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STRATEGIC AND INTERACTIVE WRITING INSTRUCTION (SIWI):
APPRENTICING DEAF STUDENTS IN THE CONSTRUCTION OF
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STRATEGIC AND INTERACTIVE WRITING INSTRUCTION (SIWI): APPRENTICING DEAF STUDENTS IN THE CONSTRUCTION OF INFORMATIVE TEXT

By

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ABSTRACT

STRATEGIC AND INTERACTIVE WRITING INSTRUCTION (SIWI): APPRENTICING DEAF STUDENTS IN THE CONSTRUCTION OF INFORMATIVE TEXT

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The purpose of this study was to investigate the effects of writing instruction that was strategic and interactive, namely Strategic and Interactive Writing Instruction (SIWI), when utilized with deaf, middle school students.

The SIWI curriculum was largely informed by (a) cognitive theories of composing, (b) sociocultural theories of learning, and (c) theories of dialogue. By drawing on these varied perspectives, a theoretical structure was imposed that comprehensively and effectively guided the inquiry of strategic instruction of writing within collaborative and interactive environments. In addition to strategic and interactive instruction, SIWI has four minor instructional components including: (a) use of writing examples and non-examples; (b) metalinguistic knowledge building; (c) use of visual scaffolds; and (d) *NIP*-it lessons (i.e., contextualized mini-lessons involving *N*oticing, *I*nstructing, and *P*racticing).

The study used a non-equivalent, pretest-posttest control group design to explore whether students receiving SIWI made significantly greater gains compared to those not receiving SIWI in the following areas: (a) high-level informative writing skills (i.e., primary traits associated with the text structure); (b) reading; (c) high-level generalized writing skills; and (d) low-level generalized writing skills (i.e., contextual language and conventions). The participants of the study were two teachers of the deaf and their

respective middle school students. There were 33 total students, 16 in the treatment group and 17 in the comparison group. Students, teachers and schools were matched on a number of variables. The SIWI intervention lasted a total of 8 weeks, during which the treatment teacher guided the collaborative construction of two informative papers; the comparison group continued with their usual literacy instruction.

All students were given a battery of assessments prior to and after the intervention to evaluate any gains. These measures included (a) an informative writing assessment, (b) an editing and revising task, (c) a generalization writing probe similar to a 7th grade state standardized assessment, and (d) a SORT-R reading test. The first three measures were scored, according to rubrics, for organization, coherence, evidence of text structure, contextual language, and conventions. A second rater scored approximately 10 to 20% of the papers and obtained an interrater reliability of 0.93 to 1.0.

A multivariate analysis of variance (MANOVA) was performed along with the necessary follow-up univariate analyses. All analyses were statistically significant, finding SIWI to be an effective instructional approach. Furthermore, the effect sizes (d) or the magnitude of the differences between group means for the writing variables were large to very large, ranging from 1.27 to 2.65. The effect size for the reading variable was small to moderate at 0.39.

A complementary set of qualitative data was also collected through interviews with students around motivational aspects and declarative knowledge. Analysis of student interview data revealed that students at posttest were able to express more knowledge about what good writers do before, during and after they write. Motivation for writing was a matter of topic choice.

In memory of Drs. David Stewart and Michael Pressley

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CHAPTER 1

INTRODUCTION

When Thomas Edison was working intensely to invent electric light, one of his lab assistants approached him and asked about all the failed attempts they had endured. Edison replied, "No, they're not failures. They taught something that I didn't know. They taught me what direction to move in" (PBS Home, 2000). Edison, despite numerous fruitless efforts, had a positive disposition and viewed his failures, not as disappointments, but as small steps in the right direction. When it comes to the historically low literacy achievement of deaf students, there is much to be learned from Edison's insistent ways. This is not a time for settling or surrendering to the numerous failed attempts. Edison, a deaf man himself, would not be satisfied with such a perspective. Yet, dogged persistence is needed now more than ever.

Rationale

Literacy Outcomes of Deaf Students

Statistical data on the achievement of deaf students has been collected for years and has been used to illustrate a lack of literacy progress since the late 1950's (Yoshinaga-Itano & Downey, 1996b; Yoshinaga-Itano & Snyder, 1985). Despite decades of effort and research aimed at raising achievement and reading outcomes of deaf children, reading levels have remained stagnate. The most recent data released by the Gallaudet Research Institute (2003) confirms this sad reality; the median reading comprehension score for 17 and 18 year old deaf students corresponds with a 4.0 grade reading level of hearing students. This indicates that half of the deaf and hard of hearing

students tested in this age range are reading below the typical hearing student who is beginning the fourth grade level. Even more striking, deaf persons typically only make one year of gain in reading comprehension over a 10 year period from age 12 to 21 (Yoshinaga-Itano, 1996). Writing achievement similarly plateaus at this age (Bereiter, 1980), with most deaf children making little to no progress in rules of transformational grammar after the age of 12 (Yoshinaga-Itano, 1996).

Dismal literacy outcomes persist even though advancements in the field of deaf education over the past several decades should have logically created greater literacy achievement. Some of the developments of recent times include: technological improvements such as cochlear implants and digital hearing aids; early identification and intervention programs that are increasingly screening babies at birth for hearing loss and providing services to the families by six months of age (National Center for Birth Defects and Developmental Disabilities, 2005); the explosion of sign-based programs and bilingual/ bicultural programs for educating deaf children; higher qualifications and standards for educational interpreters and teachers of the deaf; legal mandates such as IDEA that give students with hearing loss access to the general education curriculum; heightened awareness of Deaf[1] culture and the Deaf community. Yet, working to make a difference in the literacy achievement of deaf students has proven to be a formidable task despite these developments, and educators, now more than ever because of a changing society, have a need for effective literacy practices.

Today's ever-increasing technological society and global economy have impacted the nature of learning; there exists a heavy reliance on print-based literacy skills to

[1] "Deaf" is intentionally capitalized to indicate a prideful and empowered subpopulation of persons who are culturally and linguistically affiliated. When lowercase, it connotes persons with hearing loss that may or may not have cultural ties to the Deaf community.

accomplish everyday tasks and access information (Luckner, Sebald, Cooney, Young & Muir, 2006). Greater access to educational advancements, such as putting a deaf child in contact with the general education curriculum, does not necessarily ensure that learning takes place. Rather, if deaf students are to take advantage of such opportunities, they must have an array of effective strategies for composing and comprehending information of classroom learning and the greater society. The current study, as a result, gives attention to how writing instruction that is strategic and interactive apprentices deaf students in the use of cognitive strategies for writing informative text.

Further rationale for the study is provided through a broader national context.

A National Writing Agenda

Because of the lack of emphasis at all levels, writing has been branded the "neglected R" (National Commission on Writing in America's Schools and Colleges, 2003) in comparison to reading and arithmetic. Over the past few years, national efforts in educational reform have centered heavily on raising student achievement in reading and mathematics. The *No Child Left Behind Act* (NCLB) of 2002 calls for students in grades 3 through 8 to be annually assessed in reading and mathematics. Students must reach proficiency standards that increasingly build to 100% by the year 2013-2014, a year when all children should be at grade level in these subject areas. The high stakes associated with NCLB have inevitably placed reading and mathematics at the instructional forefront and have taken the spotlight off other subject areas such as writing which has been discounted in terms of the national agenda. For instance, the National Reading Panel (National Institute of Child Health and Human Development, 2000) chose to disregard the mutually dependent relationship of reading and writing by excluding

writing research from their review. Consequently, national discourses of academic achievement have positioned "writing" out of the conversation.

At the same time, and justifiably, national outcomes in the area of writing are far from desirable. The results of the 1998 National Assessment of Educational Progress (NAEP) on writing indicated that the majority of students at the fourth, eighth and twelfth grade levels had accomplished basic writing; however, only one in four students were able to write at advanced or proficient levels (United States Department of Education, 1999). Students' writings were often lacking higher levels of skill such as precision, complexity and coherence. In 2002, the NAEP writing assessment results showed few differences. Whereas the students' average writing scores in the fourth and eighth grades did show an increase, the results for twelfth graders were dismal, showing no significant difference between the two assessment years (United States Department of Education, 2002). The numbers have remained stagnant with only 24% of students graduating at or above a proficient level in the year 2002 as compared with 22% in the year 1998.

The lack of attention to writing in the schools has far-reaching consequences for postsecondary life. *Writing: A ticket to work. . . or a ticket out* (National Commission on Writing in America's Schools and Colleges, 2004) brought attention to the importance of writing skills in the workplace—they are crucial and essential, especially if one is wanting to ascend the corporate ladder. The report was based on a survey of corporate leaders and members of the Business Roundtable, which included representatives from some of the most well-known companies in the United States and the world. One commonly held opinion among these employers was that "writing is a ticket to professional opportunity, while poorly written job applications are a figurative kiss of

death" (p. 5). Two-thirds of salaried positions require some writing responsibilities. Also, half of all companies consider employees' writing skills when making promotional decisions. More than ever in today's workforce and society, employees need sophisticated and effective writing skills to be successful.

Meanwhile, current employers are dissatisfied with the writing abilities of recent college graduates (c.f., Johnstone, Ashbaugh & Warfield, 2002). With the exception of remedial courses, little attention is given to instruction of writing methods or techniques at the postsecondary level. It is commonly assumed, rather, that students entering the collegiate experience have had sufficient prior writing practice and instruction. In fact, recent updates to the SAT and ACT now require high school students to demonstrate their writing skills for college entry purposes (ACT, 2006; College Board, 2006). Similarly, the Graduate Record Examination (GRE) recently amended its subtest areas to include analytical writing as one of the three components along with the verbal and mathematics sub-areas, emphasizing the crucial role that writing plays in post-graduate education.

The demands for advanced writing skills at the postsecondary level and in the workforce are not waning, and the National Commission on Writing in America's Schools and Colleges (2003) stressed heavily that writing education is in need of a "cultural sea change." Among the several recommendations listed in the report, the most heavily stressed was the need for schools to double the amount of time currently spent on writing. For many teachers, this is an impractical request given the high stakes on reading outcomes. *Unless there are instructional practices available to teachers that address*

multiple literacy objectives simultaneously and evidence reading growth in addition to writing gains, writing will inevitably receive less class time rather than more.

Theoretical Framework

National attention on reading or writing may influence what is taught in the schools, but it does not necessarily ensure that teaching and learning happen in an effective manner (Hillocks, 2002). The current investigation on the effectiveness of writing instruction is informed by (a) cognitive theories of composing (Applebee, 2000; Flower & Hayes, 1980; Hayes & Flower, 1980; Hayes, 1996, 2000; Scardamalia & Bereiter, 1986), (b) sociocultural theories of learning (Bruner, 1996; Lave & Wenger, 1991; Rogoff, 1990; Vygotsky, 1978, 1994; Wertsch, 1991), and (c) theories of dialogue (Bakhtin, 1991; Burbules, 1993; Cazden, 2001; Nystrand, 1997; Wells, 1999, 2000). By drawing on these varied perspectives, a theoretical structure has been imposed that comprehensively and effectively guides inquiries around strategic instruction of writing within collaborative and interactive environments. To that end, these theories provide the grounds for the principles and foundational properties of the study's instructional intervention, Strategic and Interactive Writing Instruction (SIWI).

Obvious juxtapositions exist between these theoretical stances with regard to making meaning—cognitive perspectives are oriented around the individual or view sense-making as a process of enhancing one's cognition, whereas sociocultural perspectives view meaning-making as a social, cultural and historical mediation of knowledge with the use of semiotic tools (Prior, 2006). Instead of viewing these differences as tensions, this study adopts the position that plurality of thought, rather, promotes understanding complexities of teaching and learning as well as writing

development (Stone, 2004). When it comes to models of writing instruction, others have also seen the importance of this perspective:

> An intervention model that allows the integration of knowledge gained from multiple theories and models of teaching and learning – even competing models that may appear theoretically incompatible – allows the development of intervention approaches that maximize the strengths of each while addressing the weaknesses in any given model through strengths inherent in others" (Wong, Harris, Graham & Butler, 2003, p. 386).

Each of the theories emphasize critical yet distinct dimensions of mind or society that, in combination, provide for a comprehensive and synthesized way of applying writing instruction. The current study lies at the core of this mesh of theoretical perspectives, methodological tools and practices.

Theories on composing and cognition reveal those cognitive processes that are utilized when individual persons are engaged in activities of writing. Whether involved in processes of planning, generating or reviewing and revising, expert writers seem to manage them effortlessly while novice or struggling writers have an inefficient or ineffective method of approach (Scardamalia & Bereiter, 1986). In addition, theories on cognition and writing usefully direct us away from unrealistic step-by-step models of writing in favor of new ways of thinking about information processing, that is, recursive models (Hayes & Flower, 1980). Intervention studies that build conceptually from the cognitive models of writing processes tend to emphasize cognitive strategy instruction (Graham, 2006; Singer & Bashir, 2004; Wong & Berninger, 2004).

Whereas the models of writing conceptualized through cognitive science do make known the processes to be developed in emerging writers as well as the motivating aspects and knowledge to be cultivated or explicitly taught, there is less focus on how students best appropriate these through writing instruction. In support of teaching and learning, ideas are drawn from sociocultural theories. Sociocultural theories focus on language and literacy as socially and culturally developed processes. Therefore, the construction of meaning and knowledge happens when the individual interacts with others and the environment. There are four central tenets of Vygotskian theory that strongly influence the current research: 1) learning first happens on an interpsychological plane with other people or artifacts and then is later internalized (on the intrapsychological plane); 2) learning is a reciprocal, co-constructive process that involves a more knowledgeable other and a learner, both serving as active participants; 3) learning is distributed among people, artifacts, and tools; 4) learning happens within a zone of proximal development (ZPD)—the mentor encourages the learner to achieve beyond his individual limits by providing assistance but does not move beyond the learner's capabilities to make connections with what they already know (Lee & Smagorinsky, 2000).

