and writing samples from the students' regular classes; and, (d) researcher's observations in her role of a participating teacher.

Second, the training phase data included: (a) 45 hours of audio-taped recording of classroom interaction; and, (b) free writing samples. Free writing samples were the journals written by both the students and the researcher (see Appendices L & M for selective entries from the researcher's and student journals). The students wrote their journals for about five minutes at the end of
each session and kept them in their individual writing folders. The researcher wrote her journals during the day each time after she listened to the tape-recording of the classroom interaction.

Third, the assessment phase data consisted of: (a) the audio-taped recording of the classroom interaction; (b) the free writing samples; (c) the researcher's observations and memos; (d) the students' responses to probing questions; (e) the students' 80 writing samples (2 sets of OSs and RSs) from each of the five students for each of the four assessment subphases; and, (f) the students' revision samples, both process and product data from the video-taped computer screen, the audio-taped interaction, and the printouts of drafts.

The classroom interaction during the assessment phase was not extensive as in the training phase, but the students' questions to each other and the replies in a real-classroom situation were excellent sources from which to infer their level of metacognition. The students' responses to probing questions were used as primary indicators of metacognitive skills during revisions (see Appendix D for probes used). The students' revision process data were collected by videotaping the computer screen while the student was revising. Since only one video-camera was available, only the revising process of one of the four stories in each assessment subphase was taped for each student. Product data were collected by recording the changes made from the first draft to the final draft of the OSs and RSs. As with the writing samples, a total of 80 revision samples was collected.
Analysis

Both qualitative (Strauss, 1987) and quantitative approaches (Siegel & Castellan, 1988) were used to analyze the data. The purpose of the qualitative analyses was to find general patterns in young ESL writers' metacognitive skills during the revising process, in order to address the first research question. The main indicators of metacognitive skills were the students' responses to probing questions (see Appendix D for the probes used). Other sources of data included the student's questioning during the class interaction, the researcher's observations, and the written or revised pieces of text during the session.

The qualitative analyses included mainly transcribing protocol data, training of independent coders, and coding. The protocol data during the first two sessions of Assessment I were all transcribed. The full transcripts were used to train two independent coders, both doctoral students majoring in linguistics with emphasis on metalinguistics. Korean-English bilingual speakers were chosen for the coders because of the bilingual protocol data.

During the training sessions for independent coding, the researcher and two coders discussed segmentations of protocol data into distinctive idea units, where each unit was an isolated remark about single thought or behavior. Segmentations were generally based on the coders' judgment, but were close to T-units. A T-unit, or “minimal terminable unit,” is defined as a main clause plus any clausal or nonclausal attachments (Hunt, 1965).

Then such protocol was analyzed into metacommnts and nonmetacommnts. The number of protocol segments representing metacommnts, remarks regarding metacognitive awareness and regulation
together, ranged from 13 to 40 for each story of the five students. Metacomments were further divided into the two components of metacognition, awareness (coded as "A") and regulation (coded as "R"). (Detailed examples are presented in Part 1 of Appendix G.) Whenever a question occurred pertaining to the categorization of a segment, the researcher provided supporting sources of data such as classroom interaction and observation memos.

In addition to the coding for the two components of metacognitive awareness or regulation, coding continued to further specify seven subcategories of writing tasks by using a number from 1 to 7 respectively. The seven subcategories were: (1) task/topic goals; (2) subgoals; (3) genre/discourse structure; (4) grammar; (5) mechanics; (6) vocabulary; and (7) meaning. The coding system was not emergent, but it was adapted from the systems that were already developed by other writing researchers (Cranston, 1986; Langer, 1986). The subcategories were used to seek patterns in the ways the young writers' metacognition focused on their writing tasks, as compared to the native English-speaking children. The coding for subcategories was relatively free of controversy between the two coders. By the time the two coders neared the end of the full scripts from Assessment I, approximating some 150 segments of thoughts, their agreement level for coding was above .90.

Afterwards, much of the protocol data was coded directly from the tapes by referring to the corresponding text. The researcher was not involved directly in the coding, but she assisted the coders throughout the process, clarifying protocol data by providing contextual cues from class interaction and observation memos that were relevant to the writing task given. Multiple data sources increased the accuracy with which coders could make inference about
the student's metacognitive skills. Approximately 2-6 segments, out of the 15-40 segments of thought in each writing task, needed the clarification of additional cues.

The analysis was then focused on quantitative measures. The purpose of the quantitative analyses was to provide evidence about the effects of training two metacognitive strategies, in order to address the second research question. The quantitative analyses included mainly deriving scores, training of independent raters, and conducting statistical analyses. In order to measure the relevant variables, derivation of scores was necessary. The researcher examined literature which quantified the variables and developed scoring systems to quantify metacognitive skills (see Part 2 in Appendix G), revising skills (see Appendix H), and writing skills (see Appendices I & J).

Quantified scores for the metacognitive skills were derived from the coding completed through the qualitative analyses by counting the number of occurrences of each category. Percent of each category occurring in each student's story was determined by the ratio of number of segments for a given category to the total number of segments. Since four stories were written by each student during each assessment subphase, the mean percent (M%) for each category was obtained by dividing the total percent (addition of the percents for the 4 stories) by 4. For example, suppose Mary has a total of 30 segments in one story with 3 segments categorized "A1." Then the "percentage for A1" = 100 × (3 / 30) = 10%. If the "percentage for A1" for 4 stories in a given assessment subphase are 10%, 4%, 4%, and 6%, then M% = (10 + 4 + 4 + 6) / 4 = 6%. These mean percentages, quantified directly from coded data, reflect the use of
metacognitive skills during the writing process, since the protocol data used for coding were collected throughout the writing process. This is the main reason the quantified scores for metacognitive skills were derived from the coding, instead of adopting new measures. Other advantages of using mean percentage are the possibilities of: (1) examining the score differences between or within students, regardless of the length of a story; (2) using the number for further statistical analyses; and, (3) comparing the results of present study with those of previous research (Langer, 1986), which used the mean percentage for quantifying metacognitive skills.

In order to measure revision and writing skills, two different independent raters were trained. The raters for the quantitative analyses were experienced ESL teachers who were familiar with ESL children's writing. The coders for the qualitative analyses were informed of the background of each child so that they could make appropriate judgments in coding each child's protocol data. However, the raters were chosen because they did not know the participating students. They were not informed of the purpose and design of the present study. Thus, copies of anonymous writing samples with all identifying information removed were distributed. Samples were presented in random order so that raters could not distinguish from which participant or assessment subphase a particular sample was obtained. The raters followed the procedures outlined in Appendices H through J, for revising skills and writing skills, respectively. Pearson's correlation coefficients for inter-rater reliability for the revising skills ranged from .73 to .94 and inter-rater reliabilities for the writing skills ranged from .76 to .93.

The quantified data above were entered into a Macintosh computer in
order to conduct the statistical analyses through the program called StatView II: The solution for data analysis and presentation graphics (Feldman, Gagon, Hofmann, & Simpson, 1987). The sum, mean, standard deviation, and standard error were calculated for each variable. Since this study involved a single group of five students, nonparametric statistics were chosen to further analyze the relationships between and the differences among the variables (Siegel & Castellan, 1988). The Kendall rank-order correlation coefficient, denoted $T$, was used to determine the strength of association among variables. The Friedman $F_r$ statistic was used to determine whether the students made significant differences across four assessments. The Wilcoxon signed ranks statistic, $T^+$, was also used to further specify which metacognitive training contributed to significant improvement in the students' performance.

Below are the operational definitions of the four variables that had been used for the quantitative analyses.

Metacognitive awareness skills: the ability to verbally describe one's own cognition during or after the revision process, as defined by the mean percentage ($M\%$) of protocol segments representing seven different categories - goals, subgoals, genre, grammar, mechanics, vocabulary, and meaning (see Part 2 of Appendix G for detailed procedures of obtaining the $M\%$).

Metacognitive regulation skills: the ability to verbally describe one's own cognitive regulation (action) during or after the revision process, as defined by the mean percentage ($M\%$) of protocol segments representing
seven different categories - goals, subgoals, genre, grammar, mechanics, vocabulary, and meaning (see Part 2 of Appendix G for detailed procedures of obtaining the M%).

Revision skills: the scores determined by the quantity and quality of writing revisions per 100 words in the five different categories - syntactic, semantics, spelling, mechanics, and paragraph (see Appendix H for detailed scoring guidelines).

Writing skills: the scores determined by holistic and analytic (in the five different categories of content, organization, vocabulary, syntax, and mechanics) quality of writing (see Appendices I & J for detailed scoring guidelines).
CHAPTER IV.
RESULTS

This chapter presents the results of both qualitative and quantitative data analyses. It is divided into three sections. The first section describes the general context for understanding the results of the study. In the second section, the role of metacognitive skills pertinent to the first general research question is addressed based on the data collected up until Assessment I, i.e., before any metacognitive training was introduced. In the third section, the effects of metacognitive training with regard to the second general question are addressed using the data collected from Assessment II through Assessment IV. Each section of this chapter will first examine general patterns of metacognitive, writing, and revision skills of the five ESL elementary students as a group, then look at individual differences.

General Context for Understanding Results

Student journals

The students wrote in their journals for about five minutes at the end of each session. The contents of student journals contained mostly what the students felt they learned or did during the session. There were also hints of motivation and attitudes of the students. They freely described difficulties and degrees of interest in the daily assignments, mixed feelings toward peers, and
acknowledgements of the researcher's teaching (see Appendix M for selective entries from student journals).

The students had the choice of which writing tool they wanted to use. The students chose to use computers most of the time. They used pens only when they had to hurry to go home. They tended to write longer when using the computer. This suggests that computers may have motivated these students to write more.

They also had the choice of language in which to write, either L1 or L2. Throughout their journals from the first to the last day, their language used most often was the L2, English. One might argue that their reason for using English was that the students used a word-processing software in which no L1 characters were available. However, even in hand-written journals, English was used most of the time. In the journals written by the three girls, there were only a few L1 words inserted into L2 sentences. One interesting phenomenon was the difference between oral and written language usage of the ESL students. For verbal interaction, the amount of L1 usage tended to be negatively correlated with the English proficiency of the students. However, the amount of L1 usage in writing tended to be an indication of the student's desire for rich expression. For example, Suk, who was the least proficient in English, used the L1 for verbal expression the most, but he did not use any L1 words in his journal. The main reason students choose the L2 for free writing seemed to be because their usage of the L1 for composition had not been fully developed before they came to the United States as third or fourth graders. As evidence of the students' lack of writing competency in their L1, the students still made errors in L1 spelling and
grammar. It should be noted that their L2 writing was also marked for spelling and grammar errors.

The average length of daily journal entries was about one-third page, ranging from 1 sentence to about 1 page long. The two boys' entries tended to be shorter than those of the three girls. In general, the length increased towards the end of the project. This might be an indication of transfer of the metacognitive skills trained for narrative writing on expressive writing. For example, in the informal interview on Day 25 before the session started, Ran indicated that after the SA training she had often used "5W1H" questions during the process of her journal writing.

**Researcher's journal and notes**

The researcher wrote her journals everyday after listening to the tape of the classroom interaction. The journal contained main activities and purposes of the session, the students' responses, and researcher's perceptions and interpretations. It also described weather and classroom environments and how the researcher solved unexpected problems such as student absences, off-task behaviors, and malfunctions of the computer system. These areas might not merit inclusion in the main body of dissertation but provide potentially important information about the classroom context (see Appendix L for selective entries from the researcher's journal).

Separate from the journal, during each session the researcher kept notes on unique responses of the students, such as facial expressions, that could not be captured by audio-taping. After the session, more information was added to the
notes while listening to the tape of the classroom interaction by focusing on questions of the students. The details in the notes will be presented later with other sections of the results.

The notes were also written in order to better organize the data. For example, the numbers indicating Days of the memos corresponded to the labels on the audio- and video-tapes, Days on journals, and Sessions on schedules so that they could be easily kept track of for cross-references.

Parental interviews

The researcher interviewed the students' parents before and at the end of the project. During the project, there were also occasional talks with the parents, in person or by phone. They all appreciated the extra help their child were getting. For example, the mothers of Hun and Ja asked whether the researcher needed anything for the class. Because they did not have to pay for the class, they wanted to provide materials, snacks, or whatever might be needed as a small token of appreciation.

They were very much concerned about their child's education, because they considered education to be the best route for their child toward success in the U. S. Examples of their support for their child's education included that: (1) they were willing to pay the extra expense of private lessons, e.g., for the past year Hun and Suk had been taking Korean martial arts and Ja, English lessons. Mi and Hun had once taken private English lessons; and (2) they bought educational equipment for their child, e.g., Hun received a computer and Ja a typewriter. In the same vein, the parents, except for Hun's, asked the researcher what they should consider before buying a computer for their child.
As far as academic performance, Suk's father mentioned that Suk was about average when he was in Korea and that he preferred outdoor activities to studying at home. In contrast, the other four students' parents had more optimistic assessments of the child's academic ability. They perceived that their child was bright and was above average when in Korea. They expected that their child would excel in their regular classes as soon as s/he mastered English. They could not help their child speak English at home, but tried as much as possible to buy English books and had her/him read books. Most of the parents also mentioned that one of their child's favorite subjects was reading, but not writing. Only Ja's mother added that Ja enjoyed writing letters or diaries.

**Teacher interviews and school records**

The teacher interviews were conducted to investigate the students' L2 language learning experiences in their other classes. The teachers also gave the researcher access to the students' grade reports. There were two or three different classes the students were attending on an hourly basis, except for Hun. Hun attended only his regular class, since he had been mainstreamed completely last year. In the regular class, Hun's teacher commented that Hun was about average in reading and speaking, where the average grade in reading and speaking for the semester was B. But Hun had trouble in writing. His writing contained many grammatical mistakes and run-on sentences. Hun's average grade was D. According to other students' regular teachers, Ran's average grade for reading and writing was B, while Ja and Mi obtained C and D, respectively.
Suk's regular classroom teacher did not expect him to do any writing assignments and no grade in reading and writing was given.

In the LEP class, Ja, Mi, and Ran were taking lessons that focused on reading. The teacher in the LEP class emphasized the importance of reading books and writing book reports as part of a whole language approach. In her class, Ja and Ran were excellent students, whose average grade for book reports was A, but Mi was average in reading and got an F for book reports, because she often did not turn in assignments.

In the SLEP class, there were Ran, Mi, and Suk. No grade was given to the students, but the SLEP teacher said that Ran was an excellent student who always tried hard to learn. However, the teacher considered Mi to be an average student who sometimes gave the teacher a hard time by being uncooperative and irresponsible. Suk was a below average student who was rather reserved.

Role of Metacognitive Skills

The majority of the findings in this section are reported in a qualitative and descriptive manner, due to the nature of the first general research question and the data collected in this study. Some descriptive statistics are used to address the general patterns in metacognitive, writing, and revision skills. The presentation of the findings is organized into two parts. The first part presents the findings in regards to the level of the ESL students' metacognitive skills. The second part reports the results in association with the role of metacognitive skills in the students' writing and revision skills.
Level of metacognitive skills

The first specific research question concerned the level of metacognitive skills in the revising process of the young ESL writers prior to training. The answer was inferred from the coding of the protocol data collected up to Assessment I, the assessment designed to measure baseline performance before any metacognitive training was introduced. The protocol data relevant to metacognitive skills were first divided into two categories: awareness and regulation. They were then further examined in terms of seven different subcategories: goals, subgoals, genre, grammar, mechanics, vocabulary, and meaning (see Appendix G for the procedures of coding and examples of each category).

Quantitative indicators of the metacognitive skills of the five ESL writers are presented in Tables 4 and 5 for metacognitive awareness and regulation, respectively. In general, the mean percent of protocols reflecting metacognitive skills was low, ranging from less than 1% to about 8% for each subcategory of both awareness and regulation. When comparing the two aspects of metacognitive skills, the mean percents of protocols for metacognitive regulation slightly exceeded those for metacognitive awareness. About 2% of the protocol segments fell in each awareness subcategory, compared with approximately 3% for each regulation subcategory; and about 14% of the total protocol segments were categorized as awareness, contrary to about 19% as regulation. In other words, the ESL children provided more comments about what they were doing than what they were thinking.
Table 4

Metacognitive Awareness of the ESL Children During the Four Writing Revisions: Assessment I

<table>
<thead>
<tr>
<th></th>
<th>Goals M%</th>
<th>Subgoals</th>
<th>Genre</th>
<th>Grammar</th>
<th>Mechanics</th>
<th>Vocabulary</th>
<th>Meaning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suk</td>
<td>1.00</td>
<td>.75</td>
<td>.25</td>
<td>1.75</td>
<td>1.75</td>
<td>2.25</td>
<td>3.50</td>
<td>11.25</td>
</tr>
<tr>
<td></td>
<td>(.98)</td>
<td>(.50)</td>
<td>(.50)</td>
<td>(.98)</td>
<td>(1.26)</td>
<td>(.50)</td>
<td>(2.08)</td>
<td>(3.59)</td>
</tr>
<tr>
<td>Ran</td>
<td>1.25</td>
<td>1.75</td>
<td>.75</td>
<td>2.50</td>
<td>2.25</td>
<td>2.25</td>
<td>4.25</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>(.50)</td>
<td>(.96)</td>
<td>(.50)</td>
<td>(.58)</td>
<td>(.96)</td>
<td>(.50)</td>
<td>(1.13)</td>
<td>(1.66)</td>
</tr>
<tr>
<td>Mi</td>
<td>1.00</td>
<td>1.25</td>
<td>.50</td>
<td>1.75</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>10.50</td>
</tr>
<tr>
<td></td>
<td>(.82)</td>
<td>(.96)</td>
<td>(1.00)</td>
<td>(.96)</td>
<td>(.82)</td>
<td>(.82)</td>
<td>(.82)</td>
<td>(3.70)</td>
</tr>
<tr>
<td>Ja</td>
<td>2.00</td>
<td>3.25</td>
<td>1.75</td>
<td>3.25</td>
<td>3.75</td>
<td>3.50</td>
<td>5.25</td>
<td>22.75</td>
</tr>
<tr>
<td></td>
<td>(.82)</td>
<td>(.96)</td>
<td>(.50)</td>
<td>(.96)</td>
<td>(.82)</td>
<td>(.82)</td>
<td>(.82)</td>
<td>(2.38)</td>
</tr>
<tr>
<td>Hun</td>
<td>1.00</td>
<td>1.50</td>
<td>1.00</td>
<td>2.00</td>
<td>1.00</td>
<td>2.00</td>
<td>2.50</td>
<td>11.00</td>
</tr>
<tr>
<td></td>
<td>(.82)</td>
<td>(.58)</td>
<td>(.82)</td>
<td>(.82)</td>
<td>(.82)</td>
<td>(.82)</td>
<td>(1.29)</td>
<td>(2.94)</td>
</tr>
<tr>
<td>Total</td>
<td>1.25</td>
<td>1.70</td>
<td>.85</td>
<td>2.25</td>
<td>2.15</td>
<td>2.40</td>
<td>3.50</td>
<td>14.10</td>
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<tr>
<td></td>
<td>(1.38)</td>
<td>(1.18)</td>
<td>(1.41)</td>
<td>(2.15)</td>
<td>(1.64)</td>
<td>(1.18)</td>
<td>(2.86)</td>
<td>(5.48)</td>
</tr>
</tbody>
</table>

Note - All values are Mean percent (M%) and Standard Deviations (SD) of protocol segments per story.

The following examples illustrate the main differences. Suk's protocol of "I'm going to write 'E.T.' as my title" simply describes what he is doing while writing, that is, the regulation aspect of metacognition. In contrast to Suk, Ja's two comments, "That's too common. I'd rather look for an unique topic," indicate her metacognitive awareness. The first segment illustrates that Ja is aware of the options available, and the second segment indicates her awareness of the need to choose a better alternative. However, Ja's level of awareness was far beyond
that of the rest of the group. Most protocols categorized as awareness comprise low level remarks reflecting awareness of the ESL children’s own lack of knowledge available for writing. Examples include, "I don’t know how to spell the word," and "How do you say ‘Gong-Ju’ (‘princess’ in Korean) in English?" The second example sounds like a direct question, rather than a protocol segment reflecting metacognitive awareness of the student. Mostly, the students used this types of questioning, instead of describing what they did not know. When asked why they needed to ask the questions, their answer was often, “Because I don’t know.” Therefore, direct questions were categorized as awareness.

Table 5

| Metacognitive Regulation of the ESL Children During the Four Writing Revisions: Assessment I |
|---|---|---|---|---|---|---|---|---|
| | Goals | Sub-goals | Genre | Grammar | Mechanics | Vocabulary | Meaning | Regulation Total |
| Suk | M% | .25 | .50 | .50 | 1.50 | 1.00 | 1.50 | 3.25 | 8.50 |
| SD (M) | .50 | .58 | .50 | (.58) | (.82) | (1.29) | (1.71) | (1.76) |
| Ran | M% | .75 | 1.50 | .50 | 4.00 | 3.75 | 3.75 | 5.25 | 19.50 |
| SD (M) | .96 | (.58) | (.58) | (2.16) | (.50) | (1.50) | (2.63) | (3.32) |
| Mi | M% | .25 | .50 | .50 | 1.75 | 2.50 | 2.50 | 4.50 | 12.50 |
| SD (M) | .50 | (.58) | (.58) | (.50) | (1.29) | (1.29) | (1.29) | (1.91) |
| Ja | M% | .75 | 2.00 | 1.50 | 3.25 | 4.25 | 5.50 | 20.75 | 38.00 |
| SD (M) | .96 | (.82) | (.58) | (.98) | (1.26) | (1.29) | (3.78) | (5.10) |
| Hun | M% | .50 | 1.50 | .25 | 2.50 | 2.00 | 3.25 | 5.00 | 15.00 |
| SD (M) | .58 | (1.00) | (.58) | (.82) | (1.26) | (.82) | (2.58) | (2.58) |
| Total | M% | .50 | 1.20 | .70 | 2.60 | 2.70 | 3.30 | 7.75 | 18.70 |
| SD (M) | (1.07) | (1.48) | (.82) | (2.84) | (1.95) | (2.56) | (6.89) | (9.34) |

Note - All values are Mean percent (M%) and Standard Deviations (SD) of protocol segments per story.

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As a whole, there were more comments reflecting regulation than those displaying awareness. The subcategories focused upon, however, were similar for both awareness and regulation. The ESL students' primary concerns were placed on the choices of "meaning" and "vocabulary" in their writing. The mean percent in these subcategories ranged from over 2% to about 20%. The ESL children struggled a great deal in searching for appropriate English vocabulary words and in trying to understand what they had already written.

The grammatical and mechanical aspects of writing were the children's secondary concerns. The mean percent in these subcategories ranged from over 1% to 5%. The children sometimes asked questions with regard to the rules of grammar, such as verb tenses or subject-verb agreement. They also paid some attention to ensure that there were no errors in spelling, capitalization, punctuation, and other matters of mechanics. One issue to clarify here is that awareness of spelling errors was categorized as "mechanics," while searching for a word to complete a sentence was categorized as "vocabulary."

The subcategories on which the children placed least emphasis were "goals", "subgoals", and "genre." The majority of the mean percentages in these subcategories were under 1%. The ESL children were less concerned with how they would develop a story than with what they would write. One interesting issue which emerged during the protocol analyses is that there were diverse general patterns in the way the children focused their attention depending on the subprocess they went through while writing. During the planning process of writing, approximately 90% of the protocol data for the subcategories of "goals" and "genre" were collected. While writing text, they seldom reflected upon their...
goals. Although they sometimes focused their attention on the subgoal of their writing, most of their concerns were "meaning" developments from one sentence to the next. The majority of the protocol data, collected during the second and fourth sessions (held mainly for the revision tasks) of Assessment I, comprise the areas of metacognitive regulation of grammar, mechanics, and meaning. It is not surprising to see that most of the revisions made in the children's texts were found in those subcategories (see Table 7 for ratings of revision skills).

In examining individual differences among the children, the total mean percent (presented in the right most column of Tables 4 - 5) was used in order to divide the students into two groups, "above average" and "below average", in terms of metacognitive skills. Ja and Ran were in the "above average" group for both awareness and regulation skills. Although the order of the children's rank varied in terms of awareness and regulation skills, Suk, Mi, and Hun were all in the low group.

It appeared that the main difference separating Ran from those in the low group was that she was a careful writer who took writing tasks seriously. She was often observed mumbling and staring at the computer screen, exploring better alternatives. The other children tended to plunge into typing their stories at once.

Compared to Ran, Ja displayed her high metacognitive skills in a seemingly natural manner. Without apparent effort, Ja frequently added vivid adjectives and sentences to elaborate on the meaning of her text. For example, Ja revised a sentence from "Tom found a bottle floating in a river," in the first draft to "One afternoon, Tom Kim found a blue bottle floating in a small river," in the
second draft. [The words underlined indicate the portions added in the second
draft]. Ja practiced these extensive revisions throughout the four stories, the
writing revision tasks given during Assessment I.

Ja's metacognitive skills were far above those of the other ESL elementary
students. Attempts were made to investigate what factors might have
contributed to her acquisition of sophisticated metacognitive skills. According to
her mother in a telephone interview, Ja read at least one or two story books per
week at home. She also liked to read poems, letters, and diaries written in either
English or Korean. Her private tutor, who had helped Ja with English for the
past year, sometimes taught her how to use adjectives effectively in writing. At
school, Ja's teacher in the LEP class mentioned that she encouraged her students
to read stories and write book reports as often as they could, and Ja was one of
the students who worked diligently at these tasks. It is possible that Ja's
relatively high use of metacognitive skills was partly a result of her extensive
reading experience and the lessons she received privately or at school.

In examining the lower group, finding Hun in this group was unexpected
because he was the only student, among the five participants, who was
mainstreamed completely into the regular class. He came to the U. S. one year
earlier than the other students and was the most fluent in conversational English.
His extensive reading (discussed in the section of descriptions of the
participants) had led him to learn a lot of vocabulary and idiomatic expressions.
There might be two main reasons for the relatively low level of his metacognitive
skills indicated during Assessment I. First, writing was not one of Hun's favorite
subjects. He often tried to avoid writing tasks, or he tended to finish his work as
early as possible without giving his full effort. Another reason might be
distraction due to his strong interest in computer-related tasks. He often asked me whether he could do something else, such as programming, instead of writing or revising on the computer. For example, Hun wrote in his first day for journal, “I wish I could learn cobol [Note: Cobol programming language] and understand more about computer and basic [Note: Basic programming language] and how they work and how programs work.”

The lower levels of metacognition for Suk and Mi might be attributed to their relative lack of proficiency in English language skills and their low interest in revision tasks. For example, Suk’s first and second stories were difficult to understand; the many spelling and grammatical errors interfered with comprehensibility (three of Suk’s stories can be found in Appendix K). Most of Suk’s protocol data categorized for metacognitive awareness consisted of questions regarding spelling and English vocabulary.

As shown in the results of MAT6 in Table 3, Mi’s English was better than Suk’s, but her attitude toward revision tasks was less positive. Suk tried to make changes even though he ended up making more mistakes than on the first drafts, but Mi was almost always reluctant to revise. She did not want to read her text again once she finished her last sentence. When the first drafts were returned for revision, she often frowned and complained that she did not want to change anything. She preferred starting a new story to revising a draft in order to make it better. Therefore, she often added new sentences at the end of the first draft instead of reading and revising portions of the text previously written.
Role of metacognitive skills in writing and revision skills

The results of the quality ratings obtained from the writing and revising samples of the ESL children during Assessment I are presented in the first part of this section. Then, the role of metacognitive skills in relation to writing and revision skills, prior to the metacognitive training, are examined. Descriptive statistics were used to summarize the quantified evidence on writing skills (see Table 6) and on revision skills (see Table 7). Kendall's rank correlation coefficients were calculated among the measures of metacognitive awareness, regulation, writing, and revision skills, in order to investigate the role of metacognitive skills in the writing process of young ESL students (see Table 8).

Table 6 presents a summary of the ESL children's writing skills. Two evaluation methods, holistic and analytic (see Appendices I-J), were used to measure the various aspects of writing skills. The analytic approach examined five different aspects of writing skills: "content," "organization," "vocabulary," "syntax," and "mechanics." A scale with values ranging from 1 to 9, from low to high, was used to determine the quality of the writing for each category.

For the holistic scoring, a mean of 3.75 (of 9 possible) was obtained across the class of five ESL students. This value can be interpreted as an indication of low level writing skills, compared to the criterion stories (see Appendix E). For examples of each holistic value from 1 to 9, selected stories written by the participating students are presented in Appendix K. It is noteworthy that the holistic rating was very close to the rating of "organization" category in the analytic evaluation. This might imply that the general impression of a piece of
writing is greatly affected by the organization of the content. Given the score profiles, the next most influential factors for the overall holistic rating were "content" and "mechanics"; and the least influential appeared to be "vocabulary" and "syntax."

Table 6

<table>
<thead>
<tr>
<th>Writing Skills of the ESL Children: Assessment I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holistic</td>
</tr>
<tr>
<td>Content</td>
</tr>
<tr>
<td>Suk M 2.25</td>
</tr>
<tr>
<td>SD (.96)</td>
</tr>
<tr>
<td>Ran M 3.75</td>
</tr>
<tr>
<td>SD (.50)</td>
</tr>
<tr>
<td>Mi M 3.75</td>
</tr>
<tr>
<td>SD (.96)</td>
</tr>
<tr>
<td>Ja M 5.50</td>
</tr>
<tr>
<td>SD (1.00)</td>
</tr>
<tr>
<td>Hun M 3.50</td>
</tr>
<tr>
<td>SD (1.29)</td>
</tr>
<tr>
<td>Total M 3.75</td>
</tr>
<tr>
<td>SD (2.74)</td>
</tr>
</tbody>
</table>

Note - All values are Means (M) and Standard Deviations (SD) of quality ratings per story. Nine-point scales were used for quality ratings (see Appendices I-J).

As far as individual differences, Ja obtained the highest scores in writing skills. She was also superior to the other students in terms of metacognitive skills. Hun was second in terms of writing skills. This was an unexpected result,
considering that he scored “below average” on metacognitive skills. Even though he did not pay much attention to the writing tasks, it appeared that his rich knowledge of vocabulary and idiomatic expressions helped him outperform the other three students in writing.

Suk was the lowest in writing quality scored holistically and analytically. Suk's stories lacked imagination and detailed descriptions. In addition, they were difficult for a reader to comprehend because misused words and incorrect grammatical usage interfered. Mi’s writing was better than Suk's, although she and Suk belong to the low group in metacognitive skills. Mi was imaginative with interesting ideas, as shown in Mi’s holistic score, 3.75, which is as high as Ran’s.

The results of descriptive statistics are presented in Table 7 to illustrate the general patterns of the ESL children's revision skills. As a group, the ESL children's major revising was in the area of "semantics." Then, their scores for revisions dropped suddenly, when moving to the areas of "syntax," "mechanics," and "spelling." Finally, the least revisions were done in the area of "paragraph."

The patterns of individual differences for revision skills are similar to those for metacognitive skills. Ja was the best, followed by Ran, Hun, Suk, and Mi, in that order. The main areas in which Ja appeared to be superior to the others were "semantics," and "syntax." In particular, Ja made about three times more semantic revisions than the other students. It is important to note that Ja was the student who paid most attention to the area of "semantics," as presented in the examples in the previous section about the metacognitive skills. This implies that Ja’s verbalization of metacognitive skills was positively correlated with her revision skills.
### Table 7

**Revision Skills of the ESL Children: Assessment I**

<table>
<thead>
<tr>
<th></th>
<th>Syntax</th>
<th>Semantics</th>
<th>Spelling</th>
<th>Mechanics</th>
<th>Paragraph</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suk</td>
<td>0</td>
<td>2.50</td>
<td>2.50</td>
<td>.50</td>
<td>0</td>
<td>1.10</td>
</tr>
<tr>
<td></td>
<td>(0)</td>
<td>(3.32)</td>
<td>(.58)</td>
<td>(.58)</td>
<td>(0)</td>
<td>(1.80)</td>
</tr>
<tr>
<td>Ran</td>
<td>3.50</td>
<td>5.50</td>
<td>.75</td>
<td>2.75</td>
<td>.25</td>
<td>2.55</td>
</tr>
<tr>
<td></td>
<td>(3.00)</td>
<td>(1.92)</td>
<td>(.50)</td>
<td>(1.50)</td>
<td>(.50)</td>
<td>(2.50)</td>
</tr>
<tr>
<td>Mi</td>
<td>.50</td>
<td>.50</td>
<td>1.00</td>
<td>1.25</td>
<td>.75</td>
<td>.80</td>
</tr>
<tr>
<td></td>
<td>(.58)</td>
<td>(.58)</td>
<td>(1.41)</td>
<td>(1.26)</td>
<td>(.50)</td>
<td>(.89)</td>
</tr>
<tr>
<td>Ja</td>
<td>3.75</td>
<td>17.75</td>
<td>1.25</td>
<td>1.75</td>
<td>.25</td>
<td>4.95</td>
</tr>
<tr>
<td></td>
<td>(1.71)</td>
<td>(5.85)</td>
<td>(1.26)</td>
<td>(.96)</td>
<td>(.50)</td>
<td>(7.13)</td>
</tr>
<tr>
<td>Hun</td>
<td>.75</td>
<td>3.50</td>
<td>1.25</td>
<td>1.50</td>
<td>.25</td>
<td>1.45</td>
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<td>(1.29)</td>
<td>(.50)</td>
<td>(1.29)</td>
<td>(.50)</td>
<td>(1.40)</td>
</tr>
<tr>
<td>Total</td>
<td>1.70</td>
<td>5.95</td>
<td>1.35</td>
<td>1.55</td>
<td>.30</td>
<td>2.17</td>
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<tr>
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<td>(3.24)</td>
<td>(6.92)</td>
<td>(2.50)</td>
<td>(2.35)</td>
<td>(1.15)</td>
<td>(7.56)</td>
</tr>
</tbody>
</table>

Note - All values are Means (M) and Standard Deviations (SD) of writing revisions made per 100 words. The values included quality evaluation as well as quantity of revisions (see Appendix H).

Suk and Mi were below average in terms of their revision skills, but the differences between the two are important to address. Suk's rating for syntactic revisions was "0." This does not mean that Suk made no grammatical revisions. Although he made a few syntactic changes, the minus points given for bad revisions were deducted from the points for good revisions, and the result became "0." This was possible since the scoring system for revision skills
included quality evaluation with plus and minus scores (see Appendix H).
However, the rating for “paragraph” was “0,” because there was no revision
made at that level.

The underlined words in the following two quotes are examples of bad
revisions: "...to surprise for her father...," or "...the a frog...." Suk added
unnecessary words in the second drafts and he did not have any idea why he
had added them. In the second example, inserting "a" after "the," seemed at first
a typographical error, but Suk repeated the same mistake in the next line. When
asked the reason for adding the “a”, he hesitated a while and said, "uh..., I don't
know....uh..., uh, maybe, it just sounds right that way."

On the other hand, that Mi had lowest score in revision skills seems
mainly due to her lack of interest in revision tasks. Mi was more knowledgeable
than Suk as to syntax and English vocabulary. She seldom made changes, even
though she recognized what was wrong in the text. An example of Mi’s attitude
toward revision, found in the interaction between Mi and Hun of Day 8 during
Assessment II, is: “You didn’t put a period at the end of that sentence,” Hun said to
Mi as he peeked at Mi’s computer screen. Mi answered, “I know I need a question
mark there, but I don’t care.” Mi was right, and she knew she needed to use a
question mark at the end of a questioning sentence. Nonetheless, no change was
made on her final draft.

Another example, found in the retrospective interview on Day 9 using the
probes in Appendix D, is: “I think the title doesn’t match with my story.” (The title
was “A Skunk in the Class,” but she wrote about a male skunk, who spilt a
perfume bottle in the store, chased after a female cat with whom he had fallen in
love, fell into a blue paint can, became a blue fragrant skunk, and finally won the
cat's love. When the researcher asked, "How could that be changed?" Mi said, "I like my story, and I don't want to change anything." She was actually not sure how to solve the problem of the mismatch between story and title. Mi's responses might be indicative of why metacognitive awareness and regulation should be differentiated. As shown in the examples above, Mi's awareness skills seemed to be functioning at a higher level than her regulation skills. Above all, Mi's regulation skills seemed to be more affected by her attitude than her awareness skills.

Table 8

Correlations among the Skills: Assessment I $^a$

<table>
<thead>
<tr>
<th></th>
<th>Awareness</th>
<th>Regulation</th>
<th>Revision</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>1.00</td>
<td>.60</td>
<td>.80</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>($p = .14$) $^b$</td>
<td>($p = .05$)</td>
<td>($p = .33$)</td>
</tr>
<tr>
<td>Regulation</td>
<td>1.00</td>
<td>.80</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>($p = .05$)</td>
<td>($p = .05$)</td>
<td></td>
</tr>
<tr>
<td>Revision</td>
<td>1.00</td>
<td></td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>($p = .14$)</td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

$^a$ Kendall rank correlation coefficient, $T$.$^b$ Two-tail probability.

To explore the role of metacognitive skills in the ESL students' writing revisions, Kendall's rank-order correlation coefficients, $T$, were computed among the four measures (see Table 8). The correlations were computed based on the
rank determined by the total score on each skill for the five students. In interpreting the correlations, it is important to bear in mind the very small sample size. Only the .80 correlations were statistically significant at the $p = .05$ level. In general, the strength of the associations among the four variables are high, ranging from $T_1 = .40$ to $T_2 = .80$.

Individually, the student who was able to verbalize about factors of good writing tended to revise more and better than the student who could not describe her/his thinking processes. Additionally, metacognitive regulation was associated with writing quality at a relatively higher strength than was metacognitive awareness.

To sum up this section, the data collected during Assessment I indicate that the ESL students generally verbalized very little about their metacognitive skills. This might be indicative of their lack of metacognitive skills or of their difficulty in think-aloud tasks. Except for the case of Hun, the students who made more metacognitive comments tended to write and revise better than the students who were below average. However, it is difficult to determine the exact role of metacognitive skills in these young ESL students' writing revisions, since the design of the study did not allow for addressing the causal relationships among the four variables.

**Effects of Training**

This section addresses the effects of metacognitive training pertinent to the second general question: What are the effects of training two metacognitive strategies (one self-questioning strategy and one self-regulation strategy) on the
metacognitive, writing, and revising skills of young ESL students? There were two metacognitive trainings, the SQ strategy and the SR strategy trainings, followed by Assessment II and III, respectively. After a two-week interval, Assessment IV was conducted in order to measure the degree of maintenance of the trained strategies.

Table 9

Correlations among the Skills: Assessments II-IV

<table>
<thead>
<tr>
<th></th>
<th>Awareness</th>
<th>Regulation</th>
<th>Revision</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>1.00</td>
<td>.71</td>
<td>.49</td>
<td>.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(p &lt; .01)</td>
<td>(p &lt; .01)</td>
<td>(p &lt; .01)</td>
</tr>
<tr>
<td>Regulation</td>
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<td>.66</td>
<td>.73</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(p &lt; .01)</td>
<td>(p &lt; .01)</td>
<td></td>
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<tr>
<td>Revision</td>
<td>1.00</td>
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<td>.53</td>
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<td>(p &lt; .01)</td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

a Kendall rank correlation coefficient, T.

b two-tail probability.

Table 9 presents Kendall rank correlation coefficients computed based on the rank determined by totalling the scores of each skill on Assessments II through IV for each of the five students (see Part 1 of Appendix N for descriptive statistics). All the relationships of the metacognitive skills with writing and revision skills are statistically significant at \( p = .01 \). The coefficients are relatively
high ranging from \( T = .49 \) to \( T = .75 \). The positive results suggest that it is worthwhile to study the effects of metacognitive training in detail.

The presentation of results is organized into three parts in order to discuss changes in the three dependent variables; that is, metacognitive skills, writing skills, and revision skills. The results from both qualitative and quantitative data analyses are presented.

**Changes in metacognitive skills**

Changes in metacognitive skills were examined first through the data collected from classroom interaction, which provided the major contextual cues for understanding the effects of training. Noticeable changes which occurred in classroom interaction are presented in terms of the following four aspects: (1) the quantity and content of questions the students asked, (2) language used, (3) responses reflecting the level of student motivation, and (4) self-evaluation used for the SA and the SR trainings.

First, changes in the number of questions asked by the students indicate that trainings might have a positive effect on metacognitive skills. For example, in the beginning of this 45-day intensive project, there were only a few questions asked by each student per session. Toward the end of this project, the number of questions approximately doubled.

Question content also revealed noticeable changes. In the beginning, most questions were about how to use the word-processing program and about L2
spelling and vocabulary. Representative questions were: "How can I make a space?" (Ja on Day 5); "How can I make a capital letter? (Suk on Day 5); "What is perfume in English?" (Mi on Day 9). Hun and Ja were the students who provided the most L2 answers to the questions on L1 vocabulary asked by other students. The researcher usually waited to observe how the student who asked a question handled the ambiguity by her/himself and how other students responded to the question. If others knew the answer, they proudly and quickly provided it. In case nobody responded, the student tended to skip the problematic part without further exploration. This passive attitude changed to a more active one after the SA training, at which point the students began experimenting with using several words or expressions for possible solutions to the ambiguous part, or putting a question mark in the text for later exploration.

During the middle of this 45-day project, a few global and content-oriented questions appeared mixed with questions on L2 vocabulary. Two examples of global questions were: "Can I change my title? It doesn't match with what I wrote." (Mi on Day 15); "Who wrote this story [note -RS2]? It's terrible! Too short and doesn't make sense to me. I'll add more and make it better" (Ja on Day 17).

Toward the end, the number of global questions increased, and global questions actually outnumbered questions on L2 vocabulary: e.g., "Can I write better than Model 3 story?" (Hun on Day 29); "Can we change the topic?" (Mi on Day 42) "Can we write something different for final story?" (Ja on Day 44); "Yes, please?" (Mi on Day 44); "Can I write scary story?" (Ran on Day 44); and "Can I change the whole story (RS2)? I don't like it at all" (Ran on Day 45).

The second type of change which occurred in classroom interaction to be
examined was the language used by the students. Although language is not direct evidence of improvement in metacognitive skills, it is important to note the changes in this area because the students tended to interact verbally in the language they used for their cognitive process. In an informal interview with the students, the researcher asked why they sometimes switched spoken language from L1 to L2 or the opposite way. A summary of their responses was that they had chosen the language they had felt most comfortable with for both thinking and speaking.

In general, English was used about 30 - 50% in the beginning of the project and the usage of English increased to 50 - 80% as the project progressed, except in the cases of Suk and Hun. Suk remained at the 30 - 40% level of English use throughout the project. Hun consistently used English more than 80% during most of the sessions.

The third type of changes in classroom interaction to be examined was the level of student motivation based on the students' responses to the tasks assigned during the sessions. As with language, change in motivation is not direct evidence of changes in metacognitive skills. However, motivation level was found to be an important factor in students' performance of metacognitive skills. The general pattern was for motivation level to rise and fall repeatedly. For example, the motivation level was relatively high in the beginning session of each training subphase and tended to decrease toward the end of the subphase. This may be because the students liked to do new activities everyday (see Appendix N for evidence in Mi's journal on Days 15, 17, & 18).

During the assessment phase, the level of student motivation varied again. It was relatively low for the story writing tasks during Assessment I, increased
during Assessment II, fell again during Assessment III, and once more became high (probably the highest among the four assessments) during Assessment IV. Some of the examples below may explain the reasons for these changes in motivation level:

<Assessment I> “I’m done. I have nothing to change. Can I play game on the computer?” (Hun on Day 9).

<Assessment II> “Could you please give more time to write? I didn’t finish my story yet.” (Hun on Day 16); “Me, neither. The 5W1H questions keep giving me more ideas to write. Can I continue tomorrow?” (Ran on Day 16).

<Assessment III> “...too much writing.” (Mi on Day 28); “Can we do something else?” (Ja on Day 28); “I’m bored.... Do I have to change again? I’ll make it worse” (Mi on Day 29).

<Assessment IV> “Wow, we gonna write story today?” (Mi on Day 42); “Great! I missed writing stories” (Ja on Day 42); “I have a great idea. I’ll make the funniest story I’ve ever made.” (Hun on Day 44).

Fourth, self-evaluation of writing during the SA and SR training provided important evidence of improvement in metacognitive skills (see Appendix F for self-evaluation checklist). In the beginning of SA training, the students had difficulty evaluating their own stories. Hun and Ja mentioned that they would just give a high score to their own story and give the others’ stories scores which were as low as possible. Ran was a little frustrated in trying to figure out what portion of her writing belonged to which question in the SQ procedure. Toward the end of the SA training, the students began to understand how Model 1 story could be used for rating stories objectively (see Appendix E for Model 1 story). For example, Ja said, “There are two sentences about When and Where in Model story (note - Model 1). My story have four sentences, so I’ll mark on 4 for first question (see Appendix F for the first question).” This comparison was limited
to the length of the two stories, but this was still better than the self-centered evaluations before the SA training.

During Assessment II, no self-evaluation checklist was used, but the students kept asking the "5W1H" and "BOL" questions they had learned during the SA training. The shortened form of questions and their corresponding scores scribbled in the margins of the OSs and RSs provide evidences of a sustained effect of the training. Nevertheless, the students still had difficulties. One major difficulty can be seen in Hun’s question on Day 15, "How can I rate my story? I have trouble rating. I think my story is better than Model story (note: Model 1)." Hun evaluated his story to be better than 5, but the scale had 5 as the highest score. The average score of other students was also greater than 5. They tended to compete against Model 1, attempting to write better than the model.

Consequently, a scale with values greater than 5 was deemed necessary. For the SR training, a 10-point scale was adopted and a self-evaluation checklist was used again. Using Model 1 as the first draft, Model 2 and 3 stories were created for their respective criterion scores of 6 and 9, in order to help objective evaluation. The criterion value of 3 for Model 1 remained the same. The process of constructing two model stories and visualizing their progress on the checklist helped the students enhance the accuracy of their self-evaluations. This process also greatly motivated the students as they progressed to establish their revision goals higher than the quality of the criterion stories. Establishing one's goal at a higher level was also in the seventh step of the SR procedure (see pp. 81-82).

During Assessment III, the students used neither a checklist nor scribbled on their drafts. According to their think-aloud protocols, they mentally evaluated the drafts of OSs and RSs holistically against the model stories, instead
of diagnosing weaknesses in each part of the stories. During classroom interaction, they clearly expressed that they did not want to go over the SQ and SR procedures step-by-step. It was not clear whether this suggested their internalization of the SQ and SR strategies. Nevertheless, their performance on writing skills improved, implying that their self-evaluation based on general impression was accurate.