Language is one psychological tool that is used by students to mediate and interpret activity (Wells, 1999, 2000). Thought is inextricably related to language (Lantolf, 2000), which points to the potential of dialogue to transform the consciousness of conversational participants (Lindfors, 1999). When student writers are viewed as active members of the collaborative discourse around writing, or are legitimate peripheral participants (Lave & Wenger, 1991) in a cultural setting of writing practices, they are

apprenticed in ways of thinking about, talking about, and performing writing tasks (Englert, Raphael, Anderson, Anthony & Stevens, 1991). Classroom dialogue, as it is practiced and appropriated by the learner over time, has a profound influence on the transformation a learner undergoes (Englert & Mariage, 1996) from a novice to a master practitioner in the community (Gee, 2004).

These diverse bodies of knowledge (i.e., cognitive theories of composition, sociocultural theories of learning, and theories of dialogue) work together to generate an intellectual agenda supportive of communities of practice where writing activity is both strategic and interactive.

Purpose of the Study

The purpose of this study was to investigate the effects of writing instruction that was both strategic and interactive, otherwise known as Strategic and Interactive Writing Instruction (SIWI), when utilized with deaf, middle school students. Because previous studies indicate that students have a more developed repertoire for writing narrative rather than expository texts and also evidence greater gains with narrative writing (Applebee, 2000), this investigation purposefully targeted exposition writing that informs—otherwise known as informative writing. Furthermore, writing tasks at the middle and high school levels are largely expository in nature (e.g., research papers, demonstration of content knowledge through writing), and adolescents are in need of developing the related skills that support informative writing (i.e., synthesizing and organizing information, formulating an understanding of the content and expressing through writing).

The SIWI intervention extended a previous model of instruction used with deaf writers that was interactive and guided (Wolbers, 2006). Such a model proved to be effective in apprenticing students in the construction of personal narrative writing. Students evidenced significant growth with both higher-level writing skills (e.g., use of genre-specific traits, coherence) and lower-level writing skills (e.g., appropriate use of contextual language and grammar, English conventions, spelling)[2]; simultaneously, the instruction had a significant effect on reading. SIWI utilizes the same instructional elements but additionally incorporates strategic instruction which specifically aims to support the transition to a genre of increased complexity. Ultimately, the study asked whether students exposed to the SIWI intervention made greater writing and reading gains than those who had not been exposed.

Research Questions

In particular, the research addressed the questions below. The first question directed the examination of students' growth in the genre-specific traits of informative writing skills (i.e., high-level writing skills). The second question asked whether reading was simultaneously impacted by the intervention, even though the model does not explicitly target the instruction of reading skills. The next two questions targeted evaluations of students' abilities to generalize what was learned from SIWI about informative writing to the writing of another text structure. Both high-level writing skills and low-level writing skills were the focus of investigation. The next question regarded

[2] The terminology of higher-level/higher-order and lower-level/lower-order skills is used frequently in the writing literature; however, it should not be misconstrued that these categories of skills have greater or lesser importance. Effective writing, rather, requires proficiency with both higher-level and lower-level skills. In fact, for many deaf writers, "lower-level" may be a misnomer, for some grammar-related items necessitate very involved cognitive processing which may be a result of managing a language of expression that is very different from written English.

length of constructed essays. Finally, the last question attempted to capture declarative knowledge and motivational elements that students displayed prior to and after the completion of the intervention. Together, these questions directed the investigation of students' higher-order and lower-order writing skills for two different kinds of text and the extent to which expository writing instruction had an effect on reading achievement, metacognitive skills and motivation.

(a). Do students receiving the SIWI intervention make significantly greater gains with high-level informative writing skills compared to those students not receiving SIWI?

(b). Do students receiving the SIWI intervention make significantly greater gains in reading compared to those students not receiving SIWI?

(c). Do students receiving the SIWI intervention make significantly greater gains with high-level generalized writing skills compared to those students not receiving SIWI?

(d). Do students receiving the SIWI intervention make significantly greater gains with low-level generalized writing skills compared to those students not receiving SIWI?

(e). Do students receiving the SIWI intervention make significantly greater gains with revising and editing a piece of informative text compared to those students not receiving SIWI?

(f). Do students receiving the SIWI intervention make significantly greater gains with length of composition compared to those students not receiving SIWI?

(g). Do students exposed to SIWI evidence greater metacognitive skills in regard to writing, and/or do students evidence greater motivation for writing at the conclusion of the intervention as opposed to the beginning?

Methods

This study used a non-equivalent, pretest-posttest control group design to explore the research questions. Participants were not randomized which thereby confirms the research design as quasi-experimental in nature.

The participants of the study were two teachers of the deaf (and their respective middle school students), each located in different deaf education programs. There were 33 total students, 16 in the treatment group and 17 in the comparison group. The treatment and comparison group teachers were matched based on proficiency of sign communication, type of sign communication used with students, educational backgrounds and teaching histories. The schools were matched based on the number of deaf education students, location of schools, and philosophy of educational and communicative practices. Students' pretest results on higher-order writing skills, lower-order writing skills, reading and editing/revising skills were examined to locate any differences between the two groups in terms of student achievement. Furthermore, student characteristics (e.g., onset of hearing loss, use and benefit of amplification, exposure to deaf adult role models in the home) were also considered and compared. The SIWI intervention applied to the treatment group lasted a total of 8 weeks, during which the teacher guided the collaborative construction of two informative compositions.

The students were given a battery of assessments prior to the intervention and after the intervention to evaluate any gain that may have occurred over the course of the

instructional period. These measures included (a) an informative writing sample, (b) an editing and revising task, (c) a generalization writing sample, and (d) a SORT reading test. The first three measures were scored, according to rubrics, for organization, coherence, evidence of text structure, contextual language, and conventions. A second rater scored approximately 10 to 20% of the papers from each assessment and obtained an interrater reliability of 0.93 to 1.0. A multivariate procedure was then used for the analysis (i.e., MANOVA due to the absence of pretest differences). The investigator also collected a complementary set of qualitative data through interviews with students; questions pertained to motivational aspects and declarative knowledge. The qualitative data was used to enrich the research findings and elaborate on the quantitative claims by providing information about students' thinking and feelings.

This dissertation introduction is followed by four additional chapters. In the next chapter, a literature review supporting the study is outlined. This chapter examines theoretical orientations that undergird writing intervention research, select writing research conducted with school-aged students, and the nature of literacy achievement among deaf students and the writing-related research. Chapter 3 then examines the research design of the study, including the participants, data sources, and methods for examining the data. Chapters 4 explores the findings of the study. Chapter 5 concludes the dissertation with a discussion of the findings, the study's limitations and future directions for research on writing within the field of deaf education.

CHAPTER 2

LITERATURE REVIEW

This chapter is comprised of three main sections that work together to build a rationale for the instructional design of the SIWI intervention while also justifying the existing need for research on deaf adolescent writers. The chapter begins by presenting a theoretical frame for the current study, one that draws on cognitive theories of composing as well as sociocultural theories of teaching and learning, including theories of classroom dialogue. This was purposefully done to shed light on both the inner and outer worlds of the developing writer. The second portion of this chapter points to the specific barriers and challenges facing deaf writers. Because of the scarcity of research on writing within the field of deaf education, arguments for instructional approaches were made based on a larger body of literature that considers general education students, special education students, and linguistically diverse writers. The concluding section of the chapter then highlights two methods of instruction, Cognitive Strategy Instruction in Writing (Englert, 1990; Englert, Raphael, & Anderson, 1989; Englert et al., 1991) and Morning Message (Englert & Dunsmore, 2002; Mariage, 1995, 2001), which, combined, have heavily influenced the current instructional model.

Theoretical Perspective

Theory of Cognition and the Composing Process

Cognitive theories of science have contributed substantially to the body of knowledge on composing practices and have illuminated the individual processes involved in writing. Such work has revealed the multitude of resources that one relies

upon and how or when these resources are activated in a single writing performance. Research has also offered explanation for the differences that exist between fluent, advanced composers and struggling, novice writers (Applebee, 2000; Hayes & Flower, 1980). Instruction of writing is then tailored to address the needs of the writer, in terms of insufficient knowledge or facilitation of knowledge.

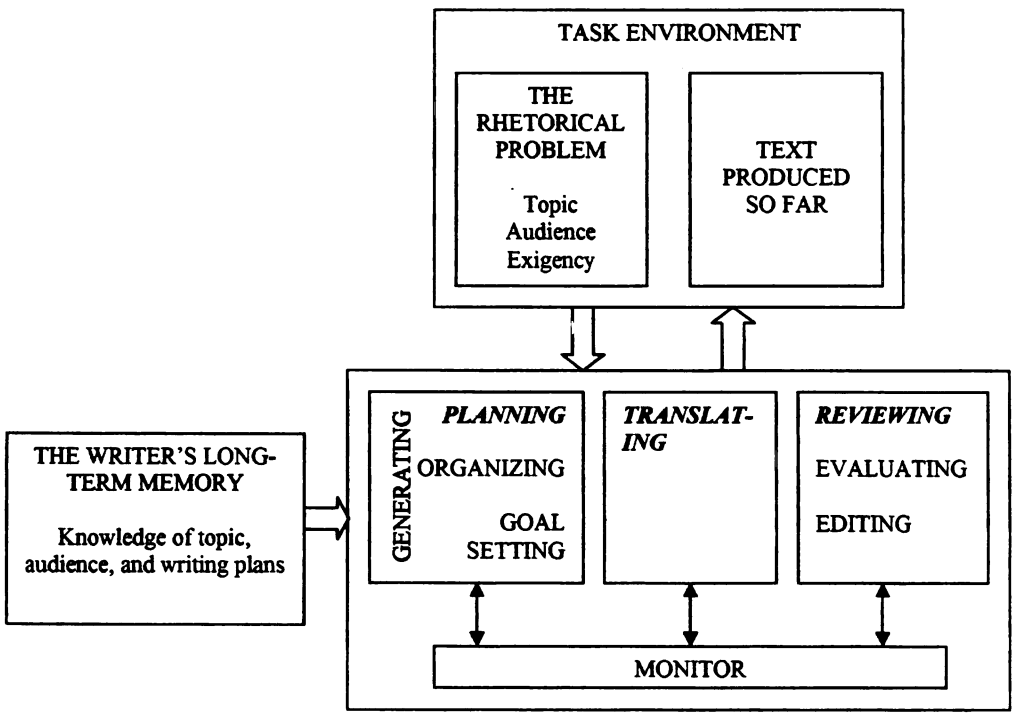
With this theoretical frame, writing is viewed as a complicated art that requires the composer to have control over multiple types of knowledge—knowledge of the content he is writing about, procedural knowledge in order to manipulate, organize and structure the content, knowledge of the text structure being employed, rhetorical knowledge in terms of purpose and audience, and knowledge of contextual language elements and conventions (Flower & Hayes, 1980; Hillocks, 1995). Furthermore, if the writer either lacks such knowledge or faces barriers in the automatic retrieval and fluent application of knowledge, one's short-term memory can be overloaded. As Flower and Hayes (1980) suggest, instruction might offer the novice methods for juggling the constraints that are encountered.

When examining aspects of individual writer cognition, a useful framework can be located in the work of Linda Flower and John Hayes (e.g., Flower & Hayes, 1980; Hayes, 1996; Hayes and Flower, 1980). Working from a cognitive problem-solving paradigm, Hayes and Flower (1980) were able to construct a model (represented in Figure 1) that would be useful in diagnosing the difficulties of the immature writer. They accomplished this feat by observing advanced writers and by collecting data using think-aloud protocols. While composing, individuals were prompted to verbalize their thoughts

or inner dialogue, which then gave insight into the processes (and organization or order of processes) being used to complete the writing task (Applebee, 2000).

The model is comprised of three main components: the task environment, long-term memory and the individual's processes. The first two components are the least elaborated; task environment represents those elements outside of the writer's body such as rhetorically-related information or text already produced, and long-term memory refers to one's knowledge of text structure or topic. Hayes and Flower detail more fully the writer's cognitive processes: (a) planning, (b) translating (later known as generating), and (c) reviewing (later known as revising).

Figure 1. A cognitive process theory of writing (Flower and Hayes, 1980)



Planning. Planning is giving thought to how a task should be accomplished. This can occur as an internal event where the writer is creating mental constructs that will aid the generation and organization of text, or it can be an external event where planning takes the form of a physical artifact (Hayes & Nash, 1996). Planning, especially when carried out externally, can be an effective way of reducing the cognitive strain a writer may experience when trying to manage various sets of knowledge (Flower & Hayes, 1980). One method of planning, referred to as planning by abstraction, involves writing down ideas associated with one's topic and then trying to move and organize those ideas into an outline or skeleton for writing a certain genre type (Hayes & Nash, 1996).

It has been shown that expert writers do quantitatively more planning than novice writers. Young writers often begin writing within the first couple minutes of receiving a writing task, completing little to virtually no planning (McCutchen, 2006). Yet, the difference in the amount of time a novice and expert writer spend planning should not be solely pinpointed as the cause for any discrepancy in writing ability. It is the case, rather, that the expert writer spends more time than the novice on all writing tasks including generation and revision of text (McCutchen, 2006).

Often less noticed are the qualitative differences in the planning writers undertake. When novice writers plan, they focus most intently on the generation of text, whereas expert writers consider additional facets of knowledge and memory including audience, goal setting, tone, and rhetorical purpose (McCutchen, 2006). Advanced writers have more flexibility in their plans (Flower & Hayes, 1980) which is evident in their ability to elaborate or change their plans once they have already started writing; they may choose to rethink their original design in light of what they accomplish or

discover through their writing (Pressley & McCormick, 1995). Such a method of conceptual planning is rare in adolescent writers but can be explicitly taught (McCutchen, 2006).

When there is a lack of planning or purpose, the writer may not access information from memory in an efficient manner (Pressley & McCormick, 1995), and the writer's ideas may be presented in a series of topic-like statements that do not evidence overall coherence (Hillocks, 1995), a process known as knowledge-telling (Scardamalia & Bereiter, 1986). Whereas mature writers consider the intentions of their pieces of writing when organizing and structuring information, novice writers structure information in the order they retrieve it (Sanders & Schilperoord, 2006). Furthermore, advanced writers develop themes in their text more deeply than novices by elaborating, adding, supporting or evaluating ideas.

The organization or structuring of text is a cognitive approach that some would say is neglected in the Flower and Hayes model (Sanders & Schilperoord, 2006). Later models of composing, however, point to organization as an important executive function of writing, just as planning, generating and revising (Singer & Bashir, 2004). Organization deals with how to structure and sequence content according to particular genre conventions. It is often the case that novice writers show competence with narrative story make-up but are less familiar with the structures associated with other genres of writing (Scardamalia & Bereiter, 1986). Yet, genre knowledge or knowledge of the form can contribute significantly to the processing of content and ideas (McCutchen, 2006; Hillocks, 1995). Wong and Berninger (2004) contend that through instruction, the schemas for paragraph structure and genre-specific text structure need be made accessible

to the learner to facilitate composing. This can be done by examining examples and identifying the underlying structure and components associated with various styles of writing.

Generating. While composing, one continually transforms his ideas from memory into the words and sentences of written discourse. This process, referred to as generating, can be challenging for a novice writer. Advanced writers, in fact, generate more content and write over 30% more words per sentence than less skilled writers (Hayes, 1996; Scardamalia & Bereiter, 1986). There are several problems that can interfere with the performance of novice writers. First, immature writers, especially children, rely on oral language patterns when writing. This often results in text resembling short, one-sided conversations. Instruction that effectively responds to this might involve peer response and active collaboration (McCutchen, 2006). Second, writers burdened by technical requirements such as spelling or handwriting do experience greater difficulty generating text than writers who attend to these matters with fluency (McCutchen, 2006). Namely, short-term memory is consumed by attention to low-level tasks, which leaves limited cognitive facility for the development of text (Pressley & McCormick, 1995). Once students are given tools that compensate for these competing processes, they are able to devote more attention to the generation of ideas (Scardamalia & Bereiter, 1986). For instance, a teacher might take over the responsibility for handwriting during the collaborative construction of text so students are free to practice high-level processes like generating. Lastly, novice writers may have difficulty accessing content-based knowledge when composing because memory is not efficiently activated (Scardamalia & Bereiter, 1986). Prewriting activities such as listing or engaging in conversation with

others can help writers with the retrieval of ideas. In addition, when students are allowed to write on topics that are of high interest, ideas may come more readily (Scardamalia & Bereiter, 1986).

Revising. Revising is a process of making one's text a higher quality. It consists of reading and editing subprocesses—reading to evaluate the text for meaning as well as detect weaknesses in language conventions and then editing when problems are encountered. The average writer will revise locally by addressing surface-level features; whereas, the skilled reviser can see the macrostructure of the text and will seek clarification of meaning by rearranging, adding or substituting text (Hayes, 1996; McCutchen, 2006; Scardamalia & Bereiter, 1986) in addition to handling mechanical concerns. Furthermore, an expert writer has an evaluative disposition toward the text—she reads from the perspective of a critical or reactive reader and anticipates an audience response. She is concerned with needs of the reader, and it is from this frame of mind that she evaluates the completeness of her message, appropriateness of her tone, the clarity of her language and the effectiveness of her organization (Hayes, 1996; Pressley & McCormick, 1995). High-level revision skills, those that give attention to meaning in addition to contextual language usage and conventions, need to be explicitly taught and practiced (McCutchen, 2006; Scardamalia & Bereiter, 1986; Wong & Berninger, 2004). Writers can be taught to conjure a representation of the reader while revising, or they may practice revising skills while working face-to-face with a reader (McCutchen, 2006).

Recursive writing. In addition to identifying the cognitive processes of writing, Flower and Hayes (1980) also revealed how writers move through the composing processes to achieve a final piece of text. Contrary to original thought that the process

consisted of prewriting, writing and rewriting occur in sequential stages, the skilled writer takes a more complicated approach by moving between processes in a recursive fashion (Hayes & Flower, 1980; Hillocks, 1995). Planning in general happens near the beginning of a writing task and revising typically happens near the end; however, this does not preclude planning from occurring after a writer has generated a good portion of text. Similarly, a writer may choose not to wait until he has generated a complete text to begin revisions. Rather, he may revise portions of text as they are constructed. To that end, writing instruction that encourages writing in a linear manner does not accurately capture the work of real writers and how they manage the cognitive processes of composing.

Revised model. Hayes (1996) has since revised the original model of composing processes. The more recent version gives consideration to how motivation and affect influence writing performance. In addition, a social component was added to the task environment that more specifically addresses audience and writing collaborators. Yet, although Hayes concluded it was necessary to broaden the cognitive model to account for social and cultural aspects of activity, he, at the same time, acknowledges his inability to fully elaborate these components due to his psychologically-oriented background. For the most part, writing instruction influenced by cognitive theories of composing has emphasized strategy instruction, self-regulation with cognitive processes (Singer & Bashir, 2004) and the use of cognitive tools or aids (Scardamalia & Bereiter, 1986; Wong & Berninger, 2004).

Strategy instruction. Struggling writers are those students who are not as aware of what constitutes good writing; they may (a) rarely plan before or during writing, (b) write using a knowledge-telling approach, (c) have difficulty organizing information, (d) have

poor spelling or grammar skills that impact composing, and (e) tend to focus revision efforts around conventions rather than content (Harris, Graham & Mason, 2003; Troia & Graham, 2002). Therefore, studies of strategy instruction aim to build the multiple aspects and sub-components of individual writing and cognition. They have typically targeted planning (De La Paz, 1997; Saddler, Moran, Graham, & Harris, 2004), organizing ideas and adhering to the text structure (Englert et al., 1991), writing (Chalk, Hagan-Burke & Burke, 2005; De La Paz, 1999) and revising (Wong, 2000). Goal setting is another strategically taught component of writing that is meant to impact the motivation or affect of an individual's writing (Troia, Harris & Graham, 1999). Oftentimes strategies are taught through the use of procedural facilitators such as cue cards with prompts or language stems (Wong, Butler, Ficzere & Kuperis, 1996), mnemonics that represents a set of steps, or checklists of specific evaluative criteria.

Strategy instruction of writing is the explicit teaching of more sophisticated composition processes than the writer currently has. Strategies are taught with the intent that behaviors become part of the students' own approach toward writing and are self-regulated (Harris, Mason, Graham, & Saddler, 2002). Graham's (2006) meta-analysis comprehensively reviewed 20 group comparison studies of strategy instruction and the teaching of writing. Effect sizes for quality, elements (i.e., inclusion of genre features), length and revisions were impressively large, even on maintenance and generalization probes, and many conclude that strategy instruction does positively influence the composing processes of all students but most definitely the processes of struggling writers.

Sociocultural Theory: Social and Cultural Features of Higher Mental Functioning

In recent decades, there has been a paradigmatic shift in the study of learning—a shift away from focus on the individual and cognitive processes to examining participation in social worlds with cultural history and practices (Lave and Wenger, 2003). This "turn to the social" is evident in the research activities around literacy, with the predominance of writing research in the 21st century geared toward studies of social context and writing practices (Juzwik, Curcic, Wolbers, Moxley, Dimling & Shankland, 2006). Human mental functioning is now widely regarded as situated in cultural, historical, and institutional contexts (Wertsch, 1991) and, accordingly, inquiries of mental action consider the individual within a larger contextual frame rather than an isolated element (Bruner, 1996; Cole, 2000).

The transition to socially- and culturally-influenced theories of learning was driven primarily by cross-cultural comparisons of cognition; in particular, seminal investigations such as the Kpelle rice farmers successfully illuminated effects of the cultural and historical on thinking (Cole, 2000). The Kpelle were found to have unique mathematical knowledge, in that, complex cognitive processes were witnessed as taking place in the everyday practices of weighing, buying and selling of rice. When the same mathematical tasks were given to Americans, they were not as successful. This led to reasoning, not that the Kpelle had superior intelligence, but that the Americans were disadvantaged by the task because they were unfamiliar with the cultural practices of selling and buying rice—cognition was divorced from context. Rather, learning is embedded within the social realm and is the result of interaction among people, objects or events (Wertsch, 1991). To that end, mental functions are grounded in everyday life events.

A sociocultural approach to mind where cognition originates from social life (Wertsch, 1991) theoretically influences and contributes to conceptions of education and a view of teaching and learning. Student learning is not just a process of teachers teaching but rather of students responding to and interacting with the environmental conditions (Dewey, 1990). Schools house the values and beliefs of an institutional group, where the young are socialized and acculturated into its practices through interactions with others and the environment (Bruner, 1996; Dewey, 1990). Thought is essentially the byproduct of internalized and aggregated social relations (Vygotsky, 1994; Wertsch, 1991). This notion of development translates to literacy events that are exploratory, dialogic and collaborative in nature (Wells, 2000), for literacy practices are embedded in the broader social goals and cultural practices (Gee, 1996). Writing activities, in particular, are contained within a social context and motivation for use (Barton & Hamilton, 2000).

Toward intramental functioning. Higher mental functioning first takes place on the interpsychological plane between persons and cultural artifacts and then is appropriated by individuals on the intrapsychological plane (Lee & Smagorinsky, 2000; Vygotsky, 1978). This process of transformation is one through which thought explored in shared activity becomes later internalized by the individual. That is, learning takes place along a continua from social to personal or collective to individual (Harre, 1983). Transfer of knowledge in classroom practice occurs when actions are externalized through group collaboration and discussion; later they become part of the student's repertoire of strategies which can be called upon in independent situations (Hillocks, 1995).

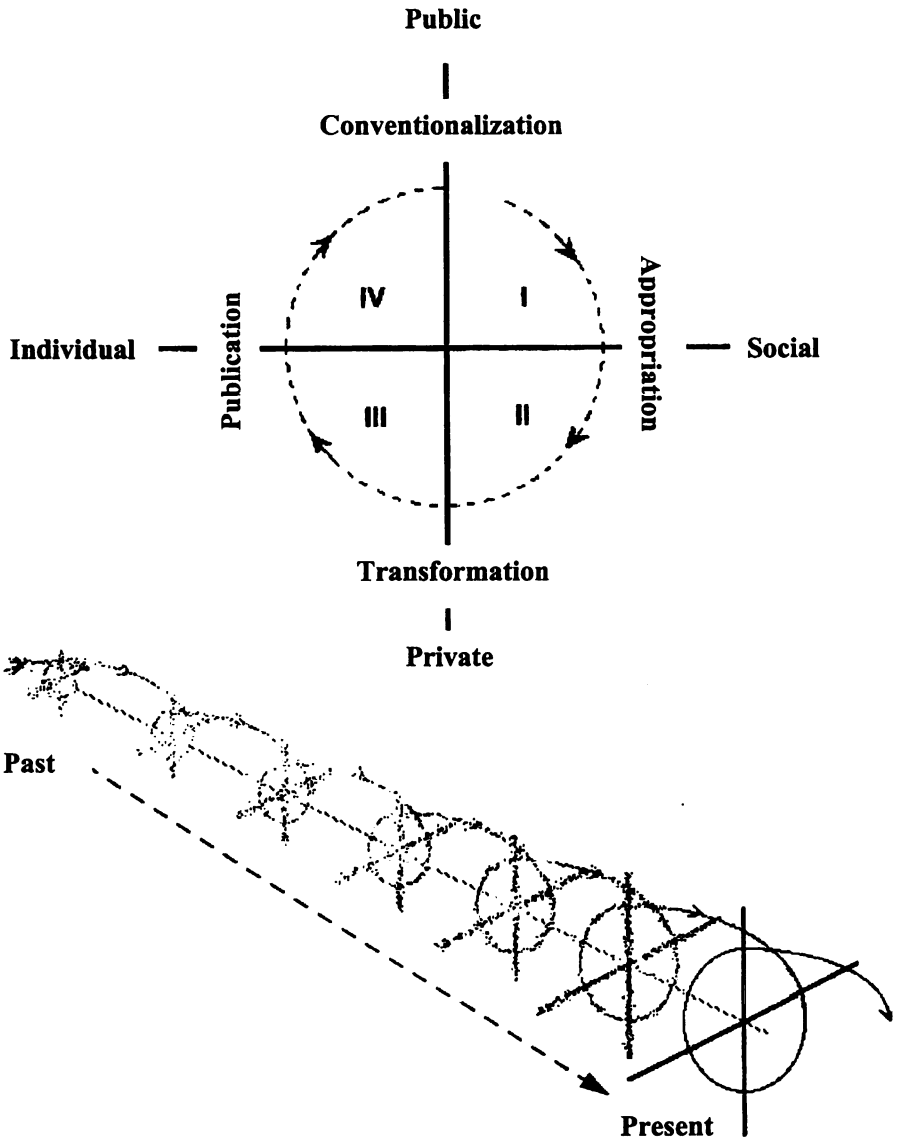
Yet, mental functioning is not a direct and simple copy of the social, but instead, individuals are active agents in their own development (Cole, 2000). Each person has their own theories and conceptions of how the world works, for we each have separate historical collections of events, conversations, and actions. Consider for instance a child who is actively exploring the world, driven by natural instincts and interests (Dewey, 1990); he may be holding on to naïve theories about the world. As he engages in interactions (i.e., discourse, collaborations or negotiations) with others about the topic at hand, his theories come into greater congruence with those around him (Bruner, 1996). The new ideas and conceptions come in contact with what has been experienced or observed prior. As Wertsch describes it, ". . . different forms of intermental functioning give rise to related differences in the forms of intramental functioning" (p. 27). The various appropriations we accumulate and assimilate give rise to individuation of thought (Prior, 2006). Individual thought, through novel constructions as opposed to transmission, is then communicated outward and impacts the social world (John-Steiner & Meehan, 2000).