The results from the classroom interaction mentioned above described background information about the changes in metacognitive skills. The major findings in the following sections are reported quantitatively, although qualitative data are selectively presented for understanding the results of the quantitative analyses. The results of nonparametric statistics \( F'_{r} \) are used to address the effectiveness of training in terms of quantified variables of interest. Each part below includes the results of testing the effects of the two metacognitive trainings on the direct measures of three dependent variables across the four assessments. The effects of each training are examined based on the performance of the five ESL children both as a group and as individuals.

Investigating changes in direct measures of metacognitive skills, Figures 1 and 2 illustrate changes in the total mean percent of metacognitive skills of the five ESL students throughout Assessments I-IV (see Tables 10 & 11 in Appendix N for descriptive statistics). Figure 1 indicates the awareness component, while Figure 2 illustrates the regulation component of metacognitive skills. As can be seen from the figures, all the students made significant progress throughout the four assessments for awareness \( [F_r (3, 28) = 15.00, p < .01] \) and for regulation \( [F_r (3, 28) = 14.04, p < .01] \). Since the Friedman test \( (F_r) \) for all assessments is shown
to be significant, the Wilcoxon signed ranks test \( (T^+) \) was used to further specify between which assessments the students made significant improvement in their metacognitive skills.

The results of Assessment II (after the SQ training) indicated that the ESL children as a group made significant improvements in both awareness \( (T^+ = 2.02, p < .05) \) and regulation \( (T^+ = 2.02, p < .05) \), as compared to Assessment I. This suggested that the SQ strategy training might be effective for enhancing these two aspects of metacognitive skills.

For instance, Ran's think-aloud protocol after the SQ training indicated that she kept asking the "5WIH" questions while she was developing plots in the process of her story writing. One of her protocol segments is: ".... Now, I'm gonna write What goal part." The underlined two words, What goal, are a shortened form for "what was the goal of the main character?", the fourth question among the "5WIH" questions. The others also wrote longer and richer stories in terms of their content. The number of semantic questions asked regarding the content of a story increased, and the ability to make desired changes improved.

However, it is noteworthy that the major changes in their metacognitive skills occurred during the process of writing, rather than during the revision process, after a draft had been completed. All the students reported in interviews that writing their own stories became easier when using the "5WIH" questions as guides to developing ideas from one paragraph to the next. Ran's think-aloud protocol segments, collected after the segment presented in the previous paragraph, clearly indicate changes in metacognitive skills during the
writing process: "...I'm done with What goal part. Now, I'll write What try part... Then all I have left is to write How end...." Although the students admitted that the SQ procedure was helpful in the writing process, they did not care much for using it step-by-step for the revision tasks, including revisions of the two RSs and the first drafts of two OSs.

![Figure 1. Changes in Metacognitive Awareness Skills](image)

In terms of individual changes in metacognitive awareness and regulation skills, everybody made significant improvement across the four assessments (see Table 15 in Appendix N for significance tests). More specifically, from Assessment I to Assessment II, Hun and Ja made significant improvements in
awareness skills, while he others progressed slowly and did not make significant improvements in metacognitive awareness (see Table 16 in Appendix N for significance tests). The significant gain made by Hun and Ja may be related to the information stored in their long-term memory, since they were most knowledgeable in terms of vocabulary and idiomatic expression. In metacognitive regulation skills, Ja was the only student who did not show significant improvement in Assessment II. One reason for Ja's insignificant improvement might be explained by the fact that her baseline performance in Assessment I was much higher than the other students.

Figure 2. Changes in Metacognitive Regulation Skills
As in Assessment II, in Assessment III (after the SR training), the ESL students as a group demonstrated significant improvements in both awareness ($T^+ = 2.02, p < .05$) and regulation ($T^+ = 2.02, p < .05$), as compared to Assessment II (see Table 14 in Appendix N). This indicates that the SR strategy training was also effective in enhancing both the awareness and regulation aspects of metacognitive skills. During the revising, as well as the writing process, the children kept comparing their drafts with the Model stories they had collaboratively created during the SR training. This process enabled the children to become critical readers of stories written by themselves and others. Apparently, the critical evaluations led the students to make an extra effort to improve the drafts in order to make them better than the criterion stories.

The effects of the SR training on individual students' metacognitive skills were also positive. Everyone made a statistically significant improvement for both awareness and regulation at $p = .05$ level (see Table 16 in Appendix N). It is interesting to note that all the students made significant progress after the SR training, while a majority of the students did not make such progress after the SQ training. However, the results should not be interpreted to compare the effects of the two trainings because of their different lengths and the inclusion of SQ in the SR procedure.

In Assessment IV (after the two-week interval), the ESL students as a group again made a statistically significant improvement in metacognitive awareness skills ($T^+ = 2.03, p < .05$). On the metacognitive regulation skills, the children's performance improved, but the difference was not statistically
significant ($T^+ = .67, p = .50$). It was somewhat surprising to see the improvement on the awareness skills after the two-week interval. The improvement might be due to changes in students' attitude toward the writing and revision tasks given during Assessment IV. After involvement in non-writing activities for the previous two weeks, the students applied themselves enthusiastically to the writing tasks in Assessment IV. The following conversations, selected from the classroom interaction on Day 42, portray this enthusiasm:

Mi: “Wow, we gonna write story today!”
Ja: “Great, I missed writing stories.”
Ran: “This time I’ll do my best because this will be my last story during my elementary school years.”
Ja: “Can we write any story whatever we like to, please?”

These were responses contrasted markedly with those heard during Assessment III, when the students complained that there was too much writing, since they had written or revised 12 stories within the 3 weeks from Assessment I through Assessment III.

Another reason for the improvement in awareness skills might be the short-term interval between Assessment III and IV. The two-week period might have not been long enough to completely erase the effects of training. Additionally, a session had been held for reviewing the SQ and SR procedures one day before Assessment IV was undertaken. If there had been no review session, the results of Assessment IV might have been lower.

With regard to individual improvements in metacognitive awareness, only Hun and Ja demonstrated statistically significant gains. For the metacognitive regulation skills, none of the students made a statistically significant improvement.
Changes in writing skills

Figure 3 illustrates changes in the mean overall holistic score for writing skills of the five ESL students for Assessments I-IV (see Table 12 in Appendix N for descriptive statistics). As Figure 3 depicts, all the students made significant progress over the four assessments for writing skills \(F_r (3, 28) = 15.00, p < .01\). Because the Friedman test \(F_r\) for all assessments proved to be significant, the Wilcoxon signed ranks test \(T^+\) was used to further specify on which assessment the students made significant improvement in their writing skills.

![Figure 3. Changes in Writing Skills](image)

Figure 3. Changes in Writing Skills
The results of this test show a significant improvement in writing skills on Assessment II (after the SQ training) \((T^+ = 2.02, p < .05)\), as compared to Assessment I. This suggests that the SQ strategy training might have been effective for improving the children's writing skills. Perhaps, by asking questions in the SQ procedure, the students were able to generate and organize ideas better.

An examination of the changes individual students made after the SQ training shows that Suk, Ran, and Hun made significant improvement at \(a = .05\) level. Mi and Ja progressed somewhat, but not to a statistically significant extent.

In Assessment III (after the SR training), the ESL children made significant improvement in writing skills \((T^+ = -2.02, p < .05)\), as compared to Assessment II. This suggests that the SR strategy training had a positive effect on writing skills and writing strategies. During the writing process, the students developed their ideas according to the framework of the story grammar in the SQ procedure. While developing a paragraph, the students kept comparing their drafts with Model stories and revised their stories accordingly. These comparisons and revisions were sometimes conducted even before the students transferred their thoughts into text. Their think-aloud protocols showed changes at a cognitive level although there was no trace of changes in their texts.

The effects of the SR training on individual students' writing skills were impressive. Every student made a statistically significant \((a = .01)\) improvement in writing skills. Further, all the students said that creating Model 2 and 3 stories
during the SR training was very helpful for them in clearly understanding the process of good story writing.

In the results of Assessment IV (after the two-week interval), the ESL students made statistically significant improvement in writing skills ($T^+ = -2.03$, $p < .05$). Since the analyses of metacognitive skills showed significant improvement after the interval, it is perhaps not surprising to see improvement in their writing skills.

When examining individual differences in writing skills, three students (Suk, Mi, and Ja) made significant improvements. A major factor in their improvement may have been a change in their motivation (see Appendix M for evidence of this enthusiasm from students' journals written on Days 42-45). Suk and Mi were the students who had complained about too much writing during Assessment III. Ja could not put her full effort into writing because of her concerns about another after-school program held right after this class. By the time of Assessment IV, however, Ja had quit her other program and, therefore, did not have to hurry as before. Also, she reported that she missed writing stories after the interim. Ja, Mi, and Ran found the topics for writing interesting. Suk said that he had gained self-confidence by winning educational games during interim computer activities, and he had learned that he could do well if he tried hard enough. Consequently, his attitude toward writing tasks became sincere. Evidence of this was the increased number of questions asked during his writing process.
Changes in revision skills

Figure 4 illustrates changes in the total mean of revision skills of the five ESL students throughout Assessments I-IV (see Table 13 in Appendix N for descriptive statistics). As Figure 4 shows, the students as a group did not make significant progress in their revision skills throughout the four assessments \( F_r (3, 28) = 2.22, p = .53 \).

Although there was no statistically significant improvement found in revision skills, evidence from revision tasks for RSs clearly showed the students' progress in a positive direction. The eight RSs were designed by the researcher specifically to measure changes in revision skills isolated from writing. Each was equivalent in terms of quantity (about 200 words) and quality (about 3 for holistic rating) of the content. For Assessments I and II, the average score for the
holistic quality of the RSs revised by the students was only 3.8, as compared to 5.8 for Assessments III and 6.5 for Assessment IV (see Appendix O for selective entries from students' revision samples). It is obvious that the SR training was effective in improving revision skills. In this study, it is not possible to determine whether the SR training itself was effective because the SR procedure included the SQ procedure. However, the SA training alone might not be sufficient to improve revision skills, as shown in the lack of increase in revision skills from Assessment I to II. Though the SA training might not have helped generate better alternatives, it might have helped to enhance the effectiveness of the SR training.

When examining the changes individual students made, no student made a significant improvement across the four assessments. However, only Ja's scores decreased to a statistically significant extent, between Assessment I and Assessment II ($T^+ = -2.67, p < .01$). Prior to the training, Ja was the only student who revised extensively by adding descriptive words. This means that her starting performance was already much higher than other students. The SA training made her manipulate and experiment with content, rather than with words. Consequently, she dealt with a larger piece of text. This may have been the reason why the number of revisions she made dropped suddenly.

Although the students did not show any improvement in revision skills in general, their patterns of revisions suggest that there were positive changes. For example, the students' revisions in the category of paragraph improved from Assessment I to Assessment IV: i.e., Suk from 0 to .50; Ran from .50 to 5.00; Mi from .75 to 3.00; Ja from .25 to 3.50; and Hun from .75 to 3.00. In the categories
of syntactic, spelling, mechanics, there was a tendency among the individual students for numbers to decrease from Assessment I to Assessment IV. This indicates that the students began dealing with more global aspects of writing.

To sum up the effects of the SA and SR training, the ESL students’ metacognitive and writing skills improved as a result of each training. Although the individual students’ revision skills did not show any significant improvement statistically, their progress was evident in that the revised text throughout the four assessments obtained higher scores for writing quality than did the originals. The students not only maintained the learned SQ and SR strategies over the two-week interim, but also improved their writing performance. This might be evidence that the students internalized the two strategies and revisions might have become more integrated into their ongoing writing processes.
CHAPTER V.
DISCUSSION

The five specific research questions posed at the end of Chapter II are addressed in this chapter. Factors contributing to improvement of L2 writing skills, issues relevant to measurement of writing processes, and motivation will also be discussed. The results presented in the preceding chapter add information about the role of metacognitive skills in young ESL students' writing revisions. Yet, it seems important that this information be used to integrate general knowledge about metacognition, revision, and writing using English as an L1 and L2. For this reason, a more dynamic or heuristic view of the results will be taken in this discussion.

Discussion of the Results in relation to the Research Questions

1. What is the level of metacognitive skills in the revising process of young ESL writers?

Before introducing any metacognitive training, the ESL students' protocols reflecting metacognitive awareness were slightly less than those reflecting metacognitive regulation (see Tables 4 & 5). In each of the seven subcategories of writing, the mean percents ranged from .85% to 3.50% for awareness and from .50% to 7.75% for regulation. The ESL students provided running statements about what they were doing more than what they were thinking. When examining the results of Langer (1986, pp. 162-163), who analyzed protocols of native English-speaking children during their writing
process, the ranges of the mean percents in the seven subcategories were 1.9 - 10.4% for awareness and .4 - 35.4% for regulation. It is interesting to note that regulation exceeded awareness aspects whether the elementary students used English as their L1 or L2.

Nevertheless, the mean percents reflecting metacognitive protocols for the students in Langer’s study are greater than those for the ESL students in the present study. However, it is difficult to conclude that the ESL students have a lower level of metacognitive skills than the native English-speaking students. One reason for this difference could perhaps be that Langer collected protocols throughout the writing process, while the present study focused on the revising process. The ESL students were asked to think-aloud only when they changed their thoughts or text. It also must be noted that the present study had a group of only five students. The mean percents obtained in this study should therefore be used to interpret general patterns of the five ESL students’ metacognitive skills, rather than to represent characteristics of young ESL students in general.

The fact that awareness appeared less than regulation can be interpreted from two different perspectives. One possibility is that the ESL students are actually lacking in awareness skills, as compared to regulation skills. Therefore, the students may be able to revise better if they can learn to recognize the weak areas in their writing processes. Beal (1989) argues that the main reason for children’s low revision levels is their lack of awareness.

The other possibility is that the difference occurred mainly due to the difficulty of the think-aloud task. In spite of pretraining for think-aloud, verbalization of thinking for the ESL children appeared to be more difficult than verbalization of action. Most protocols categorized as awareness were the
questions reflecting the student's awareness about what s/he did not know. Besides the questions, there were only a few remarks representing awareness. The students might not have talked much about their awareness due to the difficulty of describing thinking.

Regarding the seven subcategories of writing, "goals," "subgoals," and "genre" were the subcategories where the ESL students placed less emphasis than on those subcategories on "grammar," "mechanics," vocabulary," and "meaning." Before introducing the SQ strategy, the ESL children were not very concerned about the framework of a story, as compared to local aspects of writing. This is also a general phenomenon found in the writing behaviors of native English-speaking children (Bereiter & Scardamalia, 1987; Graves, 1983; Langer, 1986; NAEP, 1977).

2. What is the role of metacognitive skills in the writing skills of young ESL writers?

The role of metacognitive skills in the production of good ESL writing seems significant. Both metacognitive awareness and regulation had positive relationships with writing skills, whether the students received the metacognitive training or not (see Tables 8 & 9). The results could be interpreted in three different ways: first, the more the students were aware of and regulated their verbal production, the better the student actually wrote; second, the view that is exactly opposite of the first interpretation could be postulated; third, the verbalization of sophisticated metacognitive skills and production of good writing skills could happen together. Due to the design of the study, it is impossible to address the causal relationships among them. However, the
positive relationships are congruent with other English as an L1 studies which claim sophisticated metacognitive skills are an important factor in good writing (Calkins, 1980; Cohen & Scardamalia, 1983).

3. What is the role of metacognitive skills in the revision skills of young ESL writers?

The role of metacognitive skills appears to be important in finding problems and generating better alternatives, as shown in the positive relationships between metacognitive awareness or regulation and revision skills (see Tables 8 & 9). These results were similar to those in studies using native English-speaking writers (Bereiter & Scardamalia, 1986; Faigley & Witte, 1981, Sommers, 1980).

Regarding the five areas of revision, the ESL students’ major concerns were in the subcategory of "semantics." Their concerns decreased gradually in the subcategories of "syntax," "mechanics," "spelling," and "paragraph." In comparison with other studies, there are similarities and differences in the results. One similarity is the lack of attention paid to the subcategory of "paragraph." Whether L1 or L2 is used, children tend to revise local aspects of text that are not longer than a sentence (Bereiter & Scardamalia, 1987; Langer, 1986).

However, unlike the ESL students in this study, young children whose L1 is English tend to focus on spelling or neatness of their handwriting primarily, and then finally move their attention to meaning, purpose, and audience (Graves, 1983). One reason for the difference might be explained by the fact that the ESL children in this study did not have to worry about their hand writing because they used the computer as their writing tool. Instead, they were
concerned about typographic errors, categorized as "mechanics." The other reason why the ESL children focused on semantic aspects might be attributed to the L2 used for revision tasks. The ESL students' chief concern was translating L1 thought to L2 text, as shown in their frequent questions about how an L1 word or expression could be translated into English.

The ESL students paid the least attention to the subcategory of "paragraph" (see Appendix H for the category). The revision fell into this category of "paragraph," which covers changes made from more than one sentence. The average total number of revisions in this category was less than one per story for Assessment I. The results implies that the ESL students were not extensive revisers before the metacognitive training.

The last issue for discussion is related to the differences based on the authorship of a story. Revision tasks with the students' Own Story (OS) promoted more direct concern with the meanings themselves, while revising tasks with the Researcher-provided Stories (RS) led the students' attention to more diverse aspects, such as "grammar," "mechanics," "vocabulary," and "meaning." The difference may be due to the fact that the students exercised their best when producing their own text so that they had difficulty later detecting their own weaknesses or errors in a variety of areas.

4. What are the effects of training a self-questioning strategy on metacognitive, writing, and revision skills?

After the three SQ training sessions, the ESL students made a significant improvement in their awareness and regulation aspects of metacognitive skills and also in writing skills. One issue to note here is that the SA training in the
previous studies has been shown to be effective only for metacognitive awareness (Bereiter & Scardamalia, 1983b; Brett, et al., 1983; Daiute & Kruidenier, 1985). Then why was the SA training in this study effective in enhancing both awareness and regulation? There are at least two possible reasons for the differences found in the effects of SA training.

The first reason seems to be related to the internalization of the learned strategy emphasized in this study. Writing researchers employed different strategies for the SA training. Two studies adopted procedural facilitation through the use of 13 diagnostic cues such as “Too few ideas,” and “Part of the essay doesn’t belong with the rest.” (Bereiter & Scardamalia, 1983b; Brett, et al., 1983). One study employed a questioning strategy through the use of computer-prompted 22 questions (Daiute & Kruidenier, 1985). The present study employed the SQ strategy, including 9 questions asked during the SQ procedure. The diagnostic phrases or questions in the studies above did not have a connection among them for a schematic representation. The researchers did not consider internalization of the questions for independent performance. Their students still used external prompts for posttest performance. The present study adopted the “5W1H” questions based on the story grammar (Dreher & Singer, 1981; Solomon, 1986; Wall & Taylor, 1982) and the “BOL” questions for the SQ training. Since the internalization of the learned skills was a focus of the present study, mnemonics were explicitly taught during the SQ strategy training so that the students could memorize the questions easily and utilize them without any external prompts. Explicit instruction on the story grammar and mnemonics might have helped the ESL students develop and, quite possibly, internalize a schema related to the structure a good story should have, as shown in the
evidence from think-aloud protocols and independent performance of the ESL students.

Another reason for the significant effects of SA training on both awareness and regulation can be attributed to the process-oriented methodology used. This study investigated both process and product of the revising process, whereas others studied only the products (Daiute & Kruidenier, 1985) or artificially divided processes (Bereiter & Scardamalia, 1983b; Brett, et al., 1983). In other words, the evidence for improvement in regulation after the SA training was not found in the products but in the process only. For instance, comparison of OS with RS illustrates the difference. During the process of writing OS, the students incorporated "5W1H" questions into the developing ideas and regulated their own revision process. As shown in Ran's protocols in the previous chapter, the students asked the "5W1H" questions while writing OS. They then used the questions to find weaknesses in their content generation and to add or change. The actions taken to add or change might be the evidences of improvements in regulation. However, the students took little action on the product-oriented revision tasks, including revisions of RS and the first drafts of OS. Once they completed their first drafts of OS, they seldom employed the questions to improve their drafts. For the RS, they used the questions to evaluate the story, but thereafter they knew little about what proper actions to take for improvement of the problems identified. This could be the reason why the other studies did not find improvement on regulation. If the present study focused on the product-oriented revisions, the results might have been the same as the other studies.
In terms of writing skills, the ESL students improved as a result of the SQ strategy training (see Figure 3 & Table 12 in Appendix N). Although the SA training lasted only three days, the progress made by the ESL students was promising. The “5W1H” questions covered the story grammar, a framework for good narrative writing, and the “BOL” questions reminded the ESL students of the main weaknesses they used to make. For example, Hun’s story written for Assessments I and II illustrates his improvement (see Appendix K for selective entries from Hun’s stories). In the beginning of Hun’s first story, “Rockets Away,” Hun did not write When (the part of the first question in “5W1H”) it happened, but he started his second story, “A Visitor from Outer Space,” as follows: “Yesterday at 3:00 p.m ....” In terms of Who, What beginning, What try, and How end, the rest of “5W1H” questions, Hun’s second story written for Assessment II also developed a more detailed and interesting plot than the first story. Regarding “BOL” questions, Hun used to write run-on sentences, but his sentences became shorter and clearer after he learned to use the questions. It was apparent that the questions contained in the SQ procedure contributed to his writing quality.

Regarding the revision skills, the students did not make a statistically significant improvement after the SA training. It is interesting to note the difference between OS and RS discussed earlier. The ESL students incorporated the SQ procedure into their composing process of OS and consequently made improvements in their OS writing quality. However, when they were given the first drafts of OS and RS for the revision tasks, they were reluctant to use the SQ procedure step by step. Even though they found weaknesses, they did not know what to do next with the problems identified. They simply put the scores on the
margins of the drafts for each question and did not take any action for improvement. As a result of the SQ training, their ability to evaluate the drafts appeared to be improved, as their ratings for each question were not significantly different from the ratings given by the adult raters, who were trained for objective evaluation (see Quantitative Analyses in the last section of Chapter III). This result was similar to the training studies with English as L1 writers (Bereiter & Scardamalia, 1983b; Brett, et al., 1983). The lack of ability in generating better alternatives after identifying weaknesses might imply that metacognitive awareness and regulation function differently in revision tasks.

5. What are the effects of training a self-regulation strategy on metacognitive, writing, and revision skills?

After the nine SR training sessions, the ESL students made a significant improvement in metacognitive and writing skills, though not on revision skills. In terms of metacognitive skills, the SR strategy training was effective in enhancing both awareness and regulation aspects. Since the SQ procedure for the SA training was embedded in the SR procedure, it was not surprising to see improvements in the two aspects of the metacognitive skills. The results were similar to the training study done with English as an L1 writers (Cohen & Scardamalia, 1983; Fitzgerald & Markham, 1987; Harris & Graham, 1984). However, their training procedures varied from teaching SA and SR together (Fitzgerald & Markham, 1987) to training SR with SA embedded (Cohen & Scardamalia, 1983; Harris & Graham, 1984). The latter procedure is close to those used for the present study.

The SR training for this study was focused on teaching the ACD method
for improving the weaknesses identified through the use of SQ (see the SR procedure on pp. 82-83). To clarify the relationship, the examples within IF-THEN structure are given as follows:

**IF (SQ: “5W1H”+ “BOL”)**

- If *When & where* part is missing, Then Add to improve the part (goal is 9)
- If *What beginning* is not interesting, Then Change to make it more exciting.
- If a part doesn’t *Belong* to the rest, &/or Add
  - Then Delete to make the story coherent.
  - or Change to make it fit into the rest.