Higher mental functioning is not merely transmission or transfer of knowledge to the individual (John-Steiner & Meehan, 2000); rather, the knower must actively construct it (Wells, 2000). This line of thought aligns itself with a constructivist perspective of learning—learning happens when students construct knowledge for themselves within a framework of what they already know by making links with previous experience and extending previous understandings (Goldenberg, 1992; Hillocks, 2002). Furthermore, constructivist theorists contend that students will easily forget the information that has been offered them through instruction or other classroom interactions unless they are ". . .

making sense for themselves of the experiences made available in the curriculum, trying out the ideas and skills. . . applying ideas to new contexts, and so on . . ." (Barnes, 1992, p. 6). Many teachers of the deaf, myself included, have focused their teaching around those grammatical skills students lack in their writing, using a skill and drill, decontextualized approach to teaching written language. In the case of my students, instruction would continue until they evidenced proficiency on worksheets or writing exercises, but then I was later puzzled when there was no transfer of newly developed knowledge to students' classroom writing assignments or personal writings.

The active role of the individual in internalizing, personalizing and contributing to the social is represented in the Vygotskian space (Harre, 1983; Gavelek & Raphael, 1996) pictorial featured in Figure 2. For some, the Vygotskian term "internalization" connotes a passive process of transferring knowledge (Cazden, 2001) and "appropriation", a Bakhtinian term, refers more accurately to the individual's role in transforming and constructing internal processes. Regardless of terminology, as the model shows, the learner's cognition, role and participation changes over time. The individual learner moves recursively through the four quadrants, indicated by the private/public and individual/social dimensions. Transformation indicates the unobservable and private cognitive work that an individual undertakes when new information encountered in the social is appropriated and then connected to one's previous experiences and knowledge. Congruent thoughts and novel constructions are then publicized once again via social and observable avenues which become conventionalized ways of thinking. Ultimately, the learner advances mental functioning working in a cyclical fashion between the social world and individual thought.

Figure 2. The Vygotsky space (original source Gavelek & Raphael, 1996 and adapted from model by Harre, 1983)



The notions of appropriation, transformation and publication can be further explicated with application of Bakhtin's ideas relative to the production of utterances. Because thought is an internal version of dialogue that springs from social activity (Cazden, 2001; Ward, 1994), one appropriates multiple voices and often disparate utterances from a variety of conversations; this is a process known as Heteroglossia. The language we use tends to be someone else's in part, that is, we inevitably echo others when we practice our own voice (Burbules, 1993). Ventriloquation is a term that represents this idea of taking on the words of others and then speaking through these voices (Wertsch, 1991). Yet, our individual utterances are also shaped and developed uniquely through interaction with others when others' voices are assimilated with previously-owned dialogue. The individual's intention and accent is applied, which gives, as a result, utterances filled with others' words and a degree of the own self (Bakhtin, 1989). Children's speech has much "hidden dialogicality" whereby the voices of invisible others are borrowed until the language is transformed into something distinctive (Bakhtin, 1989). The development of thinking and voicing is especially troubling for the many deaf children who are overlooked as conversation participants in the family and in the school because of communication barriers.

Teaching and learning in a community. Learning occurrences are not finite but rather takes place within a zone of proximal development (ZPD). This zone represents a range of skills and knowledge, spanning from what an individual can attain independently to an amount that can be developed through mentoring or peer collaboration (Lee & Smagorinsky, 2000). Assisted performance exceeds the unassisted (Lantolf, 2000), that is, the learner, with support from a more-knowledgeable-other, can

achieve above and beyond what would be attainable through solo episodes. Likewise, by assisting interactions with the child at a more complex and higher level, the mentor allows him to attain his full learning potential. The learner increasingly takes on greater responsibility for performance (Englert, Mariage, Dunsmore, 2006), and the ZPD advances forward. As the child grows in competence (Vygotsky, 1994), the guided interactions offered by the more-knowledgeable-other also continually change to remain supportive and more sophisticated. This is why some refer to the ZPD as a shifting zone of competence (Cazden, 2001)

Application of the ZPD to classroom teaching and learning requires that the child's understandings are appraised or interpreted to find out where he or she stands in relation to the larger growth process. Present performance, therefore, should be viewed in light of future desired performance (Dewey, 1990). Vygotsky (1978) further argues that dynamically assessing the level of potential development is just as necessary as actually evidencing development, for instruction is driven by the prior. As can be viewed in the model in Figure 2, evaluations of student learning can be made on a moment-to-moment basis as the learner's thoughts are externalized back to the social venue in the presence of the teacher.

Lave and Wenger (2003) conceived the move toward greater competence as taking place within a community of practice where learning is situated and inseparable from the social practice and the culture in which it occurs. Within the community, there are expert persons or old-timers who have certain ways of knowing and doing. There are also novices or newcomers who enter the community as legitimate but peripheral participants. Higher mental functioning is not a matter of experts teaching novices but

rather the interaction with and exposure to knowledge of a structured community of practice, for mastery resides in the organization itself. More central participation in the community indicates that one is becoming more engaged within the culture and taking on more of a role in the community—a shift in identity from novice to master practitioner. Knowledge is presented through social interactions in authentic contexts, and learning occurs when one is centrally participating in the community.

Lave and Wenger (2003) provide examples of learning that is embodied in the situation. For example, midwives begin on the periphery of practice, and after years of observation, helping and birthing their own and others' babies, they are finally the experts of this practice. From Dewey's (1990) perspective, this idea that learning should not be separated from the life of the larger society also applies to school practices for deaf students; for instance, literacy learning should allow for authentic opportunities and occasions for reading and writing.

School children are often legitimately peripheral to the classroom practices and knowledge but rarely participate; yet, it is through participation in the community that students learn ways of acting, talking and thinking. As Bruner (1996) puts it, ". . . if you treat people, young kids included, as responsible, contributing parties to the group, as having a job to do, they will grow into it. . ." (p. 77). When newcomers are perceived as legitimate members with contributions to give the community, activity is carried out in a more social and cooperative way. Persons are reliant on each other for knowledge, for one person may be highly knowledgeable in one area and another person in a different area (Burbules, 1993). In such a community, the teacher is not the sole authority and influence on learning; instead, students support each other in performance while the

teacher is a co-participant in the activity alongside students or is an orchestrator of interactions (Bruner, 1996; Lantolf, 2000).

Cognitive apprenticeship (Brown, Collins & Duguid, 1989) or sociocognitive apprenticeship (Englert, Mariage, Dunsmore, 2006) extends ideas of situated learning and communities of practice theories to give more focus to the cognitive and metacognitive skills to be learned in addition to the physical skills obtained through more traditional apprenticeship. Such a method involves exposing the learners to the processes, thoughts and practices that experts use to handle complex tasks. By observing how more-knowledgeable-others skillfully handle various predicaments, the novice appropriates actions and thoughts of the skilled. As the behaviors are gradually appropriated, control of the cognitive processes is increasingly transferred over to the learner. Cognitive apprenticing and transfer of control happens most effectively in the classroom through the use of (a) modeling, (b) think-alouds, (c) scaffolding, and (d) collaborative inquiry.

Modeling and thinking aloud can happen in tandem; the expert models or carries out a task that others can observe, and she may simultaneously externalize her internal thought processes around the task. The learners witness the activity and associated ideas that are utilized when accomplishing the task, and can more readily appropriate the processes involved. For example, a teacher might model the writing process by constructing a piece of text in front of students while, at the same time, verbalizing her thoughts about the actions she takes. The think-aloud is instrumental in making the normally invisible cognitive activity of the more-knowledgeable-other visible and thereby accessible to the more-novice-learner (Gavelek & Raphael, 1996). In the instruction of writing, think-alouds make visible ". . . the discourse, thoughts, actions,

decisions, struggles and deliberations that are part of the writing process" (Englert, Mariage, Dunsmore, 2006, p. 209). This approach is especially applicable to the teaching of deaf students who need access to approaches and strategies for navigating expression in two very different languages.

Scaffolding consists of various types of assistance and support offered to the learner such as verbal prompting, questioning, providing feedback in the form of direct statements, repeating or expanding on student comments, providing affirmations, offering hints on how to carry out the task, reminding, reconceptualizing or coaching (Kraker, 2000). First the teacher encourages student participation or voiced contributions so their current level of knowledge, skills and processes are articulated. The teacher then, aware of what students know, can provide scaffolding at a level that is more complex than where the students are now functioning (Bruner, 1996), thereby providing a connection between prior and new experiences and advancing learning.

Over time, the learner takes on more of the processes and actions for a particular task, and her need for scaffolding changes. As Cazden (2001) states, " . . . the adult enacts the entire script herself in the beginning, but the child gradually appropriates more and more of what had been the adult role" (p. 62). A practiced teacher will reduce and apply scaffolding as necessary to make forward progress with a task, allowing for as much independence among learners as possible. She facilitates this through "step back" and "step in" moves (Englert & Dunsmore, 2002), stepping back to give students more control over task when cognitively ready, and stepping in to provide an increased amount of instructional guidance when the processes are still slightly out of the learners' reaches. Less teacher control may involve the use of subtle prompts or questioning, and more

control is represented by teachers using direct statements, correction or methods of cognitive structuring (Kraker, 2000). Ultimately, guided instruction that is responsive to students' contributions and contingent to students' performances (e.g., recasts) promotes development of thinking, learning and metacognitive awareness (Rogoff, 1990). Yet, responsive, unscripted lessons that encourage students to take on increasingly greater control of the cognitive task are typically lacking in education of the deaf.

Lastly, collaborative inquiry is a way of encouraging learners to be more active in their learning by exploring a critical question and getting involved in the problem solving with others. Learning happens best when it is participatory, shared, collaborative and when the individual is active in the construction of meaning (Bruner, 1996). The teacher's role is to be a co-inquirer of the problem and not a provider of solutions. She may utilize think-alouds to model wonderment and create an ethos of inquisitiveness. Wells (2006) says, ". . . understanding is constructed in the process of people working together to solve problems that arise in the course of shared activity" (p. 66). As children appropriate skills of pondering or wondering, the teacher shifts roles to facilitating the direction of the conversation, connecting various contributions and repeating or reconceptualizing student offerings (Lindfors, 1999).

Instruction that is characterized by involving students in real-world problems, allowing student ideas and contributions to control the direction of classroom talk, making provisions for scaffolding students when encountering new tasks, and encouraging collaboration and interaction among class members has been referred to as the environmental mode (Hillocks, 2002), a mode proven to produce the greatest student gain (Hillocks, 1984)—more than lecture or a natural process toward learning.

Additionally, intrinsic motivation for learning has been shown to be higher during discussion or cooperative work (Hillocks, 1995). The environmental mode of instruction is common in contemporary research on writing (Juzwik et al., 2006) and is increasingly used in present-day classroom practice of writing, especially with non-mainstream students (Kuiken & Vedder, 2002). Greater application of an environmental mode of instruction with deaf students will also result in benefits, academically and motivationally.

Mediation of higher mental functioning. Human action is mediated by a number of cultural tools such as signs, strategies, concepts, artifacts, technologies and language (Lee & Smagorinsky, 2000). The mind is so much an extension of the hands and tools (Bruner, 1996) that mental action is not independent from its mediational tool (Wertsch, 1991). Psychological tools or artifacts are the objects with which we think and the entities through which we speak (Prior, 2006).

Within the context of writing instruction, procedural facilitators (Scardamalia & Bereiter, 1986) are tools such as matrices or cue cards that prompt the use of certain strategies or processes. Procedural facilitators are the semiotics that ". . . enable teachers to make visible the character of the particular text forms, the strategies and procedures that underlie the text's construction and revision, and the discourse structures and language practices that permit writers to realize their writing goals" (Englert, Mariage, Dunsmore, 2006, p. 213). They have been known to advance students to more sophisticated levels of writing (Scardamalia & Bereiter, 1986), for they allow the user to offload aspects of thought onto the tool. Additionally, evidence exists showing that students can transfer from facilitated procedures to independence with constructing text

(Scardamalia & Bereiter, 1986), for procedural facilitators, when appropriated, can alter human mental functions by becoming a form of inner speech that directs performance.

Language is a sign system and another psychological tool that can transform action (Wertsch, 1991). In fact, some would say that speaking and thinking are inextricably intertwined (Lantolf, 2000; Stewart & Clarke, 2003; Ward, 1994). Higher mental functioning is the appropriation of social processes and practices whereby language plays a critical role of mediating the learning (Kraker, 2000). Language is a way in which we come to know other points of view (Bruner, 1996) and an avenue for sharing our experiences and thoughts with others and accessing theirs in return (Dewey, 1990; Greeno, Collins & Resnick, 1997). It is through dialogue and collaborative interactions that students are exposed to techniques, strategies and the problem solving of others in ways that resonate with the knowledge they already have (Lantolf, 2000). The self and knowledge are ultimately constructed through "dialectical interaction among language, culture, people, and the material world" (Ward, 1994, p. 50). Children, especially deaf children, need the opportunity to use language with others in the appropriate context to make meaning of their social reality and to develop self identity.

Language used by a more-knowledgeable-other influences the linguistic and cognitive development of the learner (Gavelek & Raphael, 1996; Hartman, 1996). Because development happens through the use of dialogue such as questioning and sharing (Tharp & Gallimore, 1988), a dialogic pedagogy would emphasize the importance of language and interactions in the classroom. Ward (1994) provides similar remarks, "since knowledge . . . is not located in the minds of experts but in the conversations of experts, then the task of education is to provide the opportunity for

students to talk—to engage in these knowledge-producing and maintaining conversations" (p. 67). The child, his or her peers and the teacher are all shaped by each other through their interactions. Furthermore, interactions shape the way children come to understand and make sense of the environment around them—meaning is negotiated and constructed (Nystrand, 1997).

It is the case, however, that schools mainly consist of teachers telling and imparting knowledge on the learners, which is likewise the experience of the deaf student. If and when students participate, it is in the form of rote memorization or recitation of short answers. The traditional student-teacher interactions follow the structure of IRE sequences (Mehan, 1979)—the teacher initiates a question, the student gives a short and recited response, and then the teacher offers a brief evaluation of the student's response. The questions are often knowledge-testing questions instead of authentic and open ended queries (Nystrand, 1997). Teachers also may cut off or ignore any unanticipated student comments in order to keep control of the content and flow of the lesson (Lemke, 1990) while, at the same time, thwarting opportunities for discussion. Narrow questions that emphasize the need for correct answers lead to breakdowns in the dialogue (Burbules, 1993). When using traditional interaction sequences (also known as a model of transmission or triadic dialogue), teachers typically talk about 2/3 of the time (Cazden, 2001), and students do not have classroom roles that require thought, interpretation, or construction of new ideas. (Nystrand, 1997).

Non-traditional sequences, on the other hand, involve teacher questions that are authentic, open-ended and encourage discussion. The questions probe for understanding (Burbules, 1993) rather than test student knowledge with a prespecified answer in mind

(Nystrand, 1997). Questions may also challenge student thinking by asking them to explicate and give rationale for why they believe something. Nassaji & Wells (2000) suggest that initiating a class sequence of interaction with a teacher question as in the IRE sequences, in itself, is not problematic, for discussion most always stems from a teacher's question. However, teachers can have a different follow up approach that keeps discussion alive instead of offering evaluations of student responses that close the conversation.

An instructional conversation, as defined by Tharp & Gallimore (1988), is one dialogic approach to classroom instruction that illustrates how student contributions are given value and encouragement. The dialogue weaves between students, other students and the teacher, with new offerings building upon, challenging, connecting with, or extending previous ideas (Goldenberg, 1992). As Burbules (1993) points out, "In the to-and-fro exchanged comments and responses, dialogue builds upon itself to reach new and unexpected results—and this can give us pleasure and delight" (p. 50). Teachers and students alike contribute ideas to the conversation and engage in reciprocal questioning. The dialogic relation is a give and take connection, by which all participating members have something to offer and something to gain (Burbules, 1993). However, even though the spontaneous and creative nature (Cazden, 2001) of instructional conversations or any dialogic pedagogy may be delightful, as Burbules claims, it also results in unscripted instruction that leads the class in unpredictable directions. However, Nystrand (1997) argues that this moment-to-moment negotiation and movement of conversation can allow for more sustained and in-depth learning.

When using a dialogic method of instruction in the classroom, a teacher assumes numerous roles. She must not only have flexibility and spontaneity but also must demonstrate an exploratory mind-set (Burbules, 1993), thereby modeling a disposition toward learning that is inquisitive and discovery-based. More importantly, the teacher skillfully orchestrates students' talk (Gavelek & Raphael, 1996; Goldenberg, 1992) on a moment-to-moment basis. A number of dialogic approaches used by effective teachers of the deaf include questioning, eliciting, rephrasing, expanding, repeating, clarifying, listening, challenging, offering or weaving comments into a larger tapestry of meaning (Hartman, 1996; Mayer, Akamatsu & Stewart, 2002). Critical to the effectiveness of the instructional conversation is the teacher's ability to select the appropriate approach from her repertoire of dialogic techniques (Burbules, 1993; Goldenberg, 1992). Ultimately, she leads the conversation in the direction of more complexity, utilizing turn-taking of a cyclical nature (Stone, 1998) to stay abreast of what students currently understand and then offering contingent and scaffolded responses.

The teacher's contingent use of dialogic techniques (otherwise referred to as dialogic moves) sustains conversational involvement (Mariage, 2001) and advances mental functioning. Each dialogic move has a different underlying purpose. The act of *revoicing* a student's utterance, for instance, may serve any number of the following functions: checks the accuracy of one's understandings; evidences that the teacher is giving close attention to student contributions; gives students authorship for their ideas; clarifies the content; creates a collaborative mood (Burbules, 1993). *Reconceptualizing* is another discourse move that involves repeating what the child means in a rephrased utterance, thereby modeling the idea in more mature language (Cazden, 2001). Other

discourse moves include *building* to develop ideas along a particular line, *redirecting* to change the direction of a conversation (Burbules, 1993), or *holding the floor* for particular members to enter the conversation and contribute (Mariage, 2001).

Effective dialogic instruction encourages students to actively participate in the thinking, molding, and the generation of understandings (Nystrand, 1997). If trust has been established in the group, students are more willing to think-aloud these processes (Barnes, 1992). They may use *exploratory talk* (Barnes, 1992; Cazden, 2001) which is an attempt to formulate their ideas as they are speaking. The expressions may not be articulated well and consist often of disfluent utterances that have pauses and several restarts. This kind of talk which can lead in the direction of dead ends gives way to a more rehearsed talk as students come to own or appropriate the language of the task. This talk, referred to as *final draft talk* (Barnes, 1992), has been polished or refined, and the ideas have been considered prior to the expression.

Dialogic modes of teaching have been linked with greater academic achievement as well as higher cognitive capacities and critical thinking (Burbules, 1993; Hillocks, 2002; Nystrand, 1997; Ward, 1994). Research by Mayer, Akamatsu, and Stewart (2002) looked extensively into the dialogue used by teachers of the deaf across grade level and subject matter. They reported that exemplary teachers used discourse strategies like those mentioned above that encourage students to expand on their linguistic and cognitive efforts. Teachers responded to students' comments and queries in a constructive and contingent manner, and asked meaningful and authentic questions. All participants, teachers and students alike, actively worked together, sharing or exploring problems. The teachers were co-inquirers along with students in an effort to collaboratively investigate

an important question—they were involved participants in the construction of knowledge rather than simply providing or telling information. Thus, aspects of instruction drawn from sociocultural theories of learning and theories of dialogue show promise in the field of deaf education and deserve widespread application.

Writing and Deafness

Deaf and hard of hearing students form a unique subpopulation of writers, one that exhibits great challenges in learning to write effectively and fluently. For this population, there are linguistic as well as cultural barriers that stand in the way of making sufficient writing progress. First, early language exposure and language learning practices (Schirmer, 1994; Stewart & Clarke, 2003) are often inaccessible to deaf children through auditory approaches. If a mutually understandable means of communication is not adopted early on in the home, deaf children are at great risk for language delays. Siegel (2000) makes the claim that the current educational system in place for deaf learners perpetuates a home problem by also often providing communication-poor learning environments. Poor communication and language skills indicate poor literacy skills to follow—expressive and receptive language deficiencies lead to subsequent reading and writing struggles (Hartman, 1996; McAnally, Rose & Quigley, 1999; Schirmer, 1994).

Second, there is a lack of a correspondence between sign language (whether it be ASL or contact sign) and English text (Fernandes, 2003). Much has been said about the linkages between one's expressive language and one's written language. In the mid-seventies, for instance, Loban showed that oral language and written language seemed to develop in parallel (Applebee, 2000); once certain developments took place in one's oral language such as the use of dependent clauses or more complex vocabulary, these

developments occurred in one's writing approximately one year later. More recent work by Mayer and Wells (1996), based on Vygotskian theory, claims that spoken language provides the link between one's inner speech and written speech. McAnally, Rose and Quigley elaborate this idea, "Written language depends on the child's ability to represent internal personal thoughts in symbolic form using the rules of English . . . " (p. 170). Based on these assertions, one can expect that students who use an expressive language that is different from standard English will have remnants of that communication in their writing.

For instance, a person speaking English might use the following sentence to describe their recent flight: My flight from Chicago to New York was extremely turbulent. A person using ASL might sign: Chicago (set up on the left of the body)-New York (set up on the right of the body)-I-fly (movement from Chicago to New York)-happen-turbulent (shows plane movement with a classifier). There is less of a bridge between one's inner thoughts and one's written speech for children who express themselves via ASL but must learn to read and write using standard English. Deaf children who use sign language, therefore, encounter difficulties in making connections between their expressive language and written English.

Lastly, there often fails to exist a literacy relationship between one's school practices and one's community practices (Padden & Ramsey, 1993). A school's inability to incorporate Deaf culture, for instance, into instruction (Evans, 1998, March) can perpetuate a divide between two or more various discourses (Gee, 1991, 1996). Discourses are tightly interwoven with culture, values, beliefs, attitudes, acts, and social identities which provide its users a way of interacting with the world. "A discourse is a

sort of identity kit which comes complete with the appropriate costume and instructions on how to act, talk, and often write, so as to take on a particular social role that others will recognize" (Gee, 1996, p. 127). What is needed is a sensitive approach that values and respects what students bring to the classroom, and one that builds on students' already-developed linguistic competence (Delpit, 1986, 1988). Delpit (1995) argues that if we want students to develop standard English skills, we must also allow them to share different aspects of their own language. There is a cooperative building of meta-knowledge for both languages. When linguistic diversity is invited into the classroom and not shunned, students have more self-esteem for their expressive language and a greater willingness to participate in learning (Hagemann, 2001).

Unique Characteristics of Deaf and Hard of Hearing Writers

Due to the barriers detailed above, deaf and hard of hearing students face substantial literacy challenges. In contrast to most hearing writers, deaf students commonly struggle with lower-level writing skills. Whereas there are typically no distinctions between good and poor writers in relation to the use of conventions such as punctuation (Marschark, Lang & Albertini, 2002), there are several linguistic and syntactical differences (Gormely & Sarachan-Deily, 1987). With regard to lexicon, syntax and grammar, many deaf students do not yet operate with automaticity (Mayer, 1999; Powers & Wigus, 1983). Therefore, their writing can be characterized as having short, basic sentences with simple verb forms, few subordinate clauses, and few conjoined independent clauses (Heider & Heider, 1941; McAnally, Rose & Quigley, 1994; Moores & Miller, 2001; Powers & Wigus, 1983; Yoshinaga-Itano, Snyder & Mayberry, 1996). Often, vocabulary knowledge is less in comparison with their hearing

peers, and they also have slower rates of new word acquisition (Lederberg & Spencer, 2001). Furthermore, they experience difficulty with the use of adverbs, pronouns, determiners, conjunctions, passive constructions and conditional verbs such as "could", "should", or "might" (Taeschner, 1988; Wilbur, 2000; Yoshinaga-Itano et al., 1996). Students with hearing loss do make progress with syntax and contextual language over the years; however, they rarely achieve a level commensurate with their hearing counterparts (Antia, Reed & Kreimeyer, 2005). In fact, after the age of 12, progress slows considerably with many making only one year of gain over the next ten years (Yoshinaga-Itano et al., 1996).

Whereas the research on characteristics of deaf writers has been traditionally product-driven (McAnally, Rose & Quigley, 1994), there are also higher-level skills that need to be developed in all children such as viewing writing as a process, having a purpose, addressing a specific audience, and writing organized and coherent pieces (McAnally, Rose & Quigley, 1999). Students must have knowledge of different writing styles or text structures such as expository, narrative or descriptive (Evans, 1998; Isaacson, 1996), and they should give proper consideration to the primary traits associated with the writing style they are utilizing. Most of all, there is a need for deaf students to develop coherence in their writing (Antia et al., 2005; Klecan-Aker & Blondeau, 1990; McAnally et al., 1999). They have typically relied more on associative kinds of writing techniques by introducing several topics without elaboration (Yoshinaga-Itano et al., 1996). Each idea needs to be carefully woven together instead of existing as complete pieces of information that are independent of what was previously said. Lastly, engaging in the revision process and monitoring text can provide great challenges to deaf

writers if they have not developed an internal representation of English (Paul, 1998, 1990).

Also, it should be pointed out that hard of hearing children are a vastly different subpopulation of students and tend to develop literacy skills as their hearing counterparts. If these children fall slightly behind in the younger years while in the process of assessing what technology and accommodations will be most successful, they rarely continue to fall further behind once these are realized. Antia (2005) evidenced, for instance, that hard of hearing students do not fall further and further behind their hearing peers in writing. Students with more severe hearing losses evidence much more variable outcomes.

The following story written by a 7th grade deaf student evidences many of the lower-order and higher-order characteristics mentioned above:

> February 7, Sara and I went to pet shop. I want the lizard. We buy the lizard, wood, little cave with plant, the crickets, and water. We brought to my house. I feed the lizard. It eat crickets. I pick the lizard Then pet to it. I said, "called Darsh and Satch." It is brown and yellow. Wow! The lizard's long is 8 inch. I can tickle the lizard. I don't know how old the lizard (Wolbers, 2005).