The SR training was focused on the THEN portion so that the students could take appropriate actions to control their revising processes, since the IF portion was already taught and there was no need to review again. Zero out of 9 SR training sessions was used to train the SA directly, but the SQ procedure for the SA training was still indirectly embedded into the SR procedure. Given the background of SA, training SR might have pushed the students for better performance, but it is impossible to tell what would happen without that prior training. Theoretically, differentiation of SA and SR was possible. However, practically, making the SR independent of the SA was difficult, due to the characteristics of the SR procedure. One needs to identify weaknesses prior to taking any action to improve the weaknesses.

In addition to the confounding effects of SR with those of SA, there is another reason that the effects of SA and SR training should be interpreted with caution. During the metacognitive training, the students used self-evaluation checklists with different scales: e.g., the 5-point scale for the SA training and the 10-point scale for the SR training. Since the study adopted qualitative approaches for training phases, it seemed to be appropriate to make changes
based on the students' needs. However, the students' expectation levels changed between Assessment II and III, due to the scales used for training. For Assessment II, the maximum score the students expected to have for their stories was 5, while it was 10 for Assessment III. Beyond the SA training effects, the students' expectations on the highest score during Assessment III might have caused them to perform better.

Writing skills of the ESL students improved significantly following the SR training, as shown in the increases of both holistic and analytic ratings for writing quality (see Table 12 in Appendix N). During the writing process, the students often evaluated their text by comparing them with three model stories. They did not have to look at the model stories, which were still vivid in their minds through the experience of joint construction of Model 2 and 3 during the SR training. However, the students were often observed thinking aloud such as, "...This is not enough, I can get only about score 6. I'd better add more." If their drafts were found to be at an unsatisfactory level, then the students employed the ACD methods and took proper action to improve their drafts. The results of this study suggest that the SR training helped to enhance the quality of English as an L2 writing as well as an L1 writing (Cohen & Scardamalia, 1983; Fitzgerald & Markham, 1987; Harris & Graham, 1984).

Just as after the SA training, the students did not make a statistically significant improvement on revision skills after the SR training. However, process evidence suggests that revision skills might actually have been improved. According to the system developed by Faigley and Witte (1981), semantic changes were considered as high-level revisions. Prior to the SR training, the ESL children's major revisions were focused on semantic aspects,
but they were far below the high-level revisions expert writers might do. In other words, the expert writers' awareness concerning semantic development tends to be fully extended throughout the writing process in light of their writing goals (Hayes & Flower, 1980). However, the ESL children's awareness concerning meaning reflected by their writing goals was limited to the planning process of writing. Once they started to write, their attention on meaning diverged to a small portion of text, from a word or sentence to the next one. When they were mainly involved in revision tasks of a draft, they made changes on local aspects of text, with little consideration of the goals and subgoals of their writing. This changed after the SR training. The ESL students evaluated their drafts according to their writing goals and extended their revisions accordingly. One example of the extensive revisions is that the students sometimes threw their drafts away completely and started new drafts (see Appendix O for an example from Ran's revision sample during Assessment IV).

A second indication of possible improvement in revision skills is related to the time they spent for the revision tasks. The students spent about 10 minutes per draft before the metacognitive training because they knew little about what and how to revise. After the SA training, the revising time extended to about 20 minutes, and after the SR training it was extended to 25 minutes, the whole allotted time per story. Sometimes one or two students, especially Ran and Ja, asked for more time to add or change. Consequently, they tended to spend more time than allotted on the story presented first for revision and they often did not have enough time for the second story given for another revision task of the session.

In addition, there is some evidence of cognitive changes in the students'
approach to the revision tasks. The ESL students seemed to develop a problem-solving view of revisions, as a result of both SA and SR training. Before the training, the students knew little of what to do when they were given OS and RS for revisions. Except for Ja, who made extensive semantic changes from the baseline performance, the revisions that the four other students made were limited to a few spelling and mechanical errors. After the training, the students evaluated text by using the SQ procedure, then regulated their revising actions through the SR procedure. The ESL students used the SQ and SR procedures repeatedly until they attained the highest ratings of their writing. Fitzgerald and Markham (1987) claimed that their students gained a problem-solving view of revision after training, but their students did not seem to have goals for revisions. The students in this study established a concrete goal using the three model stories and revised a draft until they were satisfied. Through the joint construction process of two new models, they also learned that their goal could be raised to better than Model 3 if they were able to reach that level. The dramatic changes in revision skills are apparent when comparing revision samples collected during Assessment I with those during Assessment III or IV (see Appendix O for revision samples).

In summary, direct metacognitive training in the revision process appears to hold promise as an approach in helping young ESL students acquire skills in what and how to revise, and thereby positively affect their L2 writing skills. Although the SQ and SR strategies taught in this study seemed to improve both awareness and regulation, the evidence from individual students and process data suggest that neither the SA nor SR training seems sufficient by itself to
maximize the effects of training on writing revisions. Revision skills did not improve at the .05 level, but process evidence implies that the ESL students made noticeable progress after the training.

Factors Contributing to Improvement of L2 Writing Skills

The present study seemed to be successful in terms of improving the students' L2 writing skills and attitudes toward L2 writing. Employing the three model stories as criteria, the students witnessed their own progress throughout four assessments and indicated that L2 writing became easier and enjoyable (see Appendix N for evidences of enthusiasm from student journals on Days 42-45). In this section, the factors underlying successful L2 writing will be discussed.

The after school class for the dissertation project was conducted with voluntary participants. During this 45-day intensive project, Suk was the only student who was absent twice and had make-up sessions on the following days. Ran and Ja were absent once during the interim phase. The near perfect attendance rate indicated that the students were self-motivated to actively participate in their learning process. In addition to this, the support from the students' parents was great because they encouraged their children to take full advantage of the after school class by keeping track of their attendance and attitudes in combination with the teacher. It might have been difficult for this project to be successful without having such highly motivated students and supportive parents.

Besides motivating students, the specific metacognitive strategies utilized
in this study seemed to be effective in enhancing the ESL students' writing skills. The ESL students' writing weaknesses were diagnosed prior to the training. The SQ and SR procedures were then designed, which could be memorized easily and used independently by the students while efficiently improving their writing skills. The SQ strategy based on story grammar was probably helpful for the students to build a concrete schema for good story writing. Other researchers, who taught 22 questions through the computer for 5 months, did not pay much attention to the issue of internalization nor prove improvement in their students' independent performance (Daiute & Kruidenier, 1985). No attempts were made to tie the 22 isolated questions into a simpler structure. The 9 questions used in this study were simplified as the two “5W1H” and “BOL” questions, which helped the students memorize easily and prompted them to examine organization and coherence of their writing according to the story grammar, without any external cues.

The SR procedure in this study was also unique. Emphasis on three remedial actions through the “ACD” methods was similar to the procedure used by Cohen and Scardamalia (1983), but joint construction of new model stories as a process instruction was employed only in this study. This might have positively affected the students' attitudes toward revision in at least two ways: (1) viewing revision as a necessary writing process through the attempts to improve the Model story from criterion score 3 to scores 6 and then 9; and (2) raising writing goals, as revisions progress. In other words, the students' expectation level for their final draft elevated. Although Model 2 and 3 were collaboratively constructed, the individual students were proud of their contribution and wanted the challenge of exceeding Model 3. As Vygotsky
(1978) has suggested that cognitive development occurs through the interaction of the child and adults or more capable peers, the ESL students’ independent performance improved after the successful experience of joint construction of the two model stories. As the results of the SA and SR training, they were able to use independently “5W1H” and “BOL” questions to find problems in their drafts, and “ACD” methods to generate better alternatives, according to their writing goals.

As briefly discussed above, the process-instruction used for the training was also a critical factor. The SA and SR training, by focusing on two aspects of metacognition separately, allowed the ESL students to receive process-oriented instruction for their L2 writing revisions. The usefulness of the SQ questions and the ACD methods were clearly demonstrated by the teacher in the process of constructing model stories collaboratively with the students. Thereafter, each student was in charge of her/his own writing revision process and demonstrated how s/he employed the SQ and SR procedures for improvement. Whenever the student had difficulty in the process, the teacher and peers provided scaffolding through suggestions and feedback. The students gained confidence during the process. The following examples selected from Suk’s journal illustrate some of the process:

Day 22 - “To day I learn how change the story. My firends are help me many time. So i can change the story. If my friend doesnt help and i cannot change so i thanks for my firend....”

Day 24 - “TODAY I heip my friend story. Today we use the 5, w, 1, H, too, so i can make a good stence (note - sentence)...”

The metacognitive training placed special emphasis on the semantic aspects of writing, which might be an important factor contributing to ESL
writing improvement. The ESL students lacked skills in developing adequate content and in applying proper grammatical rules in their writing. However, priority was given to the semantic aspect, as most writing researchers suggest for ESL students (Ammon, 1985; Urzua, 1987). If the training was focused on grammatical aspects of writing, the resulting improvements would not have been as impressive as the results of the study in such a short period of training. After the training, the students seemed to utilize well their thinking skills for content development.

The computer as a medium of writing played a crucial role in motivating the ESL students. Their enthusiasm toward the computer was evident in the following examples. Even though free choice of writing tools was allowed for journals, they chose to use the computer most of the time. In their journals, the students often referred to this class as “computer class” rather than as “writing class.” The word-processing also helped the students focus on semantic aspects of writing.

Training intensity was a factor to be considered as important. The training sessions were held every day. Very few regular curricula allow this type of intensive metacognitive training focused on writing revisions. The continuation of the training every day might have facilitated the students' acquisition process of the metacognitive strategies.

Assessment intensity is also an important factor. Each assessment phase lasted four sessions for collection of 4 writing and revision samples. There were six sets of writing and revising tasks during the total 12 sessions from Assessment I to III. These repeated measures within and between assessments provided additional writing practice and might have led the students to greater
familiarity with the procedures of assessment.

The researcher as the teacher is a factor that could have made the training effective, although it will be noted later that the dual roles played by the teacher will limit the generalizability of the study. Nonetheless, the familiarity and rapport established with the teacher through the SLEP class and the long-term pretraining sessions helped the students express their difficulties and negative feelings with little reservation. The teacher's L1 was the same as that of all participating students. This made bilingual interaction possible and helped the students understand the concepts behind the SA and SR procedures with little difficulty, as Ran wrote in her journal on Day 45:

"... I think I had learn many in this class and I can understand what Ms. Kim says. So it means that Ms. Kim teach was in easier way so we all could understand so I could get award for SLEP. So I will try my best to learning a English and I would never forget this computer class."

One important issue concerning the instructional effectiveness was the relative amount of Korean and English used. The transcripts of the SA training sessions indicate that about sixty percent of the classroom interaction occurred in the participants' L1, Korean. One might argue that too much L1 was used in the L2 learning classroom. The appropriate ratio of L1 to L2 should be determined by the bilingual classroom teachers, who can judge based on many factors such as their students' level of L2 proficiency, learning tasks, objectives, and context. The researcher's concern was focused on achieving the training goal within the given time constraint.

Using positive reinforcement as a teaching strategy could be an important factor. As suggested in other metacognitive training research (Haller, et al., 1988), the present study adopted positive reinforcement. A behavioral checklist
was used to encourage on-task and discourage off-task behaviors by adding or deducting points on an individual basis. From the latter part of SR training, points for the group were also given to facilitate cooperative behaviors among the students. Occasionally, material rewards, such as stamps or stationary, were given based on the cumulative points each student earned (see Appendix L for details from the researcher's journal on Days 20 & 23). Parents' support also played a very important role of positive reinforcement. The teacher occasionally called the parents to inform them of their child's progress. The students usually tried harder to do well in the class after the calls. One of the examples can be seen in Mi's journal on Day 23, "...I will make my mother happy and my father happy, so I can have my computer and I can learn more about it..." Her parents promised to buy a computer for her if she did well in the class, which served as a great incentive for Mi.

Building the students' knowledge in English vocabulary as a component of the SR training might have helped the students apply the ACD method efficiently. During the SR training, the researcher noticed that the ESL students had very limited knowledge in English vocabulary; therefore, their attempts to "add" or "change" did little to help in improving revision qualities. A handout (listed 140 words including 90 verbs, 50 adjectives, and 50 adverbs) was distributed for them to study at home, as Harris and Graham (1985) suggested that expanding vocabulary, in addition to the self-regulation strategy training, helped learning disabled students improve writing skills. During the first ten minutes of the 6th -9th sessions for the SR training, the students made sentences using the new vocabulary. The activity was set up in a game format. For example, each student had to make a sentence within a time limit to obtain
points. At the end of the activity, the student who got the highest number of points won the game of the day.

Finally, there were individual reasons for the improvement made by the students. For Hun, Ja, and Ran, the relatively rich knowledge of English vocabulary and idiomatic expression they possessed prior to the training could have contributed to their efficient use of the SQ and SR strategies. Efficient use seems to be related to the writers' information stored in long-term memory, which can be retrieved whenever needed during the writing process. According to the results of MAT6 (see Table 3) and classroom interaction, the three students seemed to have more information available than Mi and Suk. Does this then imply that the metacognitive strategies training are most beneficial to the students who are more proficient than those who are less proficient in English? It is difficult to address the issue from the results of this study because all participants made a similar degree of progress regardless of their English proficiency, and many other factors were uncontrolled to clearly differentiate the effect.

For Mi and Ran, their attitude was one of the important factors which affected their performance. Ran was the most serious student who tried hard during the class. She was the student who responded most earnestly to the teacher's suggestion and practiced at home making sentences using the new words listed in the handout distributed during the SR training. She often made 20-30 sentences as homework and brought them to class to obtain extra points for her behavior checklist. On the other hand, Mi had an unstable attitude. When she was motivated, she did a fine job of writing and revising stories. However, she became emotional easily and her performance was inconsistent. She once
even mentioned that she would make her second draft worse than the first draft because she was not in a good mood (selected entries from Mi's journal in Appendix O reveal some of her emotional changes).

Suk had the least English proficiency among the participants and did not have confidence in his English learning ability. He sometimes said or wrote in his journal that he was not good at English. To make matters worse, his teachers did not expect him to write anything. When the researcher interviewed his regular classroom teacher, her first response was, "Is he in your writing class? What can he write?" As a matter of fact, he did no writing assignments outside of this class during the intensive period of the project, which lasted about nine weeks. The other four students wrote at least two to four book reports and a couple of stories. As compared to the other students, Suk's slow progress in writing skills might have been partly due to his lack of writing practice caused by his low self-confidence and lack of expectation from other teachers.

Measurement of Writing Processes

The present study measured metacognitive, writing, and revision skills during the writing process. In this section, the strengths and weaknesses of the measurement will be discussed.

Metacognitive skills

Three issues for both possible strengths and major weaknesses will be addressed in this section. One issue is related to the possible strength of verbal
data collected from multiple sources in this study. Metacognitive skills are impossible to measure directly. Therefore, many writing researchers depended on a variety of data from which to infer writers' metacognitive skills. Direct observation (Calkins, 1980; Graves, 1983; Matsuhashi, 1981), the taping of think-aloud protocols (Emig, 1971; Flower & Hayes, 1981), retrospective interviews (Langer, 1986; Sommers, 1980), and process log questionnaires (Langer, 1986) were some of the methods used for data collection. In general, one method was exclusively used for each study. This study employed direct observation, the taping of think-aloud protocols, and retrospective interviews because each method has weaknesses which can be partially alleviated by the others (some of the weaknesses will be discussed below). Besides the three major sources, journal writings and the tapes of classroom interaction were also used as contextual cues to enhance the accuracy of inferring the metacognitive skills from verbal reports.

A second issue is relevant to the protocols collected in L1 and L2. It is very likely that weak verbal facility in children, particularly using the L2, could mask cognitive strategic strengths. This could have been minimized by encouraging the ESL learners to use the language they were comfortable with throughout the project, as suggested in ESL research (Edelsky, 1982; Halsall, 1987). Since bilingualism was allowed, the ESL students tended to express well their thoughts, regardless of their L2 fluency.

The attempt to quantify protocol data seems to be a third possible strength. The most difficult task for measurement was to quantify metacognitive skills because little research has attempted to define operationally and quantify them. The majority of metacognitive research tended to be limited to nominal
measurement by focusing on qualitative descriptions of categorized data (O’Malley, Chamot, Stewner-Manzanares, Kupper, & Russo, 1985a). This study preceded further from categorization to quantification of metacognitive skills by calculating the mean percent of each category, as used in Langer (1986).

However, the number reflected only quantity and did not represent quality of the category, which might be related to the first weakness of measurement. No quality rating given to the protocol segments could be one reason for the low correlations between metacognitive skills and writing skills found in individual differences. It is worth noting the difference between Suk and Mi in the quality of their writing (see Table 6), despite the fact that both were at the same low level of metacognitive skills (see Tables 4 & 5). For example, there were two protocol segments: “I don’t know how to spell ‘object’” by Suk and “I didn’t write about what happened to him,” by Mi. In relation to writing quality, Mi’s protocol segment led her to add more ideas to her first draft and in turn resulted in quality improvement of that draft, whereas Suk’s protocol did not. However, this study counted the two protocol segments equally as awareness and gave them no relative weightings for different qualities. As ratings for writing skills reflect quality, it may be necessary to develop further an ordinal measure, such as ranking the metacognitive comments according to their quality, if a clearer understanding of the relationship between the two skills is desired.

A second major weakness can be due to the attributions of the measuring methods themselves. Think-aloud, a source for inferring metacognitive skills, turned out to be difficult for the ESL students. Although they had the pretraining, particularly for thinking aloud, they still had difficulty in
differentiating content generation of their stories and cognitive process. They tended to talk more about what they were actually doing or they revealed their thinking in the form of dialogues such as questions rather than descriptive sentences. As discussed briefly in the previous chapter, the direct questions asked by the students might not have been categorized as metacognitive awareness. However, when they were prompted to answer why they asked the questions, they explained that it was because they did not know or because they wanted to change. Given the difficulty of the think-aloud task, the coders decided to categorize most of the questions as awareness.

Retrospective report based on probing questions was another major source of inferring metacognitive skills. It was less time-consuming than think-aloud protocols for the researcher to sort out the data, since it used information directly related to the students' revision activities. However, the students sometimes reported more than they actually knew or did. They tended to say what they perceived they should do, or what the researcher might want to hear, by imitating some of the terms used during the metacognitive training.

A third weakness of measuring metacognitive skills from verbal reports seemed to occur due to the personality of one student. Suk was rather reserved and talked less than the other four students. In the beginning of the project, the researcher thought that Suk's limited English proficiency hindered him from verbalization. Thus, she encouraged him to use the L1 as much as he wanted. Although his increased L1 usage helped in his verbalization of thoughts, the heavy dependency on verbal reports for measurement might be one reason for Suk's low level metacognitive skills.
Writing skills

Writing skills were measured in terms of both holistic and analytic scoring evaluation. Most writing research has adopted only one of the two methods. The holistic scoring system in this study judged the overall quality of writing, which seemed to be the most valid in measuring the total ability to communicate in ESL writing. The positive relationship between metacognitive skills and holistic scores of writing found in this study also suggest that the holistic scoring system is valid in measuring the effects of metacognitive training on overall writing quality (see Tables 8 & 9).

The analytic scoring system in this study was useful to address how much the semantic aspect of writing quality improved, as a result of metacognitive training focused on that aspect. Interesting in this regard is that the improvements made in the subcategories of "content" and "organization" were larger than those in the subcategories of "syntactic" or "mechanics," after the training (see Table 12 in Appendix N). This may suggest that the analytic scoring system is valid in measuring different traits of writing. However, no total average score of the analytic scoring was obtained. Instead, the holistic score was used as the total score for writing skills because of the weakness inherent in calculating the total quality score from different aspects of writing. Writing researchers have argued that content and organization aspects deserve heavier weights than other aspects of writing (Hall, 1988). However, a total score derived from the sum of subscores representing all aspects of writing gave no priority for semantic aspects.

The 9-point scale used by the raters for scoring is a second major strength of the present study. A scale with 5-7 points has been commonly used in the
writing research community (Cranston, 1986; Fitzgerald & Markham, 1987; Scardamalia & Bereiter, 1983). This scale with more points was useful in clarifying the small difference among individual students by forcing the raters to make more discriminating judgments than those required for the scale with fewer points. For the same reason, this scale was also sensitive to the detection of the ESL students' small progress. Beyond the two metacognitive strategies training, the 9-point scale for the measurement of writing skills might also explain some of the significant improvements made from one assessment to the next.

A third issue, which could be a strength for training purposes but a weakness for assessing purposes, is related to another scale used by the students as a self-evaluation checklist during the SA and SR training. The scale for the SR training was extended to 10 points from the 5 points used for the SA training. Although the scales were not used for assessments, they apparently affected students' motivation level. From Assessment II to Assessment III, their highest goal for a story changed from the criterion score 5 to 10. Regardless of the fact that the absolute values remained the same in each scale, it is difficult to claim the discrepancy between Assessment II and III as the result of the SR training only. Change of the scale to one with higher values during the SR training might be another critical factor which contributed to the growth in writing skills.

Revision skills

One weakness in measuring revision skills can be attributed to the difficulty of revealing cognitive revisions, which might be one major reason for
no significant improvement in revision skills after the SA or SR training. The measures for revision skills did not include the mental revisions, which left no trace on the surface features of text. Although the present study made an attempt to measure changes during the cognitive process, it was impossible to uncover all the mental revisions if the students did not describe them verbally.

A second major weakness might be the score given to the revisions at the paragraph level (see Appendix H). The revisions in the category of “paragraph” were difficult to fit in any category because they were often combinations of “syntactic,” “semantics,” “spelling,” and “mechanics.” The category system, revised from Cranston (1986), appeared to be useful especially after the SA and SR training because many revisions fell into this “paragraph” category. However, one flaw was that the revisions made in this “paragraph” category counted as a group and were assigned a score the same way as those given for the other revision categories. For example, Ja added 3 paragraphs and corrected 3 grammatical errors for a revision task. Since each revision was better than the original, it earned 2 points for the quality rating (see Appendix H). So Ja obtained a total of 6 points for both categories of paragraph and grammar. Although the total score for each category was the same, adding 3 paragraphs helped greatly to improve her holistic writing quality, whereas the grammatical revisions did not. If the changes categorized as “paragraph” had been given a heavier weight when scoring, the results might have shown some improvement in revision skills. After the SA and SR training, the students added or changed between 7-32 sentences or between 1-5 paragraphs. This was a remarkable increase, as compared to 1-4 sentences before the training. In three studies (Brett, et al., 1983; Daiute & Kruidenier, 1985; Scardamalia & Bereiter, 1983),
attempts were made to measure the quality and the quantity of revision. However, little research has addressed the issue of weighted quality evaluation for revisions which occur at the paragraph level.

A third weakness seems to be the attempt to combine quantity and quality measurement together. For example, there were "0" scores in the categories of Suk's revision skills. This number "0" was misleading. Separation of quantity and quality might have helped for clarification of the issues of how many and how well each student made revisions.

Motivation

There was unexpected significant improvement after the 2-week interim. It was a somewhat surprising result because previous studies, which measured the maintenance effects of training, usually tended to show a slight decline in students' performance after a certain period (Harris & Graham, 1984). The most critical factor for improvement after the interim appeared to be motivation. This section will discuss the reasons why the students were motivated greatly during Assessment IV.

The two-week interim was a major reason. The two-week period was not long enough to fade the learned skills, as Mi wrote in her journal on Day 42, "...I'm glad I didn't forget how to write the story." Besides, the students "missed story writing (Ja's comment during the classroom interaction)" after the two-week interim without any writing activities (see Appendix M for more evidence from student journals on Days 42-45).