In this sample, the author uses short, rigid and simple kinds of sentences, while avoiding more complex features such as dependent or relative clause use. The sentences have more of a knowledge–telling quality rather than really hanging together to develop a coherent narrative with a beginning, middle and end. Also, the phrase, "the lizard's long is 8 inch," demonstrates nonstandard usage in a couple ways—"long" is an incorrect word choice for this context and "inch" lacks plurality. While the sentence seems awkward to a standard English speaking person, it looks correct to the deaf child. There are reasonable

explanations for the child's construction of such a sentence. First, one way a deaf child might express the concept of length in ASL is to use one's index finger and slide it up the length of the other arm. The ASL gloss word for this concept is "long" and is perhaps the reason for the word's appearance in the awkwardly-sounding sentence above. Second, one may signify plurality in ASL by using repetitive movements, but it is not always necessary. In the example, "8 inch", the student has already indicated that there are several inches by stating a number, and that alone can indicate plurality in ASL. Thus, the student is seemingly applying knowledge of her first language to write her ideas in English.

The challenges that deaf students experience with writing often parallel similar problems of reading (Wilbur, 2000). This highlights the interrelatedness of language, reading, and writing skills. For instance, inadequate language skills and a limited vocabulary are challenges that impede development in both reading and writing. Indeed, deaf children who are superior in one of these skills tend to be superior in all of these skills (Crandall, 1978). Yoshinaga-Itano and Snyder (1985) noted that when deaf and hearing participants were matched by reading ability and chronological age, there were no differences in the syntactic or semantic qualities of the writing. Reading and writing, therefore, happen in collaboration and are taught together (McAnally, Rose & Quigley, 1994).

Post-secondary Literacy Readiness

The provost at Gallaudet University, a liberal arts college for the deaf, stated recently that reading and writing levels of incoming freshman have been rising each year (Fernandes, 2003). Surprisingly, at the same time, the national median score of reading

achievement for high school graduates remains unchanged. This may be indicative of a widening gap between those students who have surpassed the 4th grade reading barriers that seem to exist for deaf students and those students who are still struggling with basic (even primary) reading and language skills. Certainly, the literacy levels of deaf students at the time of high school graduation place this group of individuals at risk for positive postsecondary outcomes. Only 36.4% of deaf students participate in postsecondary education within two years of leaving high school (American Council on Education, 1996).

Within three to five years after leaving high school, 60% of deaf and hard of hearing students are participating in postsecondary education which is a rate similar to all students. Yet, most deaf students attend colleges specifically tailored for students with hearing loss such as Gallaudet University and National Technical Institute for the Deaf. Do not mistake that these are fine institutions which house some of the most reputable faculty members and researchers in the nation; however, the colleges do have lower admission standards than many other universities. Once accepted, students with low reading levels and writing skills are typically enrolled in an intense and targeted remediation program. NTID, for instance, offers a series of developmental English courses meant to advance deaf students and their literacy outcomes, so that they are on "level playing ground" with typical college students who are hearing. There are few deaf students who have strong enough literacy skills at high school graduation to attend any university of choice.

Prior Literacy and Deafness Research

Sadly, the field of deaf education has very little knowledge aggregated in terms of the writing practices of the deaf or effective literacy interventions with school-aged deaf persons. Antia, Reed & Kreimeyer (2005) conducted a regression analysis to find the predictors of writing achievement in this population of students, but they resulted in a model that could only explain an unsatisfying 18% of the variance with variables like grade, degree of hearing loss and gender. This research and others like it do little to respond to the historically low literacy achievement rates of the deaf. Furthermore, there is a paucity of literacy research. Luckner, Sebald, Cooney, Young & Muir (2006) found that only 964 articles relative to literacy and deafness have appeared in peer-reviewed journals over the past 40 years; that equates to a meager 24 a year, on average. Of those 964 articles, only 22 could be considered evidence-based, that is, the study used a control group and provided quantitative and statistical information needed for calculation of effect sizes. Astonishingly, over 500 of the articles were eliminated solely on grounds that they were not research studies at all but were position papers, practitioner articles, or literature reviews. Luckner et al. (2006) could not conduct the meta-analysis they had wanted due to the fact that no two studies examined the same aspect. Furthermore, out of the 22 articles considered scientifically-based research, less than a quarter related to writing. Needless to say, there is considerable need for an increased quantity and quality of literacy research and deafness.

Deaf Writers as L2 or Linguistic Minority Learners

With the paucity of literacy research on deaf populations, innovation and research within the field is largely reliant on theoretical frameworks such as those already presented in this chapter (e.g., cognitive theories, sociocultural theories, and theories of

dialogue). It is also fruitful to ascertain the applicability of other related bodies of literature such as L2 writing research and research on linguistic minority writers. One may question the ability to apply L2 writing literature to deaf students because so many deaf children do not have even one fully developed language at the start of school. With the exception of deaf children of deaf parents who may be exposed to ASL in early childhood, most deaf children who use sign language do not have adequate quantity (i.e., due to lack of opportunities for communication via ASL) or quality exposure to ASL (i.e., due to lack of fluent models) at an early age to acquire it similarly to how their hearing counterparts acquire English. Therefore, language development of a primary language, if sign, is often delayed and/or incomplete. Similarly, due to the physical barriers of hearing spoken language and the difficulties of lipreading, deaf children have, at best, partial exposure to the English language. Often a reality is that deaf children are learning English and sign (ASL or contact sign or English-based sign) simultaneously in the schools. This experience is contrary to a typical L2 student who has fluency in a primary language which then influences learning in the secondary language of English. In this regard, the deaf and hard of hearing population of students is a unique group that faces specific and particular challenges of its own, that is, the impact of incomplete language acquisition of a primary language on reading and writing or the impact of mixed exposure to sign and English. At the same time, Valdes (2006) has identified monolingual speakers of a particular ethnic group who speak a contact variety of English as representative of the diversity of L2 writers. These are persons who have learned English from others who speak it imperfectly (e.g., children learning and using a Spanish-

influenced variety of English). Similarities can be drawn to the use of contact sign where persons use more of a mixture of English-based sign and ASL properties.

There are parallels that can be found in the writing of deaf students and the writing of your typical L2 students. Both populations of writers evidence struggles with the mechanics or grammatical features of English, have nonnative features that surface in their writing, have longstanding syntactical, phonological, morphological or pragmatic problems even after years of English use and after reaching a level of expressive fluency (Valdes, 2006). Deaf education teachers have inherently relied on similar instructional techniques (e.g., error correction) that are widely used in the field of L2 writing when it comes to addressing a-grammatical elements of student work. However, the field of L2 writing has furthered this body of research (e.g., through instructional principles of "noticing" and "reformulation" centered around heightening metalinguistic awareness and involving students in the meaning-making process). With respect to deaf education, these ideas remain largely untapped but potentially effective.

To that end, it can be questioned whether deaf students may be referred to as a L2 population. This is somewhat problematic because the L2 label implies that deaf children have acquired a primary language other than English. As it was shown above, there often is partial and delayed acquisition of both sign language and English. Yet, for the population of students that is represented by this study, ASL (or contact sign) is more than often preferred as a primary means of communication and expression. This population of students would prefer to sign it or see it signed in ASL rather than speak it, read it or write it in English. Sign language skills, albeit later than the occurrence of typical language development, are honed through day-to-day interactions, more so than

English. Sign language becomes the primary method and means through which these deaf students make sense of the world. Due to the case that this population of deaf individuals typically reach fluency in sign language prior to attaining fluency in English (which some claim to never fully attain), and because ASL or contact sign becomes an avenue for communicating about English, the L2 label is applicable, for indeed, these deaf students are learning English as a second language.

L2 or Linguistic Minority Writing Research

Research has indicated that there are differences in the writing processes used by expert and novice L2 writers. Those considered more expert at writing construct longer and faster pieces of text, spend double the time planning prior to starting, and reread text for high-level purposes in addition to low-level considerations (Sasaki, 2002). Novice L2 writers, on the other hand, devote more time to translating their generated ideas into English and stop more often to consider issues of translation. Some would deduce that novice L2 writers then need instruction that hones lower-level writing skills and focuses in on translation strategies separate from the writing process; however, studies have shown that this is not the case. For all levels of L2 writers, beginner through advanced, writing all-at-once in a non-linear process resulted in greater writing fluency and quality than step-by-step writing (Ransdell, Lavelle & Levy, 2002). This suggests that instruction and learning relative to contextual language use happens best when situated in real writing contexts.

Instruction of L2 and Linguistic Minority Writers

A balanced approach needed. Whole language and process writing approaches are used profusely in the schools to teach all students. The whole language approach

stems from knowledge about the acquisition of oral language and the development of early written language skills. Encounters with language through conversation or print-rich environments allow children to be learners who "spontaneously engage in the construction of needed knowledge and skills" (McNaughton, 2002, 92). Experiences build on each other and naturally extend into one's writing. Yet, some academicians claim that this amounts to a one-size-fits-all approach and is a disservice to linguistically non-mainstream and L2 students because instruction is not intense or strategic enough (Delpit, 1986, 1988; Reyes, 1992). Rather, for linguistically diverse students who have acquired a different first language, learning standard English is a conscious, contrastive and analytic process (Gee, 1991).

Equally, a preoccupation with the teaching of grammar through decontextualized rules or formulas may also be an unproductive approach. Traditional ways of teaching grammar and standard English rely heavily on skill-drills that occur apart from any real writing context (McNaughton, 2002). Students have little opportunity to experience purposeful writing for an authentic audience. Yet, it has been shown that reductionist teaching of lower-level skills separately from a larger sphere of meaning provides no real benefit to students (Coleman, 1997; Hillocks, 1986). Some focus on lower-level skills can be fruitful, especially if contextualized. For example, it has been evidenced that L2 students who receive feedback on their grammatical errors make significantly greater improvement on grammatical accuracy than those who do not receive feedback (Ferris & Roberts, 2006).

Explicit contrastive techniques. Linguistically diverse children who are merely immersed or passively exposed to standard English text have evidenced very little

progress with the contextual language features of their writing. For instance, merely asking students to proofread their work and fix the mistakes often results in no improvements. When a students' expressive or home language surfaces in their writing, it looks and sounds right to them. Instead, a contrastive approach that draws attention to the differences and breaks material into analytic bits can lead to greater linguistic competence of standard English (Gee, 1996; Wolfram et al., 1999). By overtly juxtaposing languages, Hagemann (2001) claims her students have begun to recognize the distinct differences that were once not noticeable to them. She uses a three-step process for helping students to build a bridge that spans the linguistic gap. First, students learn to notice features of standard English that are new or different to them. Second, they indicate the comparable feature in their expressive language. Thirdly, the feature must be practiced in the context of real writing experiences. A systematic approach such as this helps linguistically diverse students to more easily recognize language differences (Reyes, 1992; McNaughton, 2000) and to use the two discourses separately. This is the ultimate goal of code-switching or border-crossing (Delpit, 1986, 1988)—to develop the metaknowledge needed for both languages (Gee, 1996, McAnally et al., 1999) and to distinguish between situations requiring their uses.

Gee (1996) refers to those students who may never fully acquire a second language or discourse as "mushfakes". Full fluency may not be possible, especially if acquisition is happening at a later age; however, partial acquisition coupled with metaknowledge and strategies is a way these persons can "make do". There is some indication that deaf students draw on an internalized knowledge of English during composition as much as possible and also refer to the rules of English that have been

taught to them (Mayer, 1999). Schools can arm students with the strategies they need; they ". . . ought to allow students to juxtapose diverse Discourses to each other so that they can understand them at the meta-level through a more encompassing language of reflection" (Gee, 1996, p. 190).

Teachers are incredibly important mediators of this process. They must have an understanding or familiarity with the expressive languages that students use in order to guide them through the contrastive analysis techniques (Rickford & Rickford, 2000). The teacher recognizes where the students begin and where she intends to lead them. Having metaknowledge of both languages, the teacher can also model the contrastive analysis techniques (Wolfram et al., 1999) or use think-aloud strategies for students (Montgomery, 2001). Ultimately, the students begin to monitor their own use of language during writing (Hagemann, 2001).

Active student participation, collaboration and teacher responsiveness. If a positive classroom environment that is respectful of cultural and linguistic differences has been thoughtfully established, children feel they are rightful members of the community and can legitimately participate. Teachers might then use engaging activities such as writing for real-world purposes to promote high student involvement (Bakhtin, 1981). Active participation is absolutely key (Montgomery, 2001; Reyes, 1992).

When students become involved members of the classroom learning, the teacher can more accurately assess their expressions for current levels of understanding and prior knowledge, which, in turn, leads to more responsive and scaffolded communication from the teacher because she knows her students' needs better. "By building on children's cultural and personal ways of interacting while at the same time providing new and

expanded opportunities for successful interactions, teachers can help children expand their participatory and linguistic repertoires" (Johnson, 1994, p.189). The teacher may also model her thinking about language in order to support learners in seeing the form of language, thereby building metalinguistic knowledge. "Metalinguistic knowledge transcends knowledge about language as 'meaning' extending to knowledge about language as 'form' separable from its meaningfulness" (Ransdell & Barbier, 2002, p. 3).

Kuiken & Vedder (2002) discuss how collaborative writing in L2 classrooms can lead to student writing that is higher quality. The student interaction that occurs in a collaborative environment about language production prompts the learner to deepen their awareness of contextual language rules. The class engages in reflections and discussions about the content or the writing process but also gives floor time to language forms. This leads to greater "noticing", an increased awareness of linguistic forms.