Topics for the writing assignment is a second major reason. The students
usually were given a topic that was parallel to previous topics, but they insisted on choosing a scary topic entitled, "Middle of the Night," for the final OS. Writing researchers suggest that helping children choose their own topics is an excellent way of motivating them to write better by allowing them have sense of control toward their own writing tasks (Grave, 1983). The researcher was concerned about the degree of equivalence among the choices of writing assignments, but she did not suspect that the only student choice would make a big difference since the topic was in the same book as those for other stories (Schwartz, 1976). The students' enthusiasm was, however, unexpectedly great: e.g., Ja's journal on Day 44, "I made a story. It was real scary. My hands were trembling. How stupid. I wrote a story by my self and scare of it. What a pity author...." The topics for three other stories (OS7, RS7, and RS8) were also found to be interesting for the students. It was difficult to tell whether the students were motivated first, then liked the topics, or vice versa. Nonetheless, it was very impressive to see how deeply the students concentrated on writing, without regard for the chaos in the computer laboratory, caused by students and teachers in the process of relocating the laboratory facilities for the coming school year (see Appendix L for details in the researcher's journal on Day 45).

The variety of computer learning activities during the interim was a third reason. The students experienced simulation, programming language, graphics, and educational games. This experience might have possibly stimulated the students' creativity and increased their English vocabulary through reading the instructions on the programs. In particular, Suk beat the other students in educational games several times and this might have helped to enhance his self-esteem. Interesting in this regard is that the enhanced self-esteem through the computer tasks seemed to motivate Suk to work harder in the writing tasks, as
shown in his think-aloud protocols during the writing process.

Expectation of award and reward was a fourth reason. According to the schedule, the students would be graduating from the school and from this dissertation project, right after Assessment IV. Ran expected to receive an award from the school because she was elected as an honor student for the SLEP class. All the students expected rewards from this class for their participation and on-task efforts.

Finally, audience awareness was a major reason. The students were told that copies of their written works would be sent to their teachers and parents. They were also informed that someday in the future some of their stories would be published in a book. They were very proud of themselves and wanted to do their best for the final writing assignments.
CHAPTER VI.
LIMITATIONS AND RECOMMENDATIONS

Limitations of the Study

The results of this study should be considered in light of limitations which may have influenced the results. First, there was only one L1 within the group. This imposes limitations on the degree to which generalization is possible to ESL groups with many different first languages.

Second, there were only five participating students. The class size was a little big for the researcher to teach, observe, and collect the necessary data simultaneously. On occasion, the researcher had to rely on tape-recordings and memory, then took notes on the students' writing behaviors and questions after the class. However, the size of the class was too small to claim that the findings in this study can be generalized even to other ESL groups whose L1 is Korean. In particular, statistical results should be interpreted with caution due to the number of students participating and the nature of data collected.

Third, this study focused on semantic revisions. As most writing researchers recommend that editing should be postponed until the end of the composing process (Krashen, 1984), this study focused on only semantic aspects of writing. When the young ESL students asked for the spelling of a certain word during the process of developing their first drafts of OS, the researcher explicitly advised them not to worry about spelling at that time. However, the students were not given time to revise at a proofreading level. Therefore, this
study was designed to limit the L2 students' writing revisions to the semantic level.

Fourth, the time spent for writing and revising differed from one assessment to another. For Assessment I, the students did not make full use of the time allotted because they did not know what and how to revise. For Assessments III and IV, most of the students asked for more time to write or revise. If a strict time-limit was administered, the results might have changed.

Fifth, the SR training was actually a combination of teaching the SA and SR strategies. Due to the nature of the SR procedure (improving a weakness was possible only after identifying it), it was difficult to make the SR strategy independent of the SA training. Consequently, the effects of the SR training were confounded. Results after the SR training may have been accounted for partially by the effects of the SA training.

Sixth, narrative writing was the only genre studied. The role of metacognitive skills in other styles of writing such as expressive writing and poetry were not explored.

A final limitation to the generalizability of the study was due to the dual role of investigator and teacher played by the researcher. Although she attempted to make the dual roles independent as much as possible by using audio/video-tape recorders and employing independent coders and raters for analyses of the data collected, the results might have been different if a teacher, who did not know the intentions of the researcher, conducted the training sessions.
Recommendations for Further Research

Though the results obtained in this study are generally positive, there are a large number of important issues that require resolution. First, a long-term follow-up assessment is needed. This study focused almost exclusively on immediate assessment of the effects of training. The only follow-up was administered 2 weeks after the completion of training. Although the results from the assessment indicate that the ESL students continue to be positively influenced by the training strategies, an assessment after a longer interval could be useful to determine the degree of skill maintenance over time.

Second, this study needs to be extended to more typical ESL classrooms to address the issue related to generalization of the effects across settings and other L1 users. The majority of ESL classes consist of L2 learners whose L1s are diverse. Prior to collecting think-aloud protocols or training metacognitive strategies in ESL classes with diverse L1s, teacher’s modeling that is easy to follow with simple English words might be needed much more than in an ESL class with the same L1. It seems also necessary to develop a means of getting messages across without relying on the language, such as using pictures or gestures understood commonly by L2 students.

Third, the genre for writing could be extended to expressive writing or poetry. This study focused solely on narrative writing. Extension to other genres is necessary to address generalization of the effects across writing tasks. The 5W1H questions in the SQ then need revision in order to fit them into the appropriate structures of such genres.

Fourth, this study could include transfer measures to assess what general
improvement followed the metacognitive training. Transfer tests could consist of reading comprehension tasks that demand similar underlying cognitive processes to those in the training, but vary in surface structure. In particular, the researcher speculates that the participants' ability to comprehend narrative writing could be improved as a result of story grammar structure taught in the SQ procedure.

Fifth, categories for metacognitive skills in writing could be extended to cover reader awareness. The present study adopted a revised version of Langer's system (1986, p. 175). Audience awareness appeared to be a factor that influenced the students' attitude toward writing tasks after the metacognitive training.

Finally, it was almost impossible to disentangle the SQ and SR strategies for training purposes. However, separate measures of SQ and SR strategies seem possible for the purpose of assessing two aspects of metacognitive skills. For example, to measure only the SQ strategy of the students, a researcher might have student writers find weak areas in a given text. On the other hand, having them only fix a portion of text which has errors or weaknesses in writing underlined can be used to measure only the SR strategy. Continuous effort to specify further the functions of metacognitive skills seems important to the development of metacognitive theory during the revising process.

Recommendations for Practice

The main goal of training the metacognitive strategies was to improve writing skills. As a suggestion to L2 teachers, it is recommended that L2 writers
as well as L1 writers be taught to think originally and logically in the writing process. Considering that expert writers frequently reflect their thoughts and revise their writing in view of certain goals, it might be helpful if L2 writers learn to focus their primary attention on the global aspects of writing. To maximize the utilization of L2 writers' own metacognitive skills, it is important to insure that the L2 writers are allowed to think or be trained in the language they are comfortable with. The ESL students in this study were encouraged to think in L1 if they had to. [It is the author's judgment that this was one important reason for their noticeable improvement in the semantic aspects of writing after the completion of 3 days of SA and 9 days of SR training.]

L2 writers must be helped to understand the origin of their difficulties. They are using a language that they have not yet mastered. L2 teachers and learners should not view L2 difficulties or errors as an intellectual deficiency. They should be aware that problems should decrease over time as L2 learners gain more control over the L2. Therefore, L2 teachers should consider the mistakes an integral part of growth in L2 writing and encourage L2 learners to express their ideas through written language and help them to learn positive attitudes toward L2 writing. This suggestion may appear to be a common sense to most L2 teachers. However, how many L2 teachers in practice can ignore grammatical errors and focus only on semantic aspects of L2 writing? Most L2 teachers, with good intentions of helping, try to correct all the errors made by L2 students. However, they are little aware of the fact that they unintentionally discourage L2 writing. It seems beneficial for L2 learners, even at the beginning level, to learn the language through writing that is meaningful to them, since writing requires high cognitive demands which might help facilitate the L2
acquisition process.

Given the difficulty of writing in L2, the most important aspect is to teach L2 writing as an L2 learning process as follows: (1) Encourage L2 students to write rough drafts; (2) empower them to focus on content that deals with ideas and help them free their minds of concerns about correcting grammatical and surface errors. Once the first draft is on paper, the door is open for learning metacognitive skills to make self-improvements; (3) model clearly the thinking process as to what and why revisions are necessary; (4) encourage students to perform alone and insure that they express their difficulties freely so that teachers can assist them with the skills they are lacking in the process; (5) take assistance away gradually as students progress toward independent performance; and (6) incorporate positive reinforcement into the training process.

Most of all, the real advantages of metacognitive training in this study appeared to be the clear expectations the ESL students had about their final written products and the emphasis on internalization and independent performance of the learned SQ and SR strategies. In other words, the students could witness their own progress by comparing their drafts with the model stories. They gained confidence in the revising process through the successful experience of joint construction of the second and third model stories. They were encouraged to use the metacognitive strategies independently by taking away the support from the teacher and peers gradually.

Using the computer as a writing tool was a great positive reinforcement for the students in this study. One issue writing teachers and researchers should be attentive to is that computer technology cannot automatically lead novice
writers to become expert writers. There is a variety of word-processing software accompanied with modules designed to help writers throughout the process. To maximize the effect of a computer program on improving writing skills, careful planning and explicit instruction by teachers are needed. Careful planning is needed regarding when and how to present the program and when to stop using it in order to measure independent performance. Explicit instruction as to why and how to internalize the computer-prompts is essential for enhancing metacognition as well as writing skills. However, teachers must be aware that most computer programs are limited in terms of their ability to respond to student needs. If writing teachers are sensitive to helping students during their cognitive process, the word-processing itself can be an excellent medium for L2 writing and instruction.

In order to reduce the negative impact of the transfer from the L1 and maximize benefits of the metacognitive training, L2 teachers should consider starting metacognitive training as early as possible. The positive results of this study suggest that ESL children, as early as fifth graders, could benefit from metacognitive training.

An important question relevant to metacognitive training is whether the SA and SR training should be separated or integrated. The statistical results of this study indicate that both metacognitive awareness and regulation were improved as a result of either the SA or SR training. Process evidence suggests that separation of the SA and SR training was beneficial for the young ESL students. The SR training in this study was much less difficult than the SA due to the prior knowledge and skills the students obtained through the SA training. Breaking the metacognitive training into the SA and SR made them easier for
younger students to learn by allowing for more accurate assessment and for practice of the skills students are lacking (see Appendix M for evidence from students' journals on Days 18 - 27).

Individual differences and motivations discussed in the previous section suggest that L2 writing instruction could be most effective when it is accompanied by techniques that motivate individual students to participate actively in their own language learning process.
Appendix A. Daily Schedules
(Starting the second period of Pretraining)

Phase: Pre-TRAINING <second period> (sessions 1-6)

<table>
<thead>
<tr>
<th>Session (Date)</th>
<th>Topic - Activity &amp; [Data to be collected]</th>
<th>Instrument</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (4/3)</td>
<td><strong>Word-processing skills</strong></td>
<td>Apple IIe computer</td>
<td>Milliken Word Processor</td>
</tr>
<tr>
<td></td>
<td>- Skills relevant to Writing</td>
<td></td>
<td>Writing prompts</td>
</tr>
<tr>
<td></td>
<td>- centering, indenting, spacing</td>
<td></td>
<td>Printer</td>
</tr>
<tr>
<td></td>
<td>- fingering, function keys</td>
<td></td>
<td>Audio &amp; Video</td>
</tr>
<tr>
<td></td>
<td>[Interaction]</td>
<td></td>
<td>Tape-recorders</td>
</tr>
<tr>
<td></td>
<td>[free writing]</td>
<td></td>
<td>Memos</td>
</tr>
<tr>
<td>2 (4/4)</td>
<td><strong>Word-processing skills</strong></td>
<td>Same as above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Skills relevant to Revisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- insert, delete</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[Interaction]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[free writing]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 (4/5)</td>
<td><strong>Word-processing skills</strong></td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review the procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- insert, delete</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- save, retrieve, &amp; print a file</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[Interaction]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[free writing]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 (4/6)</td>
<td><strong>Practice in think-aloud</strong></td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Nonverbal &amp; inferential</td>
<td>Pictures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Observe model &amp; practice</td>
<td>Scrabble</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[see Appendix B]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[Think-aloud]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[Interaction] [free writing]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Practice in verbal interaction 
(similar to think-aloud)
- plan a paragraph using sentence sample sentences

[see Appendix B]

[Think-aloud]
[Interaction] [free writing]

Practice in think-aloud
- ask to plan a short story in response to a picture

[see Appendix B]

[Think-aloud]
[Interaction] [free writing]

Phase: ASSESSMENT I (sessions 7-10)

Assess baseline performance
- Writing Own Story (OS) 1

Prewriting prompts
(Schwartz, 1976, p.26)

[Experimenter questions after revision]
[Interaction] [free writing]

Assess baseline performance
- Revising OS1
- Revising Researcher-generated Story (RS1)

[Individual interview based on probes]
[see Appendix C]
[Interaction] [free writing]

Assess baseline performance
- Writing Own Story (OS) 2

Prewriting prompts
(Schwartz, 1976, p.27)

[Experimenter questions after revision]
[Interaction] [free writing]
10 Assessment baseline performance  "
(4/14)  -Revising RS2
         -Revising OS2

[Individual interview based on probes]
[see Appendix C]
[Interaction] [free writing]

Phase: SA TRAINING (sessions 11-13)

11 Training Self-Questioning  "
(4/17)  -Goal & usefulness
         - Model
         - Verbal rehearsal
         - Evaluation & Feedback

[Interaction] [free writing]
[Evaluation of individual performance]

12 Training Self-Questioning(SQ)  "
(4/18)  -Practice SQ in writing revisions

writing samples

[Interaction] [free writing]
[Evaluation of individual performance]

13 Training Self-Questioning(SQ)
(4/20)  -Practice SQ in writing revisions  "

[Interaction] [free writing]
[Evaluation of individual performance]

Assuming individual performance reaches the criterion level in terms of training effectiveness
(otherwise, more sessions will be used for practicing SQ)
### Phase: ASSESSMENT II (sessions 14-17)

<table>
<thead>
<tr>
<th>Date</th>
<th>Session Details</th>
</tr>
</thead>
</table>
| 14 (4/21) | Assessment II - Writing Own Story (OS) 3  
Prewriting prompts  
(Schwartz, 1976, p.28)  
[Experimenter questions after revision]  
[Interaction] [free writing] |
| 15 (4/24) | Assessment II  
- Revising OS3  
- Revising RS3  
[Individual interview based on probes]  
[see Appendix C]  
[Interaction] [free writing] |
| 16 (4/25) | Assessment II  
- Writing Own Story (OS) 4  
Prewriting prompts  
(Schwartz, 1976, p.29)  
[Experimenter questions after revision]  
[Interaction] [free writing] |
| 17 (4/26) | Assessment II  
- Revising RS4  
- Revising OS4  
[Individual interview based on probes]  
[see Appendix C]  
[Interaction] [free writing] |

### Phase: SR TRAINING (sessions 18-27)

<table>
<thead>
<tr>
<th>Date</th>
<th>Session Details</th>
</tr>
</thead>
</table>
| 18 (4/27) | Training Self-Regulation of revisions  
- Goal & usefulness  
- Model  
- Verbal rehearsal  
- Evaluation & Feedback  
[Interaction] [free writing]  
[Evaluation of individual performance]  
Handout of procedures |
Assuming individual performance reaches the criterion level in terms of training effectiveness (otherwise, more sessions will be used for practicing SR)

Phase: ASSESSMENT III (sessions 28-31)

28  | Assessment III  |
    | (5/11)  |
    | Writing Own Story (OS) 5 | Prewriting prompts
    | (Schwartz, 1976, p.30) |

29  | Assessment III  |
    | (5/12)  |
    | Revising OS5  |
    | Revising RS5  |

30  | Assessment III  |
    | (5/15)  |
    | Writing Own Story (OS) 6 | Prewriting prompts
    | (Schwartz, 1976, p.31) |
31 Assessment III
(5/16)  - Revising RS6
  - Revising OS6

    [Individual interview based on probes]
    [see Appendix C]
    [Interaction] [free writing]

Phase: No-TRAINING (sessions 32-41)

32-40 Interim: Computer Literacy
(5/17 - 5/30)
  - Graphic, LOGO programming
  - Simulation, Educational games

    [free writing]

41 Review of SQ & SR strategies
(5/31)
  - Review SQ strategy
  - Review SR strategy

    [Interaction] [free writing]

Phase: ASSESSMENT IV (sessions 42-45)

42 Assessment IV
(6/1)  - Writing Own Story (OS) 7

    Prewriting prompts
    (Schwartz, 1976, p.32)

    [Experimenter questions after revision]
    [Interaction] [free writing]

43 Assessment IV
(6/2)  - Revising OS7
  - Revising RS7

    [Individual interview based on probes]
    [see Appendix C]
    [Interaction] [free writing]
Prewriting prompts
(Schwartz, 1976, p.33)

[Interaction] [free writing]

Assessment IV
- Writing Own Story (OS) 8

Revising RS8
Revising OS8

[Individual interview based on probes]
[see Appendix C]
[Interaction] [free writing]
Appendix B. Interview Questions

**Parent Interviews**
(Langer, 1986, p.150-151)

* Korean (L1) translation was used.

[8 questions each for Korean (L1) and English (L2) literacy]

These questions fall into six question categories:

1. how successful was the child as a reader / writer - and what he / she finds hard or easy about it,
2. what it takes to be a good reader / writer,
3. how the child feels about reading and writing and what is best / least liked about each, and
4. what the child tends to read / write at home.

The remaining two areas provided a parent view of literacy:

5. how the parent thought reading and writing ought to be taught at that child's grade level, and
6. how the parent helped the child to read and write.

**Teacher (Student) Interviews.**
(Langer, 1986, p.150-151; Cohen, 1987, p.68)

8 questions that focused on general issues, and 8 questions that focused on the teachers' (students') perceptions of their individual students.

Questions on the general schedule will be divided into four areas:

1. what it took to be a good reader / writer,
2. how reading / writing was best taught at that grade level,
3. how that teacher (student) helped students (herself or himself) read / write better, and
4. what the teacher (student) thought students, in general, found easiest or hardest about reading and writing.
Questions on the child-focused schedule will deal with two areas:

(1) the teacher's (student) perceptions of whether or not each child (herself or himself) liked to read or write (what and why), and
(2) how the teacher (student) rated each child (herself or himself) as a reader and writer and how those judgments were made.
Appendix C. Think Aloud Training

Teach Children to Think Aloud
(adapted from Bereiter & Scardamalia, 1987, pp.325 - 330)

[session 4]

1. Give Students Something Concrete to Talk About.

   (a) nonverbal activity - drawing a picture, moving things, underlining, searching, etc.
   (b) Model think-aloud & then have each student practice think-aloud while the rest of students do the nonverbal activity based on the verbal description of the student who is practicing think-aloud.

< Tips >

   (a) Attend to nonverbal cues and use them as points for discussion (e.g., eye shift, change in rate, discouraged look, satisfied look, long pause)
   (b) Encourage ESL students to use either L1 or L2.
   (c) Enlist the student's help in getting the researcher to understand (e.g., Ask student to fill in gaps: "You've lost me here. How did you get from thinking about X to thinking about Y? Did I miss something?" Ask student to restate more slowly, Confess incomprehension: "I just don't get it. If this is so hard that you can't do it, then how did you know to write down what you've written so far?" Check distortions: "I think I got something wrong here." (By getting a chance to correct misstatements children not only clarify what they said originally, but they begin to feel free about correcting the adult and consequently may begin to do so when the adult isn't aware of a need to be corrected.)

[session 5]

2. Arrange a Series of Tasks in an Order of Increasing Complexity.

   (a) a sequence that involved planning a paragraph that would incorporate two given sentences (Paris, Scardamalia & Bereiter,
1982): e.g., the two sentences contained common topical words; and, the two sentences did not directly suggest a common topic at all, so that the student had to invent a unifying theme.

(session 6)

3. Turn the Task the Child Must Work on into a Discrimination or Comparison Task.

- Rather than requiring students to describe the strategies they use to solve a task, ask them to evaluate some strategy that you propose or demonstrate.

- Three different presentation formats (Each assumes that the child has worked previously on the task and therefore has something with which to compare the researcher's procedure.)

(a) the most straightforward. Simply think aloud while I do the precise task the child was just asked to do. Then ask the child if what you did was anything like what he or she did.

(b) lead students through the execution of a different strategy themselves and then have them compare it to what they normally do. This only works, of course, with procedures that are straightforward enough that one can coach students in carrying them out. But a variety of important cognitive strategies are of this kind (Brown, 1978; Paris, Newman, & McVey, 1982).

(c) easiest for the child, requires the most work on the part of the researcher. The researcher identifies cognitive procedures that the child appears to be using and puts these in a list along with other procedures that the child does not appear to use. Some of these other procedures reflect less mature strategies, some of them more mature strategies than the child appears to employ (Paris & Myers, 1981).
Appendix D. Probes to Assess Metacognitive Skills on Writing Revisions
[adapted from Fitzgerald & Markham (1987), p. 9]

(1) "Is there anything that could or should be changed in this story?"
If the student says "No," repeat the question one more time. If the response is still negative, ask another question, e.g., "Is there any part that you want to add (delete) to make the story better?" If the response is negative twice, the interview will be ended.

If the response is "Yes," the student will be asked to show the part or parts that could be changed. The indicated part will be identified by a number on a copy of the story while the interviewer says the number aloud and read accompanying information from the text so that it will be recorded in the transcription. If the indicated spot is unclear, the interviewer will prompt the student until the interviewer understand what is being indicated. Then for each spot indicated, the interviewer will ask,

(2) "Why do you think this could or should be changed?"
Prompts will be "What do you want me, the person reading it, to know or feel here by making that change?" or "What are you trying to tell me here at this point by making this change?"

(3) Next, "How could or should it be changed?"

The questions 1 and 2 are probes to assess metacognitive awareness on revision. The question 3 is probe to assess metacognitive regulation on revision. After the student has fully responded regarding the first indicated change, the interviewer will ask, "Is there anything else in the story you think could or should be changed?" If the student says "Yes," the interview procedure will be repeated until the student indicates that there are no more desired changes. If the student says "No," the interview will end.
Appendix E. Model Stories
(Note - Model 1 was first used until the SA training, then Model 2 and 3 were added to use during the SR training)

<Model 1 (Wall & Taylor, 1982, p.16)>
- Criterion score: 3

The Foolish Fish

Once there was a big gray fish named Albert. He lived in a big icy pond near the edge of a forest.

One day, Albert was swimming around the pond. Then he spotted a big juicy worm on the top of the water.

Albert knew how delicious worms tasted. He wanted to eat that one for his dinner. So he swam very close to the worm. Then he bit into him.

Suddenly, Albert was pulled through the water into a boat. He had been caught by a fisherman. Albert felt sad. He wished he had been more careful.

<Model 2 (Collaborative work by the participants)>
- Criterion score: 6 (added during the SR training)

The Foolish Fish

Once upon a time there was a big gray fish named Albert. Other fish called him Al for short. Al was always greedy for food. He lived in a big icy pond near the edge of a forest.

One cold Sunday evening, Al was swimming around the pond with his friend. Then Al spotted a big, fat, and juicy worm on the top of the light blue water.