Current Instructional Practices in Deaf Education Classrooms

Given the sparse and dated literature on classroom instruction, it is unclear whether deaf education teachers, in general, still adhere to traditional instructional practices or if they allow for student interaction and contribution—practices driven by the sociocultural and dialogic theories presented in the first part of the chapter. Wolff (1977) made a differentiation between what he called "cognitive classes" and more "traditional classes". Teachers of cognitive classes used verbal strategies that would request high-level thinking such as inferring, classifying, generalizing, and differentiating from the students. Teachers of traditional classes required memory task activities such as recalling factual information through questioning. Wolff discovered that cognitive classes were less-directive classes that allowed students more of the talking time. Craig and Collins

(1970) examined what student participation and interactions looked like in the classroom. They found that across all levels of classes of deaf students, teachers used more traditional methods of teaching. In fact, 75% of the total communication in the classroom was provided by the teacher and only 25% by the students (Craig and Collins, 1970; Miller, 1992).

There are instances of teachers using more non-traditional models of instruction. For instance, Mayer, Akamatsu and Stewart (2002) observed exemplary teachers of the deaf and analyzed the data for any common practices among the teachers. They discovered that effective teachers of the deaf used discourse strategies and "worked hard to engage students in interactions which were meaningful and encouraged knowledge-building" (499). The teachers were not the "tellers" of information but provided a stimulating environment that encouraged student-centered learning. For instance, a teacher who asks, "How can we find out about this?" instead of simply giving answers requires students to expand on their linguistic and cognitive efforts. Given a problem to tackle, teachers and students enter into a joint process of inquiry, reasoning and learning. Others have also noted the benefits of interactive instruction used with deaf students (Lang & Albertini, 2001; Schneiderman, 1995).

Imbalanced instructional practices. Instructional practices of literacy can be grossly separated into methods that are indirect or implicit versus direct or explicit. Indirect/implicit instructional methods are otherwise referred to as whole language approaches. Such practices of language and literacy instruction are widely used with deaf children. A survey by LaSasso and Mobley (1997) found that 4 out of 5 programs for the deaf based their classroom instruction on whole language principles. Schirmer (1994)

puts whole language principles in terms applicable to classroom instructional techniques: reading, writing, speaking and listening are all interrelated; literacy skills develop as one is engaged in authentic context; one learns to write by writing–learn to do by doing; students are given choice and ownership over their writing activities; writing process, not product, is emphasized; teachers use an integrated curriculum. Whole language teachers do typically allow their students to spend more time on writing (up to 6 times more); however, even though there have been no studies on the effectiveness of this approach with deaf students, no achievement differences have been found between young special education writers of whole language approaches versus skills-oriented instruction (Graham & Harris, 1994).

In contrast to whole language approaches, direct or explicit instructional methods tend to be skills-based. This can often mean a preoccupation with the teaching of grammar through drills that occur apart from any real writing context. Even when students are encouraged to craft an original story, there is often still an overemphasis on writing accuracy. Students can become easily frustrated with writing because the final product seems unattainable to them (Albertini, 1996). They are expected to produce correct writing prior to fully grasping the rules of the language (Harrison, Simpson & Stuart, 1991). Second, students are less likely to experiment with the use of language (Kluwin & Kelly, 1992) for fear of being critiqued. Often this leads to writing comprised of sentences that are simple, rigid, uninteresting, and not cohesively linked to the rest of the text (Antia et al., 2005; Hillocks, 1995). Some claim a non-corrective approach that gives credit for approximations as well as growth can help blooming writers develop confidence and fluency of expression (French, 1999; Harrison, Simpson & Stuart, 1991).

A combined effort, using natural and structured approaches to writing instruction, is used less often in the classroom but may provide the most benefit to the deaf student (McAnally, Rose & Quigley, 1994). Such a model would incorporate both holistic writing activities and skill-based instruction (Delpit, 1986, 1988; Evans, 1998; Schirmer & Bailey, 2000; Schirmer, Bailey & Fitzgerald, 1999). Teachers of the deaf have expressed difficulty in providing a balance of instruction related to content as well as form; because deaf students typically struggle more with form (e.g., English syntactical constructions), instructional efforts in this area of writing tend to dominate (Mayer, 1999). One way to achieve a balance is to teach writing skills (lower-level and higher-level) and processes (Paul, 1998) in the context of real writing experiences (French, 1999; McNaughton, 2002).

Select Studies of Writing Intervention Research

The preponderance of contemporary writing research occurs with post-secondary students and adults, and less than 15% of writing research takes place with middle school students (Juzwik et al., 2006). More specifically, writing intervention research involving linguistically diverse students at the middle school level is nearly non-existent. The current SIWI intervention, however, was largely inspired by two instructional models used previously with general education and special education writers, namely Cognitive Strategy Instruction of Writing and Morning Message. Even though instruction, in both cases, had been employed mainly with students having high-incidence disabilities such as learning disabilities, similar theoretical stances as the ones outlined in this chapter were drawn upon to inform the practices—cognitive theories of composing processes and sociocultural theories of teaching and learning. Further, characteristics of instruction

deemed necessary for linguistically diverse students are either present in the models or have been added through subsequent adaptations. The models largely incorporate strategic writing instruction and/or interactive writing instruction approaches.

Cognitive Strategy Instruction in Writing (CSIW)

CSIW, the published work of Englert and colleagues, is an instructional writing program that is often used with struggling writers, especially students with learning disabilities who have evidenced deficiencies in their knowledge of composing and self-regulation of the composing processes. It is designed to expose students to the strategies and processes of skilled writers, with the intention that students, having gained such awareness, will take on and incorporate the strategies into their own repertoire of writing approaches. Of primary focus in CSIW is knowledge development of (a) expository text structure, (b) the subprocesses of writing such as planning, organizing, drafting, editing, and revising, and (c) a reader perspective and audience considerations (Englert, 1990).

The strategies of skilled writers have been captured in think-sheets that are used as temporary scaffolds to prompt students to carry out certain actions during the writing process that they do not typically employ independently. Each subprocess of writing has an accompanying think-sheet; for instance, the planning think-sheet asks students to answer questions about who they are writing for (i.e., audience), why they are writing (i.e., purpose), and what they already know (i.e., brainstorm ideas). The mnemonic, POWER, represents the framework of multiple strategies needed when composing, with each letter indicating a set of strategies for a subprocess of writing. Additionally, the think-sheets provide teachers and students with a way of talking about the writing processes; classroom dialogues are important spaces where the process of sharing self-

talk with the group allows the writing strategies and processes of others to be made visible to all. This is the basis for quality changes in metacognition and cognition. As students begin to appropriate these strategies through practice, scaffolding is reduced and think-sheets are gradually faded.

Effectiveness of using CSIW. The effectiveness of CSIW has been studied using a pretest-posttest, control-group design (Englert et al., 1991). The treatment and control groups were comprised of three groups of students, those with learning disabilities, low-achieving general education students and high-achieving general education students. The students were administered pre and posttests for the assessment of metacognitive knowledge, composing skills on two various trained expository texts, composing skills on a third text that was unfamiliar to students and reading comprehension of expository text. Results indicated significantly greater gains in the quality of expository writing for those in the CSIW group as compared to the control group. Students in the treatment group, regardless of student labeling as LD or not, made improvements in terms of trained and untrained expository writing, audience sensitivity, use of text structure features, and metacognitive knowledge of writing. More importantly, students with learning disabilities made performance gains that closed gaps existing prior to CSIW curriculum exposure, meaning that LD students performed at posttest similarly to their non-LD peers in the control group.

As was the case in the above study, CSIW began taking more of a dialogic approach to strategy instruction, one that conceptually builds on ideas of cognitive apprenticeship, in the early 90's. A difference was found between teachers who provided

instruction supported by sociocultural principles and those who were more teacher-directed in their approach. As Englert, Mariage, and Dunsmore (2006) emphasized:

> Although CSIW think-sheets and artifacts embodied the tools, discourses, functions, and meanings of the text, such cultural tools were ineffective when they were simply applied and practiced by students, without social interaction with others that featured the meaning, functions, self-regulatory and communicative aspects of such tools (p. 212).

It was not only the presence of strategy instruction that impacted student achievement in writing tasks but the existence of an activity setting which encouraged students and teacher to co-participate in the talking, thinking, and modeling of writing strategies. Such a finding points to the importance of dialogic or interactive methods of instruction.

Morning Message

A second instructional model that informs the current SIWI intervention is Morning Message. Morning Message (Englert & Dunsmore, 2002; Mariage, 1995, 2001) is a daily, guided or shared writing activity that is dialogic and interactive. It can be characterized as instruction that allows for a non-traditional activity space in the sense that students are encouraged to contribute, to talk, and to take control over the writing processes. The interactive format can reduce a teacher's control over the lesson and cause it to move in unintended directions; however, it is amidst the to and fro of conversation that students are apprenticed in the language, thinking, actions, and conventions of writing by gaining access to others' thinking or meta-talk. Essentially, through exchanges with others, students are exposed to more sophisticated ways of thinking about writing processes such as solving problems and monitoring text. A shared knowledge is co-

constructed by drawing on the resources and the collaborative interactions of members. Over time, the individual appropriates the information that is shared on the external plane and makes it his/her own.

Morning Message is generally a fifteen to thirty-minute, daily writing activity, during which teachers and students collaboratively construct a piece of text. When co-constructing papers of personal experience or personal narratives, one student will serve as the day's lead author by suggesting an idea or topic for the paper. Others will actively participate and work with the author in the generation and revision of text. When the group and author reach a consensus to add a phrase or a sentence to the text, the teacher writes the students' word-for-word expressions (including grammar and meaning errors as they are communicated) on an easel. Then she opens the floor for further generation of ideas, or the beginning of a revising or editing component. The writing during Morning Message is illustrated as a recursive process, with participants fluidly moving back and forth between idea/ text generation, revising and editing.

The students can ask the author questions (i.e., who, what, where, why, how) about his/her experience to gather more information for the paper and generate further text. These question words, in the case of personal narratives, serve as scaffolds for learning and producing the text structure. In addition to personal narratives, Morning Message allows for the teaching and learning of a variety of other text structures such as comparison/contrast, persuasive, and expository papers. However, scaffolds for these other text structures may take the form of conceptual maps or organizing devices. In addition, the topic would be collaboratively determined and there would be no lead author.

Once any text is written on the easel, the teacher will occasionally read it alone or in unison with the students to prompt awareness of any part that does not seem right. As the text is reread, students monitor and offer suggestions for revision or editing. Participants, oftentimes through scaffolded interaction and prompting, tell the name and the procedure for their suggestion. Such a practice of discourse benefits others by pairing the thinking with language and action, and participants are able to deepen their own knowledge by gaining access to the knowledge of others. There also ensues dialogue about the merits of suggested changes as students comment on each other's input by defending or providing a rationale for opposition. The teacher will orchestrate the interaction, knowing when to step in and when to give more control and floor time over to students.

Ultimately, this activity provides a space for teachers to transfer the control of the writing process and strategies over to students. When first introducing Morning Message, the teacher may use more time for direct instruction, prompting, modeling of language and thinking, or use of guided questions. Once students begin to appropriate the writing practices, thinking, and strategies of more-knowledgeable-others, the teacher gradually releases more of the writing responsibility over to the students. S/he uses a series of "step back" and "step in" moves to facilitate this transfer; stepping back to position the students as the expert decision-makers and evaluators of the quality of text, and stepping in to provide necessary supports or instructional guidance (Englert & Dunsmore, 2002). Increasingly, more "step-back" moves are used. The transfer of control to students leads to greater self-regulation, confidence and automaticity with writing.

Furthermore, Morning Message is an activity that allows students to discuss and practice higher-level writing skills (e.g., text structure, organization, coherence, topic sentences) in addition to lower-level writing skills (e.g., English conventions, grammar, spelling, punctuation). For instance, if a student generates an idea that seems to go off topic and other students don't see the threat to coherence, the teacher may prompt students to thought by stating, "I'm wondering how that detail pertains to our topic." Any grade-level curriculum, whether high-level or low-level, can be embedded in the activity and collaborative discussion, yet it requires the teacher be cognizant of students' objectives in order to give more floor time to particular skills or nudge learning in a certain direction.

The final co-constructed piece is published and shared with an authentic audience. This may be a newsletter that is sent home and shared with parents or may be a school bulletin distributed to peers and staff. Publication of authentic pieces for real audiences shows that the writing has purpose of conveying information or ideas to others, and it is not just an activity done in school.

Effectiveness of using Morning Message. Mariage (2001) demonstrated the benefits of such an instructional approach, reporting that students did learn strategies and practices from the dialogue used during Morning Message. In his study, students at first "borrowed the voices" of others when completing independent writing projects or editing another's work. Later, however, they increasingly internalized these voices, and their writing became more automatic. Also, the number of times a student participated was correlated with editing and revising abilities—greater participation in the co-construction of text equated with a greater number of revision ideas a student was able to offer on

posttest assessments. This finding points to the value of student involvement in the teaching and learning of writing.

Morning Message with Adaptations for Deaf Students

Due to its interactive and dialogic nature, Morning Message holds promise for use with deaf students. However, some aspects of the activity were reconsidered and tailored to this unique subpopulation of students. While still adhering to the defining and key instructional principles, adaptations were made that would make the activity more accessible to the deaf and more responsive to language needs.