Al knew how delicious worms tasted. He wanted to eat that one for his dinner before his friend could notice. So, quietly but very quickly, he swam very close to the worm. Then he bit the worm with his big mouth like an alligator. Suddenly, poor Al was pulled through the cold water into a huge boat. While he was being pulled up, he saw a sign saying, "Let's Go Fishing." He had been caught by a fisherman.

Albert felt sad. He wished he had been more careful. But, it was too late to regret. He was in the hands of the fisherman.
The Greedy Fish

Once upon a time there was a big gray fish named Albert. Older fish called him Al for short and younger fish nicknamed him Fatty because of his weight. Al was always greedy for food. Usually one should eat to live, but Al only lived to eat.

Al lived in a big icy pond near the edge of a forest. Occasionally, a worm would accidentally fall into the pond and into Al's ready mouth. One cold Sunday evening, Al was swimming around the pond with his friend. Then Al spotted a big, fat, and juicy worm on the top of the light blue water. He was delighted and almost shouted, "Oh, there is a big worm to eat!" But he stopped shouting just in time. Greedy Al wanted the worm for only himself.

Al knew how delicious worms tasted. He wanted to eat that one for his dinner before his friend could notice. So, quietly but very quickly, he swam very close to the worm. By this time, Al was feeling very hungry. He was so intent upon eating the worm that he failed to see that the worm was hooked to a fishing line. He bit the worm with his big mouth like an alligator.

Suddenly, poor Al was pulled through the cold water into a huge boat. While he was being pulled up, he saw a sign saying, "Let's Go Fishing," and realized too late that it was only a bait to trap him. He had been caught by an old fisherman.

Albert felt sad. He wished he had been more careful. But, it was too late to regret. When the fisherman tried to take Al off the hook, he bit him so hard the fisherman yelled with pain. Al took the chance to escape. He hit the fisherman's arm with his tail and turned very fast to jump into the pond.

Next Al was inside his hole, surrounded with green and red weeds under deep water. Al's friend was taking care of him and explained, "You fainted when you fell from the fishing boat. So I had to take you here. You should be more careful. Don't be so greedy when you eat. There are many tricky fishermen around this pond."
Appendix F. Self-Evaluation
(Notes: Scales 6-10 were added during the SR training; this self-evaluation checklist was used only for training purposes; and no checklist or external prompts were used for the four assessment phases)

Author:
Title of Story: ______________________________

Date (1st) : ___/___/____ (use blue pen for graph)
Date (2nd) : ___/___/____ (use red pen for graph)
Date (3rd) : ___/___/____ (use black pen for graph)

10 |----|----|----|----|----|----|----|----|----|----|
9  |----|----|----|----|----|----|----|----|----|----|
8  |----|----|----|----|----|----|----|----|----|----|
7  |----|----|----|----|----|----|----|----|----|----|
6  |----|----|----|----|----|----|----|----|----|----|
5  |----|----|----|----|----|----|----|----|----|----|
4  |----|----|----|----|----|----|----|----|----|----|
3  |----|----|----|----|----|----|----|----|----|----|
2  |----|----|----|----|----|----|----|----|----|----|
1  |----|----|----|----|----|----|----|----|----|----|
0  |----|----|----|----|----|----|----|----|----|----|

Q.1 Q.2 Q.3 Q.4 Q.5 Q.6 B O L

<Questions>

Q.1 When and Where did the story take place?
Q.2 Who was the main character(s)?
Q.3 What happened in the beginning?
Q.4 What was the goal of the main character(s)?
Q.5 What did the main character try to get the goal?
Q.6 How did it turn out at the end?

B: Does any part of the story Belong well with the rest?
O: Is the story in the best Order?
L: Is any part of the story too Long or too short?
Appendix G. Coding Manual for Metacognitive Skills

Part 1. Coding for Qualitative Analysis
(used for training Coders)

1. Protocols transcribed from think-aloud or retrospective report in writing are divided into distinguishable segments. Each segment is a separately identifiable remark that expresses an idea about a thought or behavior of writing revision. Each segment of protocol and the corresponding revision are labeled with the same identification number (see coding examples below).

2. Read each segment of protocol and the corresponding text revision.

3. Make a broad determination as to whether the protocol segment is awareness ("A") or regulation ("R"). In the beginning of the segment, write "A" if the segment describes one's own thinking or write "R" if the segment describes one's own behavior.

4. Decide which category each "A" or "R" segment belongs to, according to the following subcategories (adapted from Langer (1986, p. 175): 1 = task/topic goals; 2 = subgoals; 3 = genre/discourse structure; 4 = grammar; 5 = mechanics; 6 = vocabulary, and 7 = meaning.

Coding examples  (Italic font indicates translation from Korean):

[A1] - "The title was not matching with the contents."
   - "It was like my last story."

[A2] - "I didn't know how to start this part."
   - "I need more information to develop this paragraph."

[A3] - "Since this is a story, there must be a main character."

[A4] - "I don't know how to make the past tense of this verb."

[A5] - "It's hard to spell the word 'alien'."
   - "This sentence is too long."

[A6] - "I can't think of the word I want."
   - "I didn't know what this word meant."
[A7] - "This paragraph doesn't make sense to me."

[R1] - "I will write a story about an alien."

[R2] - "First I will tell what the setting is."
   - "I am going to write 'what try' part of the story."

[R3] - "I wanted to write how he escaped from the devil."

[R4] - "I need to say 'he was' instead of 'he is.'"

[R5] - "I should capitalize this letter."

[R6] - "I changed it because this is the better word than the other one."

[R7] - "I put more information to explain why she was sad."
   - "I need to write more to explain this part."

**Coding Examples for Metacognitive Skills and the Corresponding Revision**
(Examples were taken from Ran's Day 7 her own story entitled, "Rocket Away" & protocols - Original errors retained).

<table>
<thead>
<tr>
<th>Segment No.</th>
<th>Protocol</th>
<th>Text (Revising operation) [Revision type]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. [R6]...</td>
<td>crossed out &quot;He&quot; because I wanna write &quot;First&quot; first.</td>
<td>One night a boy named David dream a something special. (1. He - delete [Semantic])</td>
</tr>
<tr>
<td>2. [A6] I erased &quot;First&quot; again because I changed my mind.</td>
<td></td>
<td>(2. First - delete [Se]) He rode a Mushroom Rocket and went to space. Then snowball was coming forward to him. It was E.T.</td>
</tr>
<tr>
<td>3. [R6] I have to write &quot;David.&quot; If I write him then I talking about E.T.</td>
<td></td>
<td>He wanted play with (3. him - change [Se]) David. E.T. gave small star to breath in the space.</td>
</tr>
</tbody>
</table>
4. [R6] I used "Then" to make a new sentence.
4. Then (add [Sel]) David come out from Mushroom Rocket (5. and First -delete [Mechanic])

5. [A5] The sentence was too long.
they play tag, but when David tried to catch the E.T.

6. [A7] Just then...I wanna make ...uh...
..it's not make sense.
If I catch the E.T., so I put "then."
6. Then (add [Sel]) he was gone so David wanted play with Martian.

7. [R6] Instead of He, I wanna write David.
(7. H -change [Sel]) David found a girl Martian, her name was Betty. They went

8. [R4] I wanna finish the sentence.
to sun. (8. with - delete [Me]) David had star so

9. [R7] I want to write 'if he went to sun' first
(9. it was not hot -delete [Sel]) if he went to sun it's not hot but Betty will be hot when she went to sun so David broke the star half and gave it to Betty. When they reached sun they (10. back -change [Sp])

10. [R6] I made a mistake so I change to "baked"
baked the squid and some pies it was delicious. (11. When -delete [Sy])

11. [A6] I want to start the sentence with "David."
David tried to (12. eat -change [Sel])

12. [R6] "bake" was better.
bake more squid he woke up. It was 8:00. he late for school but he dreamed (13. very thought he don't need to eat breakfast. - change [Sel])

13. [A3] I had hard time here. I tried to finish the story nicely, but I don't know.
ate delicious food.
Part 2. Derivation of Scores for Quantitative Analysis
(used for training Raters)

Student I.D. No.: 
Title of Story:

1. Count the total number of segments: ________________

2. Count the number of occurrences of each category and write the number (#) below:

<table>
<thead>
<tr>
<th>Awareness</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td></td>
<td></td>
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<tr>
<td>A2</td>
<td></td>
<td></td>
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<td>A3</td>
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<td></td>
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<td>A4</td>
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<td>A5</td>
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<td>A6</td>
<td></td>
<td></td>
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<tr>
<td>A7</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulation</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td></td>
<td></td>
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<tr>
<td>R2</td>
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<td>R3</td>
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<td>R4</td>
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<td>R5</td>
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<td></td>
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<tr>
<td>R6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Calculate percent of each category (see e.g. below) & write the percent (%) above:

   e.g., The % of each category = $100 \times \frac{\text{The # of segments for the category}}{\text{The total # of segments}}$

4. Do procedures 1-3 for all four stories (2 sets of OS & RS) written for the same Assessment.

5. Calculate Mean percent (M%) for each category:
   Since four stories were written by each student per Assessment, the M% for each category could be obtained by dividing the total percent by 4.

   e.g., The M% of each category = $\frac{(\text{Addition of the % for the 4 stories})}{4}$
6. Write the M% of each category below:

Student I.D. No.: ____________ Assessment: ______________

<table>
<thead>
<tr>
<th>Awareness M%</th>
<th>Regulation M%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>R1</td>
</tr>
<tr>
<td>A2</td>
<td>R2</td>
</tr>
<tr>
<td>A3</td>
<td>R3</td>
</tr>
<tr>
<td>A4</td>
<td>R4</td>
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<tr>
<td>A5</td>
<td>R5</td>
</tr>
<tr>
<td>A6</td>
<td>R6</td>
</tr>
<tr>
<td>A7</td>
<td>R7</td>
</tr>
</tbody>
</table>
Appendix H. Scoring Guidelines for Revision Skills  
(adapted from Cranston, 1986, p. 182)

1. Categorize each revision by referring to the protocol to which it corresponds (see examples in Appendix G).

2. Write the identification number of each revision on the matrix for revision type provided below.

3. Count the total number for each revision type and quality level.

4. Multiply quality rating for each revision: e.g. Better than original x 2; same as original x 1; worse than original x -1.

Student I.D. No.:  
Title of Story:

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<thead>
<tr>
<th>Revision Type</th>
<th>Quality Level</th>
<th>Better</th>
<th>Same</th>
<th>Worse</th>
<th>Total</th>
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<tr>
<td>Syntax</td>
<td>Multiple word</td>
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<td></td>
<td>Single word</td>
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<td>Semantics</td>
<td>Single word</td>
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<td>Single word</td>
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<td>Punctuation</td>
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<td></td>
<td>Capitalization</td>
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<tr>
<td></td>
<td>Space</td>
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<tr>
<td>Mechanics</td>
<td>etc.</td>
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<tr>
<td>Paragraph</td>
<td>One sentence</td>
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<tr>
<td>Total</td>
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</tbody>
</table>
Appendix I. Scoring Guidelines For Holistic Quality of Writing  
(adapted from Cranston, 1986, pp. 154-158)

1. Read each story and make a broad determination as to whether it is "below average", "average", or "above average", based on its invention of structure and details. This determination is made quickly (within 5 seconds after reading of the story).

2. If possible, assign the actual rank (i.e., a rank of 1, 2, or 3 for "below average"; a rank of 4, 5, or 6 for "average"; a rank of 7, 8, or 9 for "above average") immediately upon determining whether the story is "below average," "average," or "above average."

3. If there is some doubt as to the actual rank a writing sample merits, consult the General Impression Criteria (see following page) that lists characteristics associated with each rank. Be sure that if a writing sample is rated "above average", for example, only the criteria associated with the scores of 7, 8, and 9 are read. Likewise, if a writing sample is rated "average", only the characteristics of scores 4, 5, and 6 should be read and "below average" writing samples should entail reading the characteristics associated with scores 1, 2, and 3.

4. Once the criteria associated with the appropriate general rank ("below average", "average", "above average") have been read, the rater makes a determination of the actual rank (1-9) quickly (within 5 seconds).

5. As a "rule of thumb" a competent rater should be able to complete the reading, ranking, and scoring of ten stories (of roughly 1-2 pages) in 15 minutes. The reason for quickness is to try and encourage as holistic an estimate of writing proficiency as possible.
General Impression Criteria

Use the following criteria to rank each writing sample with regards to overall quality.

<Rank Criteria>

"above average": A writing sample rated as "above average" will be a top story; one that is structurally unified with a beginning, middle, and an end; all three parts are adequately developed.

9 - Writing displays effective use of details supporting the overall structure.
   Details are unusual and reflect a high degree of imagination.
8 - The use of details is generally effective, though there are some ambiguities.
7 - Details are commonplace, lacking imagination.

"average": A writing sample rated as "average" will be an average story; one that generally displays control of structure, but has some inconsistencies.

6 - The development of a structure is weak, although most details are imaginative.
5 - Details are given, but they do not consistently contribute to the overall structure.
4 - Details are irrelevant, unimaginative, and vocabulary is less colorful.

below average: A writing sample rated as "below average" will be below average. In general, understanding of the content will be impeded because of little or no structure.

3 - Lack of structure, though details are given.
2 - Lack of structure, details are irrelevant, expressions are dull, and words are frequently misused.
1 - Lack of structure, details are not given, and misused words and grammatical usages interfere understanding of the content.
Appendix J. Scoring Guidelines for Analytic Quality of Writing
(adapted from Cranston (1986, p. 159-173) and Jacobs, et al. (1981, p. 101))

1. Read each story while focusing attention on the specific trait of writing to be rated.

2. Make a broad determination as to whether it is "below average", "average", or "above average" based on its general impression of the specific trait.

3. Consult the Specific Trait Criteria (see following page) that lists characteristics associated with each rank. Assign an actual rank (i.e., a rank of 1, 2, or 3 for "below average"; a rank of 4, 5, or 6 for "average"; or a rank of 7, 8, or 9 for "above average"). This determination is made quickly (within 5 seconds after reading the story).

4. Mark on the appropriate rank in the Writing Skills Profile (see p. 198) provided at the end of each story.

Specific Trait Criteria

Use the following criteria to rank each writing sample with regards to specific trait.

<Content> Ideas and details

- **above average** - very creative with rich imagination
- **average** - imaginative, but lacks detail
- **below average** - unimaginative, or not enough to evaluate

<Organization> Beginning, development, and ending

- **above average** - well-organized from beginning to end
- **average** - somewhat choppy but main themes stand out
- **below average** - ideas disconnected, little or no structure
<Vocabulary> Words and expressions

above average - wide range of vivid, figurative words
average - adequate range of words, occasional errors but meaning not obscured
below average - limited range of words, expressions are dull, many repeated & misused words

<Syntax> Sentence structures, subject-verb agreements, & plural forms

above average - appropriate use of grammar, few errors
average - occasional errors but meaning not obscured
below average - little or no sense of sentence structure meaning confused due to frequent errors.

<Mechanics> Spelling, punctuation, capitalization

above average - no or few errors
average - occasional errors but meaning not obscured
below average - dominated by errors, meaning confused, & difficult to read

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Writing Skills Profile

Student I.D. No.:

<table>
<thead>
<tr>
<th>&lt;Holistic evaluation of writing&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Quality</td>
</tr>
<tr>
<td>above average</td>
</tr>
<tr>
<td>9 8 7 6 5 4 3 2 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt;Analytic evaluation of writing&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
</tr>
<tr>
<td>above average</td>
</tr>
<tr>
<td>9 8 7 6 5 4 3 2 1</td>
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<tr>
<td>Organization</td>
</tr>
<tr>
<td>above average</td>
</tr>
<tr>
<td>9 8 7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>Vocabulary</td>
</tr>
<tr>
<td>above average</td>
</tr>
<tr>
<td>9 8 7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>Syntax</td>
</tr>
<tr>
<td>above average</td>
</tr>
<tr>
<td>9 8 7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>Mechanics</td>
</tr>
<tr>
<td>above average</td>
</tr>
<tr>
<td>9 8 7 6 5 4 3 2 1</td>
</tr>
</tbody>
</table>

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Appendix K. Selective Stories*  
(* original errors retained)

Rockets Away (Assessment I - OS1, 4/11/89)  
Written by Suk (Holistic rating: 1)

ONE DAY JHON has dream that dream is he oing to the pianet and he saw a ale? he like? so he give a prize and he come back to earth every body is thier so he came to home first and he had a parry but he is so tire so he cannot go to parry but that so all right because he like sleep on the bad.

A Skunk in the Class (Assessment I - OS2, 4/13/89)  
Written by Suk (Holistic rating: 2)

ONE day a skunk is in the class student want go outside but they cant go outside because skunk is in the door one boy throw the book than skunk so he is agly because the boy throw the book so he is furt so every children junt over the window and child is fal down on the garbage truck than skunk is came to the garbage truck too so children get out of the garbage truck skunk is came to so we ran out the play grand 1 minute is over and zoo worker is came and catch the skunk and they go to the home and they have bathe end

E.T. (Assessment II - OS3, 4/21/89)  
Written by Suk (Holistic rating: 3)

TODAY is THANKGIVING day but a some thing was down on the woods. and then some kind object is came out of the space ship. and he around the woods. but the one man is saw the object then he tell the every body then the the want found a object then one man saw the object but object is so scale so he ran to the space ship but he is late because space sip is frew away so he cant go his home. but he have to hide because the men coming to him. so he hide on the tree and waiting for people go and people go away. so he down the city and he meet the boy and the boy helped him to go home back. and then they have some adventure and object is sick but people came to him and they know object is sick but they cant do any thing. but the boy can recover the object and space ship is came back to would. and object is go back to his home. end
Rockets Away (Assessment I - OS1, 4/11/89)
Written by Hun (Holistic rating: 4)

In usa a boy named cobol went to outer space becouse earth's ozen layer is vashing and people are dying of raditon and this boy going into outer space to find a new planet for the people to live on it has have the same air, water, ozen layer to block the radtion. Cobol have been travling through space for a whole week he didn't found a new planeth yet. The next day he saw something that looked like earth when he landed he new he found another earth. but there are some alien on this planet luckily these alien frindley so he radioed earth for them to come to the new planet. sothey happy alomst forver.

A Visitor from Outer Space (Assessment II - OS3, 4/21/89)
Written by Hun (Holistic rating: 5)

Yesterday at 3:00 p.m a huge mother ship came and went all over Honolulu in Oahu (wich is in pacific) and scared. Everybody and it saw a girl (the girl's name was betty) with a ballon the space ship stoppped. And a alien came down with a machine that made all kind of noise like sound of a dog and baby crying and when Betty saw the alien she thought it was a toy so Betty talked to it.

When she talk to it the machine repeated what the girl said and it learned it's launge and when it learned it's launge. the alien took the Betty's ballon and when into the space ship. then Betty heared a rush of air and then she heared the biggest pop ever and the alien drop the machine that learned it's launge and ran away becouse. It was scared by the huge pop made by the ballon! The mayer was proud of Betty and she became a hero and Betty got some to go thrugh college of her choice.

Rockets Away (Assessment I - OS1, 4/11/89)
Written by Ja (Holistic rating: 6)

Once there was a boy name Serefin. He was a great patriot. Also he was grwwdly too! He wanted ti have all the secret lands. But ut was to late, because in each country has powerful goverment. so he head a idea. He thougt probably could ride a rocket in the future!

One night, a strange sound came from the kitchen. Carefully, he opened the door. And there was a huge and shiny rocket! He hurried in to the rocket and press the red button in between the window. Then it started moving. He flyed to sparkling stars.

The dream came true. He put American's flag in middle of the moon. and he smiled. Suddenly he saw the angel she wore a white dress and called,
"Serefin, Serefin" the voice was getting more loud and loud. "SEREFIN!" "OH!"
there he saw his desk and window. And he was on his blue bed. It was only an
dreaming. And the angel was his mother. Bt he promiss to himself to become
a spaceman.

"Serefin, it your breakfast."
"Yes!"

A Visitor from Outer Space (Assessment II - OS3, 4/21/89)
Written by Ran (Holistic rating: 7)

After 3000 years, they had EARTH Bus and SPACE Bus. But the bus-
ticket was very expensive it almost $30000000 so nobody went EARTH and
SPACE. But a rich alien had come to a wonderful and bush EARTH! His name
was James.

First he found a pretty girl named Jane; she was only 13 years old but she
was very poor and she was orphan and she was homeless. but nobody help her.
However she had a alien dool it was same as James's face. Every night Jane have
to sleep at outside. It was winter. Today night Jane saw a sparkle thing in sky.
It was ahuge space ship but it was very old and had too much dust. Suddenly
the space ship pop then money rain fell to Jane. Nobody saw that because all the
window, door was closed. Then snow is falling with her new rich dad. James
had died but he ad turn to rich dad. but he wanted be her brother or Jane'S
husband when she grew up. After 10 years later James married with Jane and
they had 1 boy after couple of days. they gave him a univesal name. it was
ALIEN-EARTH-BOY. and later they moved to MARS. ALIEN-EARTH-BOY
MARIED WITH ALIEN WOMEN AFTER HE GREW UP. AND they marrid all
alien so they had name ALLAN.

The Magic Wooden Dipper (Assessment III- OS6, 6/1/89)
Written by Ja (Holistic rating: 8)

Once there was a great drought in a big state California. The hot days
dragged whole month. Birds weren't sing at all. Villagers couldn't see fresh
plants too. They were so tired and they really needed some cold waters so badly.

There was a girl named Ann Hanna. She had a blond hair like a shiny
sun. And blue eyes like a sky, Also she had pink chick like a rose. So you can
guess a shiny sun in the blue sky, and pink roses are smiling under them. Ann's
mother was really worried about her household and their cattles. Ann wanted
to help her mother so badly. But she couldn't. Maybe, she was too young, there
might be no ideas to help her mother. So around those month, Ann could not see
her mom's happy smiling faces.

One day, she decided to go out side, because she doesn't want to see her
mothere's cring face about her cattle, everyday.

She kept walking. Looking for some water. Then, she saw a old woman with a wooden dipper. She felt so strange, that she couldn't walk straight. Because of the old woman's green eyes. Suddenly, the old woman asked gently, "Are you looking for water for you'r mom?" "Yes?" "Then, take this dipper and go down straightly." There was no answer, for thsi. Because there she saw some shiny waters in the wooden dipper!!! As soon as she turned her surprising face to old strange woman, she was gone like a fast rocket!! Ann only could see some of sparklings around her area.

Ann walked straightly down to the village because the old woman said so. It was way to go to her home. She was very delighted. Because she is holding such a shiny water for her mother. Then she saw a thin dog layed down on the side. The dog looked so thirsty and tired. So Ann gave some waters. She didn't felt pity toward her shiny water. Then! the wooden dipper turned to siver dipper! "It's just unbelivable!" yes, it was. It was real unbelivable.

After that, Ann saw a bird was layed down. So again, Ann gave some waters. Now, it turned to gold dipper! Ann ran to the home, and showed gold dipper and shiny water to her mother. Her mother was so surprised. And she started to drink water. As she started to drink, unbelivebaly, the dark clouds were gathered. And rain started. All the people were fulled of joy. They were yelling and crying. Birds were singing and fresh plants ready to grow strong like before. And Ann thought and thanked to old woman. She promissed she will never forget this such a great and wonder favor. And there was someone, peeking Ann, also hppy villagers, and smiling behind the tree. It wa her. The old woman.

In the Middle of the Night (Assessment IV - OS8, 6/6/89)
Written by Hun (Holistic rating: 9)

One cold and very very dark night about a ear ago at my neighborhood. A boy name Smith was sleeping at his room at his house wich was at Cloud street intersecting another street name OUCH street. Smith was a fine young boy and he was vey tall and slem for his age and he had a lot of friends.

The first night he was sleeping at his room he heard a noise all kinds of noise down stairs. the sound was like some pans banging into the wall and Smith's dog barking ( I forgot to tell you smith and a dog) things droping it was like a unprofessinal robber in his house.

So he got his cloth on and went down stairs to look if it was a real robber ther at all. When Smith's got down the stairs he saw nothing that has been disturbed. so Smith thought it was his own mind that is playing tricks on him.

when he went bed he heard the noise again. The noise was exactly the same as last time except he heard chains hitting each other so Smith woke his
father up. so both of them went down stairs. When they got down stairs but they saw nothing that was disturbed except the picture of his old grandfather. It was ripped up to pieces. they just thought it was the dog. So Smith and his father when up again.

But Smith when back to his room he could not sleep. because he heard the noise again. And this time he got his father's gun. But while he was going down stairs he slipped and Smith yelled "ou,ou, OUCH!" Then the directer said "cut". And Smith said "I think I sprained my ankle, ou!". Then the directer said "get some medicine and rub it on his leg and do the scene again!". Smith said "won't we ever get this scene done we did this scene over ten times!".
Appendix L. Selective Entries from Researcher's Journal
(Note: “Day” in this journal corresponds to “Session” in Appendix A)

Day 1 (4/3/89, Mon.)

It was the first day of intensive pretraining. I called the sessions held from day 1 to day 6 pretraining in order to distinguish these sessions from major training sessions, held for metacognitive skills training. The first three days would be spent for reviewing a word-processing program, Milliken Word-Processing, on the Apple IIe computer. The following three days would be spent on think-aloud training during which the students would verbally describe their own thoughts during the writing process.

Today, there were two main activities. First, the children wrote about themselves on the computer while I helped them in the mechanical uses of the word processing program. Since they had learned how to use the program during the general pretraining of the last semester, all I had to do was remind them of the whole procedure, from typing to printing. The Milliken Word Processing is a user-friendly program, which provides users with menus that include graphics and important commands. Thus, my ESL students didn't have to memorize all the commands although they had to learn and practice how to use function keys such as arrow and delete keys, how to save the typed text into a file, and how to use the printer.

During the last five minutes of the session, the students wrote with pens journals on what they did and felt today. The journals would be kept by both the students and me throughout the project as I had planned free writing for students in the daily schedule (see Appendix A). The children would write at the end of each session, but I would write after I had completed the day's project. Since I would play a dual role as teacher and researcher, I would have to balance these roles with extra careful planning and preparations. While I'm with the children, I would focus on my teaching role. However, I would concentrate on
my researcher's role after the day's session. I would keep a recording of the students' behaviors during the day and observations on their thinking processes by reviewing what they wrote and by listening to the tape recorded during the day's interaction. In order to do the two jobs satisfactorily, I would need at least four to five hours of planning, reflecting, and recording, besides the an-hour sessions with my students.

The students tended to use Korean, their first language (L1), during most of the class hour. I encouraged them to speak English as much as possible, unless they had difficulty expressing their thoughts in English.

I taped all of the interactions that occurred during the class sessions. At first Ja and Mi were curious as to why I taped the whole class interaction. I explained that I wanted to review what was going on in the class so that I could improve the lessons and help them to learn English better. Taping didn't seem to bother them much although Suk's voice became softer. After a while, nobody seemed to be aware of the existence of the tape recorder in the class.

Day 6 (4/10/89, Mon)

It was the third day of think-aloud training. The children were asked to verbally plan aloud a short story based upon a picture prompting. I modeled first and then the students followed. Unlike the first and second sessions with non-verbal tasks, think-aloud with a verbal task appeared to be difficult for my students in differentiating the thinking itself from the content generations. My students did not verbalize what they thought, but said only what they were planning to write. They described narratively from one sentence to the next sentence, like an oral-story making. I had to ask questions to bring the students' thoughts out verbally: e.g., "Why did you choose the main idea?" "Wait a minute, what made you change here?"

Day 10 (4/14/89, Fri.) - Fourth day of Assessment I
The students revised a story called "A Bottle with a Surprise," which was provided by me. Everyone used the computer so I had to underline the parts changed on their printouts after the class for later evaluations. These types of tedious data-collecting process are time-consuming, but I believe that it is very critical to record the writer's rationales behind their changes, while remembering vividly what happened during the writing process. It is not an easy job to capture and study the invisible cognitive process. I interviewed the students informally to see whether they preferred the pen or the computer for revision. Except for Suk who had the most difficulties with mechanical usages of the computer, everyone preferred computer to pen.

The ways of each student working on the computer were quite different. Mi read slowly line by line, while Hun moved the cursor up and down to read the whole text randomly. English proficiency seemed to be related to their style of reading and their reading speed. Suk kept looking at Hun's screen and trying to copy some of his ideas. This was the last day of collecting data for baseline performance.

Day 11 (4/17/89, Mon) - The First Day of SQ Training

Today (the first day of training Self-Questioning (SQ) strategy), I gave the students handouts with the procedures of SQ. I emphasized the goal and usefulness of the strategy by asking questions regarding my students' writing experiences. At first, it seemed very difficult to teach SQ strategy due to my students' lack of knowledge in English vocabulary. I used the "Down to Earth" method to make young ESL students understand the theoretically developed concepts. I had them use Korean if English was difficult for them to express their ideas. I also used both English and Korean translation to explain important concepts.

After I explained the procedures for about 20 minutes, everyone studied the procedures individually. To my surprise, Ja, Ran, and Hun took only about 5 minutes to memorize 5W1H & BOL questions. For the first test, Ja & Ran got all questions correct and Hun missed 1 question. On the other hand, Mi took 10
minutes to study but got only 2 out of 9 questions for the 1st test. Suk had a
difficult time too. He kept asking how to spell words and had to use Korean to
write some of the answers. However, he misspelled words even in Korean.

One interesting fact was that everyone had learned the "5W1H Questions"
when they were in Korean schools. This was an encouraging factor for me to
pursue my optimistic hypothesis that L2 learners, even as early as upper
elementary school children, could take advantage of L1 concepts if they were
trained to do so.

Day 12 (4/18/89, Tu) - The second Day of SQ Training

I was a little discouraged and disturbed because Suk did not show up for
the class. Other students said that he had not been absent for his regular class. I
was hoping for my students to take this class seriously and learn something
useful which they could use for the rest of their school life. However, this class
was set up based on voluntary participation. They didn't have any obligation to
participate if they didn't feel like it. I decided to call him this evening to find out
whether he wanted to drop out or not.

Today's lesson focused on practicing the SQ in writing revisions. I
modeled one step at a time using an example story and the students followed
through the step by underlining the main parts and by suggesting appropriate
scores, according to the SQ. Next, the students took their stories and practiced
individually how to apply the SQ procedures in order to evaluate the story. Hun
expressed difficulty in grading his own writing. He wanted to be more generous
with his own score. I emphasized that the score itself was not important. The
main purpose of scoring was to be able to detect weaknesses in one's own
writing and to improve them later.

In the evening, I made a phone call to Suk's house. His father answered
the phone and already knew the reason why I called. He was off today from his
work and had seen his son come back from school earlier than he was supposed
to. He said that he was sorry and that he would advise his son not to be absent
for the computer class (Note - My students and their parents called this after
school class a computer class, although I had informed them that this project was a writing class using the computer as a tool. This showed that their strong interest was with the computer rather than writing.

When I talked to Suk, he made an excuse in Korean, "I wanted to go to the bathroom so badly." I asked, "Can't you go there at school?" The answer was, "I thought they were closed after school." It was obvious that he had tried to avoid the after school class. Anyway, I was relieved to know that he did not have any intention to drop out. We made an appointment to meet during the lunch recess tomorrow to make up for the missed class.

Day 13 (4/20/89, Th) - The Third Day of SQ Training

During the lunch recess, I met Suk at the library recording room. I was able to observe Suk closely. Although he was following my lesson, half of his mind was not on the task but on the playground. He kept saying that he was supposed to play basketball with other friends. He seems to prefer athletics to academics.

This was the third day of training the SQ. The children were already bored with the activities and complained, "Same thing again." or "Can we do something else?" But before moving on to another activity, I wanted to make sure everyone understood the SQ and was able to apply it to his or her own writing revisions. Therefore, most of today's lesson focused on evaluation. When I gave a written test about the procedures and 9 questions (5WIH & BOL), I was glad to see that everyone got all questions correct although Suk had to use some Korean in his answer.

Day 16 (4/25/89, Tu) - The third Day of Assessment II

Before starting today's session, we had about 10 minutes free time because everybody came as soon as their regular classes were over. I used this time to discuss the journal, which had been collected at the end of each session. I had not given any comments on the format and content of the journal thus far, but as
time went on the routine became automatic. The journal had become more careless than those done during the beginning sessions. I was curious as to whether the students tried to use the SQ they learned during their journal. No one was conscious of applying the SQ to the journal. I had the students read and compare the journal written in Day 1 and Day 15. Two of them noticed progress, while the other two noticed decreased quality, and the last one noticed no difference.

Today's formal task was to write a story (OS4) a second time for Assessment II. Prewriting activity started with showing and discussing a picture entitled, "Give me a home (Schwartz, 1976, p.29)." In the picture, an elephant was holding a note saying, "Give Me a Home" in front of a door in a house, where a girl was peeking through the half-opened door.

Hun wrote a very long story which was unusual. He usually finishes his story as quickly as possible, so he can use the computer to do something else, such as programming or playing games. It's always good to have a computer zealot like Hun in the class because the enthusiasm is contagious. This could be used as a reward for working hard on the given task. One flaw is that some students tend to finish writing without putting in their full effort and say it's done. Hun is one of those cases. But today was different. He wrote about two-and-half pages and said that he needed to write more tomorrow. I wanted to know what had motivated him today. He said, "I was asking 5W1H questions while writing. The questions kept giving me more ideas to write."

Day 17 (4/26/89, Wed) - The fourth Day of Assessment II

The students revised two stories, RS4 & OS4. They made changes on the computer, so I had to compare today's printouts with their first drafts and underline the parts changed for later reference. In general, the girls (Ja, Ran, and Mi) made content changes, while the boys (Hun and Suk) made more spelling and mechanical changes.

Mi gets moody so easily that she can not focus on the day's learning task. For example, today she didn't want to make any changes in her story. She rated
her story, but made no changes. She said, "I don't like to do it. I just want to rest." I tried to encourage her, "I know you can write better than this. Will you show me you can do it?" After I encouraged her several times, she made only a few changes.

Ran is almost always steady in her attitude towards school work, writing, and revising assignments. She sometimes complains, "I'm tired" or "I'm bored." However, when she gets an assignment to do, she tries her best.

Ja gave good answers as to why she revised. Her reasons were to improve and to put more information as shown in her patterns of revising.

Hun expressed difficulty in evaluating his own story again. He tried to be fair, but didn't know exactly how to apply the scoring standard.

Suk went through spelling errors first in revising RS2. He sometimes looked at Hun's screen to get some hints to change. He saved today's changes over yesterday's writing and lost the original draft. This is a common mistake children make when using the computer as a writing tool. The students were told to save each day's work under a separate file name so that the changes made from a draft to the following draft could be studied. But this was not a disruption of data because I had obtained printouts after each day's session.

Time became one problem because an hour session was not long enough to revise two stories. When I first planned this project, I pondered the fact (learned through several years of observing ESL children) that students don't spend much time on revising one story. Even the shorter time, from 10 to 20 minutes, was not fully utilized. Therefore, I thought 30 minutes per story would be enough to do actual revisions and to do chores such as printing and collecting. However, they began to spend more time on a revision task after they learned the SQ. They changed the major content in their stories, rather than focusing on mechanical errors. As a result, they got tired doing the second revising task. This made it difficult for me to control extraneous variables affecting physical and mental tiredness. All I can do is to counterbalance the effect of order in presenting OS and RS, by reversing the order for the second revision task.

At the end of each session, the students now automatically (without any
direction from me) write their journal. They have a choice of writing tools. All of them prefer using the computer rather than pen and paper. However, nowadays their choices depend on the time left for the class, not on their preference. If they have to hurry to go home, they write on paper. Otherwise, their choices are almost always to write on the computer.

Day 20 (5/1/89, Mon) - The Third Day of the SR Training

Before starting the regular lesson, Ja asked me a very important question: "What is the differences between 5W1H & BOL Questions and ACD methods?" No one had explained the exact uses of those questions and methods, although everybody could tell what the acronyms stood for. I explained in Korean that they could use 5W1H & BOL questions to evaluate and find problems in writing and use ACD methods to improve the parts identified as having problems.

I also gave the students positive feedback on what they had done so far: e.g., good revisions made on last Friday, free writing up to Day 19, and classroom attitudes. An ultimate goal for this long-term project was to improve students' thinking skills and ESL writing skills. But the goal was too abstract for students to be self-motivated. Thus a systematic rewarding system was adopted. Each student was given one point for each good on-task behavior. Once a week, material rewards, such as stamps and pencil, were given based on the cumulative points obtained.

I handed out the Model 2 story which I prepared based upon the revisions made by students last Friday. I had first read each student's story and had underlined the parts revised, then selected the best revision for each sentence and added to the Model 1 story. The students loved to see the parts they contributed to make Model 2. They were very proud of saying which parts they had added and why they had done so.

Then we all discussed how we could improve Model 2 story again to make Model 3. Ja suggested that we could add another trial part for the main character. Mi and Hun also provided good ideas. The students were anxious to
go to the computer to improve the story based on their discussion. I video-taped the computer screen closely to record the process of revision.

At the end of each session, I am very exhausted with the heavy burden of teaching, observing, and audio/video-taping. But I can see my students' progress as time goes by and this gives me the energy to continue.

Day 23 (5/4/89, Th) - The Sixth Day of the SR Training

Suk has been slow in learning English and low in self-esteem and motivation. He says, "I'm not good at English." Whenever I give him chances to talk, he mumbles in English. Even in Korean, his voice is so soft that few of us can understand. Everybody often complains, "He's wasting our time."

At the beginning of the session, I talked about the students' cooperative behaviors: "Please help and encourage each other. Yesterday I was disappointed. Do you know why? You discouraged a student and complained about his poor English. You should know how difficult it was for you to learn English when you first came here." Ran said, "But, he came to Hawaii earlier than I did." Ja added, "He doesn't try hard." Hun was sympathetic to Suk's problems and said, "I'll try to help Suk with English vocabulary words."

Learning in a classroom involves many factors. Especially a group dynamics, I believe, greatly influences an individual's learning. Hopefully, I can use the dynamics in positive ways. Using positive feedback with an individual often resulted in unpleasant competition within the group. I decided to use positive rewards to the group as well. "If everybody is good and helpful to each other, I will give everybody points."

Today's group discussion was on Mi's story. Mi first read her story and demonstrated how she had incorporated the SQ and SR into the revision process of her story. I provided scaffolding by giving feedback and suggestions whenever she was unclear as to what to do with certain parts.

As a way to train in the "Add" method (the first word of the ACDs), a
A game to add describing words in a sentence was introduced. In 3 seconds, each student had to say an adjective and noun by taking turns. Later, the number of words in a sentence was increased, so the students had to include two adjectives and an adverb in a sentence to obtain a point. I found that their vocabulary, especially adverbs, was very limited. I decided to make and hand out a list of vocabulary words which would help increase their action verbs and descriptive words.

Day 27 (5/10/89, W) Ninth day of the SR training

There were three main phases of activities: First, comparing Model 1 with Model 2 & 3; secondly, evaluating the degree of acquisition of the SQ and SR strategies through revisions of a story given by me; and thirdly, assessing the degree of verbalization of the SQ and SR procedures.

During the first activity, the three model stories developed so far were distributed. The students were very interested in identifying who had provided ideas to improve Model 2 to Model 3 story, since everyone had contributed some parts to the Model 3 story. The final model was polished by an ESL teacher and myself, but my intention was to show the concrete example of developing, from first draft to final draft by involving my students in the processes. The children rated the Model 3 story and talked about the good aspects of the story, by applying the two strategies learned. Average scores for Model 1, 2, and 3 were 3, 6, and 9 respectively. They now clearly understood when and how to use the Models and the numbers as criterion scores when self-evaluating their own stories. The main rationale for these activities was to have students establish the standards (criteria) of a good story and induce voluntary efforts to improve their stories in that direction. As I intended, the models were meaningful for my students and were clearly understood since they shared the parts of the developing models.

Next, a story was distributed and the students were asked to revise the story to the equivalent level of Model 3. No discussion was conducted because it was a test to evaluate how my students used the SQ and SR strategies in their
own revising activities without getting any prompts or feedback from other students or teachers.

As a final activity, the students retrieved the file called, "DAY 27 TEST," which I had stored last night on the computer. In the test, there were two questions. One was an open-ended question regarding the students' revising activities in general. I wanted to compare this with the specific question I had asked yesterday about the procedures of SQ and SR strategies. The other question was also an open-ended question regarding the students' uses of those SQ and SR in their own classroom activities. The students did not express any specific difficulties for those activities. I will closely examine the products of the second and third activities tonight to determine whether I should terminate the SR training or not.

Day 28 (5/11/89, Th) Assessment III

Last night, I read the children's revised stories. All of the students except Suk were at a satisfactory level. They all made paragraphs properly with main ideas and extended the given story by adding more information and more complicated plots. As 5th and 6th graders learning ESL, they learned to express their ideas freely without worrying so much about the mechanical aspects of writing. Their stories included many spelling and grammatical errors, but the stories made good sense to me and the ideas they developed amazed me.

As usual, Suk was less motivated than the other students. His deficiency in the English language resulted in lack of motivation and ideas for revisions. To make ESL learning more difficult, he was so shy and self-conscious about mistakes that he would rather use Korean than make mistakes in English. Unless I told him to use English, during most of the class hours he would use Korean.

At the beginning of the story given yesterday, he used the adding method to improve the story, but he stopped making efforts to revise further. From the second paragraph, he did not even revise space mistakes between a period and the beginning of a new sentence. When I asked him individually, he knew what was missing. Suk didn't even care about (or more exactly gave up on) the
extraneous positive reinforcement. As soon as the class time was up, he hurried to go home and said, "I have an appointment to play basketball." I advised him to try harder to learn English. On the other hand, I was thinking that I should develop methods to motivate him to learn to like English just as he enjoys doing sports.

Day 29 (5/12/89, F) Second day of Assessment III

Today Mi asked me, "Did you read my story?" "Yes, I did. You had a very good idea. I'm very proud of you. Actually everybody wrote a very interesting story. Hope you can make it better today." Mi frowned and complained, "Do I have to revise again? I don't want to. I'll make it worse." Ja said, "I don't want to rate the story. It's boring. Yesterday I wrote the main ideas for each paragraph. Can I just add on the computer, please?" Ran added, 'I finished up to 'what try' (means "what did the main character try to reach the goal? among the 5W1H questions - my students used these types of shortened and simplified forms to memorize and to use in the context of writing). Now I have to write 'how end' part." Everybody knew the SQ and SR procedures by heart and incorporated them into his/her writing process. Therefore, no one wanted to ask questions and rate the story for each question as a separate step. I had them use the procedures in such ways they felt comfortable with.

Everyone wanted to go to the computer and make corrections directly on the screen. This was not like most adults. Usually adult writers want to get a paper draft, read it, and make changes on the paper first because it is difficult to review the whole text in one screen.

After changes were made, I interviewed them. The rationales behind their changes were very obvious such as spelling mistakes, spaces, capital letters, and adding more information. Noticeable differences I could find from their baseline performance were their ways of adding information. The quality and quantity improved a lot by the use of more adjectives and adverbs and even sentences to provide detailed descriptions of the main character, settings, and feelings. This wide range of revisions was very unlikely to happen even among native English-speaking writers, as Beesley (1986, p.158) pointed out in her dissertation.
research. I was very pleased with their performance. After I read Ja’s and Hun’s stories, I asked myself, "Can I write a story this well?" Their creativity was in blossom. I don’t think the short-term period of two metacognitive training has enhanced the children’s creativity, but I believe that the training has provided them with the right vehicle to reach their dormant creativity. Their reasoning ability to develop a story plot also seemed to be improved (I'd better be cautious about terms used for my findings until I find out the statistical significance).

Suk used to run out of ideas easily, but he added a lot more today. Yet, he was still careless. He made space and capitalization mistakes which he recognized when I prompted him to look at it closely. This might be an indication of his lack of awareness skills.

Day 41 (5/31/89, Wed) Last day of Interim

Two weeks have passed since Assessment III. In the dissertation proposal, Assessment IV was planned to be taken 2-4 weeks later than Assessment III because this interval period was commonly used in the studies which measured maintenance effects of a training. I have no choice except for the 2-week interval because the school year will end next week Thursday.

I arrived at the computer lab 10 minutes earlier than usual and loaded the Milliken Word Processing program. As I had planned, I was going to have one session for reviewing the SQ and SR strategies, but I wanted to see how well my students could do in remembering the strategies without any previous notice. I decided to give them the test first through the use of the computer. When Ja came into the lab, she saw the computer monitor first and asked, "We are going to write a story?" She said she missed writing stories. Then the other two girls came in. While waiting for the two boys, we chatted over what had happened today. 10 minutes passed but the two boys still didn't show up. We all became impatient. Mi said, "What a waste of time!" I asked the girls to check the boys' classrooms. They were not there. We then decided to start the class.

The girls got the test file I saved and started to type. Mi complained, "Test again!" Ja responded, "I don't mind taking tests. I can learn something." Ran
said, "I forgot everything." The two boys came in 15 minutes later. They had
gone to the school library to buy books displayed in the book fair. I was a little
annoyed but at the same time glad to see them. "It's very good to buy books to
read, but both of you have to make up the time you missed. Could you stay 15
minutes more after the class?" Both of them said yes and also took the tests. The
girls finished testing and brought a printout of the test to me. I handed them
their writing folders so that they could review the SQ and SR procedures and
score their own test. They individually reviewed, scored, and studied the
procedures again until the boys finished.

A common phenomenon I found was that the students remembered the
5W1H questions and ACD methods without difficulties, but they were confused
when they had to use them. In other words, they could not differentiate between
the SQ and SR strategies. This may imply that their lack of understanding or the
two metacognitive strategies should not be differentiated because they were both
used interchangeably in the process of revising. Otherwise, it might be an
example of displaying how metacognitive awareness and regulation skills
function differently. The students did not know how to describe them but they
utilized the two strategies in their writing and revising process. I should
examine closely a variety of data collected in this matter. I summarized that the
SQ is to find problems in one's writing by using 5W1H questions and the SR is to
improve one's writing by using ACD methods. I asked individual students to
verbalize the strategies in the way they understood, either in English or Korean.
About 80% of verbalization was English. Suk, the least English proficient
student, used Korean in about 70% of his verbalization.

Day 42 (6/1/89, Th)

The computer lab was full of boxes because two classes were in the
process of moving out and in. My students were excited about their graduation
from the elementary school. This year both 5th and 6th graders will be
graduating from this school because there will be no 6th graders in this school in
the next school year. They talked about the graduation parties in their classes
and summer plans. They also said that they wanted to do their best writing good stories for the final assessment of this project. Last time when I gave writing assignments for Assessment III, most of them (especially Mi and Ran) had complained about too many writing activities. They had wanted to learn something different on the computer. However, this time after the 2-week interval, they showed enthusiasm about story writing.

I was cautious when trying to proceed with the whole process of the writing task, so they would be as close as possible to the previous assessments. After the prewriting discussion, everybody went to her/his own computer. I was pleasantly surprised to see how quickly they could think of and develop a plot. I set the video camera on Ja's screen. Mi struggled with the first paragraph. They asked questions more freely of each other. Most of the questions in Korean were to find out English vocabulary words or expressions. This could be an indication of the fact that less proficient L2 learners tend to think in L1 and translate L1 thinking into written forms while writing. The degrees of translating L1 to L2 seem negatively correlated with the proficiency of L2, according to my observation.

About 20 minutes later, Ja yelled, "Ms. Kim, my screen is funny." When I saw her screen, it was all blurred and frozen. I tried the escape key, but it didn't work. No key was working and this meant that Ja had lost all her writing without saving - one of the technology's disadvantages. Ja was so frustrated that she was almost in tears. I consoled her, "Don't worry. The video tape recorded your writing from the beginning up to now. So move to the other computer and go ahead with your writing. After the class, we can look at the video and retype the parts you lost." "Phew!" Ja and I sighed with relief. Another technology, the video-camera, had helped to get us out of this trouble caused by one technology, the computer. Luckily, Ja continued her writing without further distress.

Ja, Hun, and Ran couldn't finish their first draft in time. They said they had to continue to write tomorrow. So far, Ja and Hun have developed very interesting ideas.
Everyone tried so hard that they didn't even mind staying over time to revise the researcher-provided stories after the completion of the first drafts of their own stories. Everyone asked me whether they had to go through the SQ and SR procedures to revise their stories. They did not want to ask questions and rate stories. The main reason for this was that the SQ and SR strategies they had learned became incorporated into their whole writing processes - not only revising but also the planning and writing processes. Therefore, using the SQ and SR strategies to revise the first draft were redundant activities which the students got bored with easily.

This implies that my students now are more likely to revise their thinking and text while composing. I speculate that my students have acquired small steps in recursive thinking skills as a result of the two metacognitive training methods. The writing models of Hayes and Flower for adults and that of Scardamalia and Bereiter for children appeared to be partially valid for my ESL students. When looking at a general flow, the children seemed to follow a linear process of writing, just like the model Scardamalia and Bereiter presented. When studying closely specific stages of their writing, the numerous small steps of "planning" and "revising" were embedded in the whole writing process; e.g., planning the beginning -> revising -> writing -> revising again -> planning -> writing -> and so on.

I noticed that some obvious mistakes (this means that my students recognize the errors if I prompt them or if they go over the SQ and SR strategies after finishing their first drafts) were still in the final draft. Later when I interviewed them, their responses were, "Oh, I forgot," or "Not enough time to look at it again."

I could see improvement by observing my students. Usually my students corrected a few errors in a piece of writing and said, "I'm done with writing." Now they learned to add a lot more interesting information and creative ideas to make a better draft. They still made a lot of grammatical mistakes and used simple and awkward expressions repeatedly. The number of grammatical
Day 45 (6/6/89, Tu)

At last, it was the last day of my dissertation project. It had been a long-term project which had drained all my energy. During the last few days, I had not been feeling well, but I had no time to stay in bed. It took a lot of effort and time to make sure everything went okay. During the lunch hour today, I had to give Suk a second writing task for Assessment IV because he had been absent yesterday. Although I had to do extra work for this make-up, one advantage was that I could examine Suk's writing process more closely than before.

At the beginning of the regular session, everyone asked whether we could do something different for the final class. I promised them a University campus tour and surprise prizes this coming Friday for their participation in this project. They did their best for the final. The classroom environment was very distracting. In the process of relocating two classes, several teachers and students were walking about and carrying boxes in and out of the classroom constantly. Although they were trying very hard not to make noise, it was very annoying to me.

To my surprise, my students didn't seem to mind the noise. Once they received what they were supposed to work on, they became deeply involved in their own work. Their first task was to revise a researcher-provided story. The scope of revision varied according to their level of English proficiency. Hun, Ja, and Ran (who are more fluent in English than Suk and Mi) showed the positive effects of metacognitive training skills on their writing. The three students added new paragraphs and ideas to make the given story better. Mi also used an "Add" method to improve the story, but her added parts were less relevant to the main idea than the three students' added parts. Suk tried to make changes, but only made more mistakes. However, he had some understanding of deleting
unrelated parts and he became better at identifying the parts. Interestingly Ja
used an Add method to make connections between unrelated ideas. She inserted
new sentences which could provide a nice flow of thought between irrelevant
sentences. Ran seemed to use the given story as a prewriting prompt. She ended
up writing a new story, completely different from the original given story.
Appendix M. Selective Entries from Students' Journal

(Note- 'Day' in this journal corresponds to 'Session' in Appendix A)

IA

Day 1: “I wanna type more fast then everyone who lived Hawaii more longer then me. Also, in the other way, I want to play with Mi.”

Day 13: “Today I learned about somthing that could make more improve the story. I know reading is fun. But My english is still poor. So sometimes I got mad.”

Day 18: “Today in computer class, I was really excited. Also, I learned about ACD self regulation question which is about, A- add more, C -change, finally, D-delete. So, I can improve the story better. But mostly, I mean, my goal is in writing story, my goal is make people’s feeling interesting. Maybe I can able to do that. Really, I can not stop smiling because, some of reasons like, I could make a story better.”

Day 22: “Today, Ms. Kim gave us a paper with some letters on it. It was real funny. We don’t know, who made it, or who wrote it. It was real terrible. There was no more pirod, capital letter. Also, there was mixed with pastend and verbs like stuffs. Really, we better not laufg or tease it. Because we did like that too. So, what did we did was fixed the story. Then put some words so it’s more fun and looks good. I wrote most long....”

Day 42: “Today I disappointed. I was real excited making a story, the computer turned off and on. I wanted to cry. But, luckily, Miss Kim recorded my beautiful story on her video. I was little bit happy. So, I could just continue it on the other computer. I’m really lucky. Phew—”

Day 44: “I made a story. It was real scary. My hands were trembling. How stupid. I wrote a story by my self and scare of it. What a pity author....”

Day 45: “Today was real sad day because, today was last day of school. I wanted to continue it. It was real helpful. And it was real fun too.... I’m not going to forget this class forever.... I loved to make a story and I think, I have lots of imagination. HUM.... Also I was full of pride too. So I hated to be in the second highest. I’m greedy. Also Miss Kim, thank you

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for teaching us. Especially, we don't had to pay money either. That's the point. Neah, anyway, THAK YOU VERY MUCH + 100....” [Note -The students loved to use capital letters to emphasize]

HUN

Day 1- “I wish I could learn cobal and understand more about computer and basic and how they work and how programs work.”

Day 18: “Today we learned a new method of self-regulation it is like 5W1H only it is shorter and little bit different from 5W1H QUESTIONS it is A. I BETTER ADD MORE 2. I BETTER CHANGE THIS 3. I BETTER DELETE THIS the direction is 1. READ THE STORY 2. ASK 5W1H QUESTATION 3. RATE THE QUESTATION 4. MAKE CHANGES WITH A,C,D QUESTATION AND IMPROVE (A ADD, C CHANGE, D DELETE) 5 RECYCLE AS MANY TIME AS YOU NEED TO MAKE IT PERFECT)

Day 42 -“I made a story about a critter I mean crazy critter. It was very fun making that story. I think I might break the record for the longest story ever. I also like the story alot again.”

Day 44 -“I did a story that’s so funny that Even I can’t help laughing at it. I bet that was the funnyest story I ever did. It was also fun writing that story.”

Day 45 -“Today I changed two story. The first story was why a cow gave more milk and middle of the night. Today is the last day of the computer class. But it was fun being in the computer class....”

Mi

Day 14 -“today I learn about the nothing because we write about the space and E.T. I love to make story! but onething I hate was no! two thing I hate was Ja and Ran. I hate everybody they are stupid. I hate them!! Oneday when I saw Ran sometimes I think about sad movie because Ran don’t have she’s mom! sometimes I feel sad about it and sometimes I feel bad about it!”

Day 15 -“Today I learn NO! I writer and fix the story, but it was not fun becasue everyday we fix the story, and it was boring. I can’t see Ran and Ja are playing each other....I realy hate them!!!!”

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Day 17: "I write the story and fix the story. I love to write the story but today it was boring, last time I was proud of doing it but today it was boring and don't want to do anything at all."

Day 18: "I was excited about it because I learned new method. I love to learn new things. I want to know more new things. 1. read 2. ask questions 3. rate the story 4. make a change using the ACD 5. ask question again. That’s what I learn today I am proud of learning it."

Day 23: "... It was fun and learn about the adjectives, and the adverbs. I love to do that now. first time I always hate to do that... I got to learn more and more, and be proud of doing this. I will make my mother happy and my father happy, so I can have my computer and I can learn more about it. I’m so happy and proud of doing this. THANK YOU VERY MUCH THANK YOU!"

DAY 31: "Ms. Kim. I learned many many things. I like to make a story and I want to make many stories. Especially ACD questions and 5W1H questions, and BOL questions! Tomorrow we are going to draw and learn some more things. I’m waiting for tomorrow! I’ll be good, and learn more and more things! One thing I hated was, when we always do something over and over, we are boring!! So that was bad. One thing I liked was, learn new things. I’m excited about tomorrow!!"

Day 42: "Today I learned about the story. It was fun and excited because we didn’t write the story for long time. I’m glad I didn’t forget how to write the story."

SUH

Day 15: "today I do a make the good stence. but lam not a make a good stence. but today is lucky because today my fater is bought for me a nintendo."

Day 19 -"Today I lern the 5w, i,t,h, Quesion and aCD Quesion I thing this tow Quesion are special Because this two Quesion’s are make stance Beter so I thing this Quesion are special”

Day 22: "To day I learn how change the story. My firends are help me many time. So i can change the story. If my friend doesnt help and i cannot change so i thanks for my firend..."

Day 24: "TODAY I heip my friend story. Today we use the 5, w, 1, H, too, so i
can make a good stence and MRS.KIM was very helper we because she help every body"

Day 36 -"today I do Organ teral that's fun I like that Because I Do adventure and game and I don't know aht is the Corora But miss.kim was help me so I can go to finish. I win so miss.kim was gave to me stamp and that's it"

Day 44: "Today i make the stence thats fun. because i like read the story so i like make. yesterday i was not here so i didnt do but ms.KIM and i was do the more because yesterday i was not here and i finish and i read the my story thats fun and that story name was the MIDDLE OF NIGHT and thats it."

Day 11: "Today I had learn self question strategy. We got paper about that and we all memorize and took the test. I got all collect (note - correct) first then everybody got collect. today is really lucky day and good day...."

Day 16: "Today i wrote story about GIVE ME A HOME Chong wrote too long but I worte shorter than her I want a wrote longer than her."

Day 34: "...I like this computer class because it help me to write and improve the stories. Like 5WH QUESTION (when, where, who, what begining, what goal, what try, how end) BOL QUESTION (belong, Order, Long), ACD METHOD (Add, Change, Delet).

When I write a bookreports I all ways think about 5WH question so I could write better and easy to write paragraph, too. so it is useful and helpful to going to computer class.

I have two things that I do not like. It is free writing because we have to write that still we don't have time or we done 2-3 so it's boring. Another one is rating a stories because I don't know how to rate a story well and also I don't know really when it don't have paragraph.

I wish I want a stop wrting a stories or chaing the stories. I want do learn differnt one like Logo, Tig Tag Toe, STICKER BEAR. Acturly it is games. Also I want a learn drawing in computer. It's gona a be fun and really intetresting...so let's start fast."

Day 42: "Today we didn't do, game we wrote story like usual.... someimes (note-Someday) I'll be author. it will be fun. Fantastic! Fun! Super! Excellent!"

Day 44: "Today I wrote story about In Middle of night. First part is little bit bored but middle and end is little bit scare and interesting. But when I
I wrote the stories I had some word problems. I can't remove (note-translate) Korean to English. And also I can't spell some word so. I have to study more. I'll finish my story tomorrow and I'll be good tomorrow.

Day 45: "In this class I had learn a lot. First of all I had learn how to make good story. Like 5W1H questions, Self question stereties, Self regulation. It helpped me alot. Also I learn a lot of word like included, deserve, and I can't forget about my stories I had made and also Stamp. I think I had learn many in this class and I can understand what Ms. Kim says. So it means that Ms. Kim teach was in easier way so we all could understand so I could get award for SLEP. So I will try my best to learning a English and I would never forget this computer class."
Appendix N. Descriptive Statistics and Significance Test

Part 1. Descriptive Statistics

Table 10

Metacognitive Awareness of the ESL Children During Writing Revisions: Assessments I-IV

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Note - All values are Mean percent (M%) and Standard Deviations (SD) of protocol segments per story.
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Note - All values are Mean percent (M%) and Standard Deviations (SD) of protocol segments per story.
Table 12
Writing Skills of the ESL Children: Assessments I-IV
(Note - Holistic scores were used as total scores)

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Note - All values are Means (M) and Standard Deviations (SD) of quality ratings per story. Scales 1-9 were used for quality ratings (see Appendices I-J).
### Table 13

**Revision Skills of the ESL Children: Assessments I-IV**

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Note - All values are Means (M) and Standard Deviations (SD) of writing revisions made per 100 words. The values included quality evaluation as well as quantity of revisions (see Appendix H).
### Part 2. Significance Tests

**Table 14**

**Overall Changes Made by the ESL Children as a Group: Assessments I-IV**

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<tr>
<th>Assessment</th>
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<th>Significant Effect&lt;sup&gt;b&lt;/sup&gt;</th>
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<tr>
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<td>MR</td>
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<td>Revision</td>
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<sup>a</sup>: MA; Metacognitive Awareness  
MR; Metacognitive Regulation

<sup>b</sup>:  
* \( p < .05 \)  
** \( p < .01 \)  
*** \( p < .001 \)
Table 15
Overall Changes Made by the Individual ESL Children across the Four Assessments: Friedman Test

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<sup>a:</sup> MA; Metacognitive Awareness  
MR; Metacognitive Regulation

<sup>b:</sup> * p < .05  
** p < .01  
*** p < .001
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a: MA; Metacognitive Awareness
MR; Metacognitive Regulation

b: * $p < .05$
  ** $p < .01$
  *** $p < .001$
Appendix O. Selective Entries from Revision Samples

(Notes - the first drafts use “Courier” font, e.g., first drafts, and the second drafts use “Palatino” font inside the square brackets, e.g., [second drafts]; characters with one line stroke through indicate the deleted portions in the second drafts; and revisions indicated here are the results of product comparison between first and second draft, and no process revisions are included.)

Assessment I

**OS2**

A Skunk in the Class
by Hun

One day a skunk into the class and scared everyon[.] it[It] stayed in there all day until[and] night . but [But] [the] children didn’t leave becasue it was going to spray[ed]hem with his scent [if they move.] after[AAfter] the mornig the children [they] could not stay any longer [there] so they chaseed it out for the class but they all got sprayed when went to there home they all got grounded for [a]whole week for mat coming for a day [becouse they came didn’t come home for a whole day and night] and [for] having that terrible smell.

**RS2**

A Bottle with a Surprise
by Mi

Tom found a bottle floating in a river and inside is a note and The note said “If you find this note, come to my house and I will give you a nice present” It was signed “Mrs. Brown,” it told where she lived. There is a big tree over there.

The next day Tom and [his] frend go to Mrs. Brown’s house so she gave him a new bike. And mrs. Brown said that when she was a little girl, she found many bottle but there was never something in them so she wanted someone to found a bottle that had a nice surprise.

So his friend [and Tom] rode his bike and had fun! [But the
next day his dog named (Kim), broke the new bike. Tome was mad but he didn’t mad at Kim. Because he loves him better than the new bike!!!!]

Assessment II

OS4

Give Me a Home
by Hun

(Note - Hun capitalized the words he wanted to emphasize and used parentheses to provide more information)

About a year ago by a lake called L.BIG there was a circus name CIRCUS HUGE. Just like it’s name it was huge it was so huge that a word can’t discribe it. And inside the circus there was all kinds of animal from all over the earth, Like tiger, lion, girrafe, talking parrot, monkey, seal, horse, dolphin, sea lion, black lepoard and of corse the elphent. The main attraction was of course the elephant and his name was MAX. And MAX did great tricks like standing on one foot and standig on it’s hind leg and all kinds of other tricks too. All the other animal was jeolous of MAX. When MAX laarned a trick that no other animal can not do they got so jeolous that they wanted to kick him out. So they made a plan too throw out MAX. The plan was that they trick him into going out so they would not get blamed. First they talk to MAX ( it was the lion thet was talking to MAX) the lion said “I HEARD THAT THE RING MASTER IS GOING TO THROW YOU OUT I THINK YOU SHOULD JUST QUIT THEN GET THROWN OUT!” and MAX said“I THINK YOUR MAKING THIS UP HE NOT THROW ME OUT [BECAUSE] I AM THE MAIN ATTRACTION!” but the lion said “YOU SHOULD AT LEAST THINK ABOUT IT” then MAX said “I WILL THINK ABOUT IT”. So he thought about it for a long time he was even thinking when he doing his trick. so he almost made a mistake. Then the next day the lion asked [MAX][MAX] he made up his mind then the MAX said “I THINK YOUR RIGHT I SHOULD JUST QUIT THEN GET THROWN OUT!” then lion said “THEN TONIGHT THE MONKEY WILL OPEN THE CAGE E DOOR FOR YOU TO COME OUT AND RUN AWAY” then MAX said “O.K”.So that night the monkey stole the key from the ring master and open the cage door and MAX ran away. But that night MAX was very hungry, cold, lonesome so he went all over town (wich is in canada)
and looked for a home and when he out in the country he saw a barn so he slept there he was hungry that he ate some of the hay and he liked it a lot. The next morning he was so tired that he didn’t wake up

RS3

A [Most] Lucky Kick
by Ja

There was [Once in a hot day, in Los Angelises, after school, Ann Kim saw a black] paper bag on the [dirty] sidewalk. The paper bag was [really] big. There [are were] many trashers. The bag was full of money! Ann see it and started kicking it into the street and her foot broke the bag and she can not believe what she saw. [Ann started kicking the bag into the street. But she fell down, and she couldn’t believe what she saw. The bag was full of money!]

Ann [hurriedly] took it [lucky thing. And ran to] home to show [for surprise] her mother [and father]. Her father was watching T.V. They counted it and found there was $1,000!! And then [next mornig] Ann’s family and her mother took the [amazing] money to the police [police station].

The police could not found out who owned the [this great] money, so they [police man] gave it back to Ann’s family, and she says “Kicking the paper bag was [the most] luckiest thing I ever did [had].”

Assessment III

OS5

The Day it Rained [Candy Popsicle]
by Hun

This happeend about 1989 (today is 2000) in the summer of june. [On earth. In Hawaii]

It was very hot and the whole earth ran out of cool popsicle. The earth was suffering. Even the ice water was warm and cold water was hot and hot water was lava. There was even a drought.

And the scientist sented a message to outhere space. It
had picture of the hot children and a message saying “Help us!”. When the alien got this message, They send a message to the most powerful computer on earth. Which a chiled own it [His name was JHON. The message said “Our names are QUBEC1 TO 6”. they also] said “We are coming with a gift”. [Qubec1] said “We will land where [we] sent the message”. So the boy called the president of the U.S.A and told him what happened. So the president told the army to go and wait for the alien. So they did. And when the alien got there. Before they land they all around the world dropping popsicle. Everybody loved it. [They had all kinds of flavor. From vanilla to fish. And most of the person was surprised. Some of the popsicle fell on people and all the people that got hit by the popsicle got smelly or cold or dirty.]

When they finally did land. The alien talked with the president. And the president thank alien and the boy. For being so kind and to the boy for telling him about the message. The boy became a hero.

And the alien learned about the earth things and we learned about there things. we even learned how to make rain and water. So they lived happily ever after.

RS5

A Girl reads to Blind Children
by Ran

[In New York city a girl named Cindy who was going to intermediate school was very nice and kind their parents are, too.] Every Monday, when Cindy gets out of school she go to another [after school Cindy went to another] school and [which] it is school for [the] children who can’t see [and poor]. they don’t have a lot of money. [Actually she was going to Blind school to help them.]

Cindy [Cindy] love to read and [because] she thinks it’s fun to reading good [a fiction] stories. and one [One] day she thought, “People [People] who can’t see don’t have fun [of] reading. I am going to read stories to them.” She likes to go shopping.

She reads them the stories that she likes best and [about the blinds that could read.] the [The] blind children thought they are very good stories too. Now Cindy [Cindy] goes to the school for blind children once [at twice] a week [After she comes to her home she always think about the book that blinds
can read. Now she is only 14 years old but maybe she can be scientist.

Everyday she think and think and think. When she was sleeping she just woke up and look around and made the book for blind. In the morning when Cindy wokes up she was so surprize and delighted about book for blind. She thought it made by sudden.

When she give it to the blind school, everybody thank to her and also she had became a famous women scientist.

Assessment IV

OS8

In the Middle of the Night
by Suk

(Note - Suk was the least proficient in English among the participating students and was not expected to do any writing assignments other than this class (see Appendix K for three entries from Suk’s stories and compare them with this story for improvement he had made).

The one scary night there was the DIVID was in scary house. his parents was going some where so only he was in the scary house.

He was boring so he watch the TV but TV is broken. so he cannot watch the TV [then] He was [very] hungry so he go to the kichen and eat the [some] apple, sanwitch and milk. He [Finish eat] he want sleep so he go to his room and start sleep. [But] that moment he heard the strange sound he was so scary so he pull his blanket and hide on the bed[he saw the clock time was the 1:30.

He get out his bed and to the living room and he turn up the TV there was the movie. So he watch the movie and wait for the his parent, that moment. He hill the lock he was very scary and he walk very careful to the door and he full the door there was the his parent was still there. So not scary so he goto the his room and sleep [along time].

[He was wake the 9:45 he was late the school so he ran to the school start study. He was think the yester day so he want try agin so he wait the ghost that moment some kind of strange sound was coming out again so he ran to the barn and take the saddle to the ghost. but thats not the ghost there was the his friend was playing. Now that strange sound was no more.]

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Nina Wins Prize
by Ran

(Note - Ran did not like the first draft, deleted the whole story, and rewrote the second draft as shown below)

A letter came for Nina. It asked her to come to a party. The person who dressed the funniest would win a prize. Nina was supposed to bring many books.

One boy was dressed as a clown and a girl looked like a rabbit, and all the children looked funny and then they picked the person who looked the funniest. Nina won! Their parents did not come because they were all busy working.

Nina looked like an apple tree. She had leaves in her hair and branches pinned to her dress, and apples are hanging around her neck so Nina was the funniest looking person at the party.

[On summer vacation camp there were only the kids who were 11 and under, but girls and boys had different cabins. But all cabins were good food and everything were very comfortable.

Every season that camp had different contests and big and surprise prizes. Like usually they had summer contest. It was "Who Dress funniest As a S.Captain".

Then all the kids started to play that contest but that contest rules were: 1. No Buying the Clothes 2. Noopying Others 3. No helping others.

It wasn't hard for them so this contest would play on July 9. Every student started to make the clothes and all the thread and needle got sold. Some student skipped their meals and some student didn't sleep or take shower. So some cabins were stink and dirty.

When the day of contest came all the students thought they'll win. And now Nina came to each of student. Can you guess what she wore? She was weearing the critter with mix with all kinds of animal.]
REFERENCES


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