The first consideration regards the expressive language of deaf students. Many deaf children today use a pidgin sign language or contact sign which generally involves a simplified use of ASL vocabulary in English syntactical order. When students generate ideas for the text using a form of sign that is a close approximation of English, the teacher may readily write this contribution on the easel. However, a problematic scenario arises when students use a form of sign during discussion that is dramatically different in syntax from English. For instance users of ASL may offer expressions or ideas that are too distant from English text and can't be captured well in writing. It is because of this difficulty that Morning Message used with deaf students may need a "two easel" approach (Wolbers & Miller, 2006). That is, when students offer an idea in ASL, an additional step becomes necessary to deal with the language factor. First students collaboratively discuss if an offered expression is ASL or English-based sign (capable of being written). If the expression is ASL, the teacher may use the ASL easel as an idea holding place while translation discussions take place. She may capture the idea given in ASL the best she can using gloss words, symbols, pictures or any other mechanism,

making sure to make note of movements and expressions used in addition to sign vocabulary. A translated version (that is agreed upon) is then recorded word-for-word onto the "English" easel. If necessary, the teacher may need to model or think-aloud the principles of each language and possible translation techniques until students begin to appropriate the approaches. The addition of the ASL-to-English translation could be considered a challenge and a benefit at the same time. Although the process undoubtedly lengthens Morning Message, it does help to build necessary metalinguistic awareness of both ASL and English.

Moreover, a group with ASL-using members needing explicit instruction in translation strategies and contrastive approaches will need to be involved in thoughtful interaction around language features. Members should be careful to give respect and value to all languages in the classroom. When certain English-based discourses are used and expected in the schools, deaf children need a way to access these while still maintaining integrity for their own form of expressive communication. When contrasting home and academic discourses or languages, for instance, using words that give more value or worth to one language than another should be avoided. By simply stating that one kind of language is "right" and another kind is "wrong", students may feel that their community and culture have been insulted or degraded. After all, there are no languages or dialects that are deficient or wrong in a linguistic sense (Coleman, 1997; Rickford & Rickford, 2000; Wolfram et al., 1999). Other vocabulary to stay away from include "appropriate" vs. "non-appropriate" and "standard" vs. "non-standard".

The second consideration is the rereading of the message that routinely happens during Morning Message. Typically, the teacher rereads the text while pointing word-by-

word as she speaks. To do this while signing is difficult, if not impossible. However, it is critical that the text be repeated again and again to develop a rhythm and a pattern to the written language. Just as hearing students read along with their teacher, deaf children should also be signing (or fingerspelling if there is difficulty matching sign to the English constructions). This repetition is a vital step in teaching students to reread and monitor their texts. Thus, the method has been adapted to allow for a one-handed signing technique, where one hand is pointing at the print and the other is signing.

Effectiveness of using Morning Message with deaf students. Provided that deaf students are exposed to a modified version of Morning Message, they do make significant gains from pre to posttest in higher-level writing skills, lower-level writing skills and reading (Wolbers, 2006). These findings were based on an intervention that took place in two elementary classrooms (n=8) and one middle school classroom (n=8) for a total of 21 days and targeted personal narrative writing. Students showed substantial improvement with genre-specific traits ($t = 8.53, p < 0.000$), use of contextual language ($t = 3.91, p < 0.001$), editing/revising skills ($t = 3.89, p < 0.001$), and reading levels ($t = 6.69, p < 0.000$). There were no reported gains or losses in their use of conventions ($t = 1.85, p < 0.085$) and total word count ($t = -1.80, p < 0.093$). According to Cohen's rule of thumb (Howell, 2002), the magnitude of the experimental results were large for the primary traits comparison ($d = 0.82$) and near-moderate for contextual language ($d = 0.41$) and editing/revising ($d = 0.46$).

In addition, a one-way MANOVA was used to detect any school level effects. Elementary students made significantly greater gains with respect to conventions [$F(1,14) = 8.18, p < .013$] and reading level [$F(1,14) = 62.45, p < .000$], and middle school

students made significantly greater gains with editing and revising tasks [F (1, 14) = 13.49, $p < .003$]. On editing and revising tasks, middle school students made high-level decisions about the text structure, coherence and overall meaning of the passage at posttest whereas they mainly dealt with surface-level changes at pretest.

Summary

The current research was inspired by previous school-aged writing interventions such as CSIW and Morning Message, and it draws on the strategic and interactive natures associated with both instructional methods. Deaf students previously exposed to Morning Message did evidence gains in their personal narrative writing with both high-level and low-level writing skills. This is not overly surprising since interactive instruction and dialogic approaches have been touted in the field of deaf education and L2 writing as being highly effective and desired (Mayer, Akamatsu & Stewart, 2002). The present study, however, is more complex due to its targeting of expository writing. It is anticipated that students will need structured support when undertaking the more difficult expository text structure and could benefit from the framework of strategies that are provided through CSIW, aiding the metacognitive and cognitive development of processes for composing. Additional instructional techniques for building metalinguistic awareness are taken from the literature on linguistically diverse writers; such techniques have formed the basis for adaptations to Morning Message used with deaf children. Taken together, Morning Message and CSIW create a starting point for Strategic and Interactive Writing Instruction (SIWI), conjoining cognitive theories of composing processes with sociocultural theories of teaching and learning. It is anticipated that the

SIWI approach will respond to the unique linguistic needs of deaf individuals and foster writing growth.

CHAPTER 3

METHODS

Design of the Study

As intervention research, this study had a treatment and comparison group. The treatment group implemented SIWI components, while the comparison group continued with its typical writing instruction. By comparing gains in writing and reading of students in the treatment group with those of the comparison group, the study aimed to assess the effectiveness of the SIWI curriculum.

This study utilized a quasi-experimental and non-equivalent groups design to investigate the research questions that were detailed in the previous chapter. The research design was a pretest-posttest control group design, with no randomization of participants. Instead of randomly assigning the teachers and students to the treatment and control groups, they were assigned based on preference and ability to fulfill participation requirements. For example, the teacher in the treatment group needed to commit to the time and work demands of implementing the SIWI intervention, so participants were asked about their willingness to be involved at such a capacity. To minimize the internal validity threats arising from such a selection and assignment process, the researcher chose a comparison teacher and a classroom site that were similar on a number of experimentally-relevant factors. Students were additionally matched on a number of pertinent variables.

This study also used some qualitative techniques such as interviewing in order to represent and construct the experience of student writers in the treatment and comparison groups.

Participants and School Context

The unit of analysis for this study was the middle school deaf or hard of hearing student. However, due to the lack of randomization, it was necessary to first detail any school contexts, teacher characteristics, or student variables that were relevant to the study. This was done with the objective of evidencing an adequate match between the treatment and comparison groups and thereby strengthening the validity of the study.

Description of Research Sites

The research was conducted in two middle school classrooms at two various school sites. The treatment group research site was a classroom within a residential school for the deaf located in a mid to large Midwestern town. The comparison group research site was also a classroom located in a mid to large Midwestern town but was within a center-based deaf and hard of hearing program in a public school district. Because this study targeted literacy instruction for students at the middle school level and because there is typically only one teacher of the deaf per school who teaches reading and writing at that level, the use of two research sites was unavoidable. The sites were, however, found to be comparable regarding certain relevant factors.

Both schools, for instance, espoused Total Communication (TC) as a philosophy of communication rather than a method of communication. That is, TC was not solely equated with Simultaneous Communication (SC) or the simultaneous use of English-based sign and voice (see Mayer & Lowenbraun, 1990, for an example of viewing TC as

a method). When viewing TC as such--TC as a method--the use of American Sign Language (ASL) in the classroom is rare or impossible due to the conflicting grammatical natures of ASL and spoken English. Thus, intentional or not, TC as a method devalues the educational importance of ASL use (Peters, Wolbers & Dimling, in press). There are also concerns that children who are provided with instruction via SC may not be exposed to full and complete language in either ASL or English because of the alterations inherently made to each language in order to happen simultaneously (Laurent Clerc National Deaf Education Center, n.d). Viewing TC as a philosophy, rather, means there is an array of communication options available to teachers to flexibly use when communicating with deaf children that can appropriately and effectively respond to the needs of various situations (Hawkins & Brawner, 1997; Tucker & Powell, 1991). These options include ASL, English-based sign, SC, written text, voice, fingerspelling, and gesture, to name a partial list. Because both school sites regard TC as a philosophy, ASL is a valued and frequently utilized language among students and teachers in the classroom. How a school views TC was an important consideration to this study since SIWI intends that students build metalinguistic knowledge in both ASL and English by comparing and contrasting languages. To do such, the languages must be used in a fashion that is distinguishable.

Additionally, the school sites were comparable regarding their position within and connections to the deaf community. Both schools may be viewed as cultural epicenters for the deaf community due to their equally large number of deaf and hard of hearing students, teachers, staff and visitors. Deaf sporting or entertainment events that occur in or around the schools often draw members of the greater state and Midwestern Deaf

communities to the areas. Students in both schools have numerous opportunities to interact with deaf adults and deaf role models. Such interconnectedness between the schools and the greater Deaf community is reflected in the schools' similar values, beliefs and views of deafness as well as their welcome acceptance of Deaf culture.

Description of Teacher Participants

The teacher affiliated with the treatment group is a Caucasian and hearing female. She has been a reading, writing and language arts teacher of the deaf and hard of hearing for seven previous years, all at the middle school level and at the state residential school. She has obtained a mater's degree in special education, and she has a rating of *advanced* on the Sign Communication Proficiency Interview (SCPI).

Because the teacher of the treatment group classroom was absent on maternity leave at the time of the intervention, she did not implement any portion of the SIWI curriculum. Instead, the researcher carried out all instructional aspects of the intervention with the teacher's classroom of students. The teacher, however, received professional development regarding SIWI prior to the intervention period as if she were the primary implementer. After having the necessary training, the teacher was involved in the research project by serving as an evaluator of implementation fidelity.

The researcher/implementer is a Caucasian and hearing female. From the years 1999 to 2003, she primarily taught reading, writing and language arts to deaf middle and high school students. In the fall of 2003, she left teaching deaf students to pursue her doctorate in special education. During the time of her doctoral studies, she taught several undergraduate and graduate special education courses, including deaf education teacher preparation courses. The study described here is her dissertation research, which will be

the completion of her doctoral program. The researcher/implementer is a state qualified (i.e., QAIII) and nationally certified interpreter for the deaf (i.e., RID certified, CI/CT).

The teacher affiliated with the comparison group is a Caucasian and hearing male. He has been a teacher of the deaf for three years at his current school and has primarily taught language arts during that time. He has completed a master's degree in special education. The comparison teacher is additionally a fluent signer. Prior to becoming a teacher of the deaf, he worked as an educational interpreter at his current school for 8 years. Since 1998, he has been nationally certified (i.e., NAD IV) as a sign language interpreter.

The comparison teacher and the implementer did match in regard to pertinent factors. First, both have national certification in sign language interpreting to account for their sign proficiency. Both teachers, therefore, were effective users of English-based sign language or ASL and carried out understandable, two-sided conversations with students. Moreover, the teachers used a similar style of communication with students, one that consisted mainly of ASL expressions with additions of English-based sign and voice at times. Second, both had comparable amounts and kinds of teaching experience—approximately three years teaching language arts in the middle grades. Lastly, the comparison group teacher and the implementer took their undergraduate coursework at the same university. The implementer has accrued more graduate credits than the comparison teacher; however, the comparison teacher received high recommendations from his university instructors for being one of their top students and is regarded as a high quality teacher in the field by his coworkers.

Lastly, it should be recognized that the control group teacher took a sudden leave of absence at the beginning of the intervention phase. Although the substitute teacher assigned to the class was a certified teacher of the deaf, she did not match the implementer on other characteristics. Therefore, the pretests in the control group were delayed by approximately 4 weeks in order to allow the regular teacher to be back in the classroom for the majority of the instructional time that took place between the pre and posttests. The regular teacher was present in the classroom for approximately 85% of the time while the substitute was present for the other 15%. The substitute teacher administered pretests to students in the control group and followed the instructional lesson plans of the teacher while he was on leave.

Description of Student Participants

There were 16 students in the treatment group and 17 students in the comparison group. The following demographics were obtained from all student participants: age, gender, ethnicity/race, hearing loss unaided in the better ear (dB), amplified loss in the better ear (dB), cochlear implant usage, cochlear implant benefit, additional disabilities, reading level, and method/s of communication. Hearing loss was calculated by taking an average of hearing sensitivity in the better ear (measured in decibels, dB) across the frequencies of 500, 1000, 2000 and 4000 Hertz (Hz). Amplified losses were not calculated because aided threshold levels were not indicated on the audiograms of the students in the control group. For students with cochlear implants, teachers were asked to indicate the students' usage and benefit of their cochlear implants on a 5-point scale (1 = very little use/ very little benefit, 5 = great amounts of use/ great amount of benefit). Demographics of student participants are displayed in Tables 1 and 2.

Table 1

Demographics of Student Participants in Treatment Group

	Age	M/F	Ethnicity/ Race	Hearing Loss (dB)	Cochlear Implant	Use/ Benefit	Additional Disability	Reading Level	Comm. Method/s
Treatment Group (TG) Participants									
TG1	12	M	C/W	75	No	-	-	4.2	ASL/V
TG2	13	M	LA, C/W	86	No	-	OH	3.6	ASL/V
TG3	13	M	C/W	94	No	-	-	5.1	ASL
TG4	13	F	C/W	109	No	-	-	3.7	ASL
TG5	14	F	AA, C/W	119	No	-	-	2.3	ASL
TG6	14	M	C/W	106	Yes	2,3	LD	1.6	ASL/ MLS
TG7	12	M	C/W	121	No	-	ADHD	1.6	ASL
TG8	12	M	C/W	96	No	-	ADHD	0.6	ASL
TG9	12	M	C/W	73	No	-	-	1.0	ASL/ MSL
TG10	14	F	C/W	36	No	-	-	2.9	EBS/V
TG11	12	M	C/W	89	Yes	3,3	ADHD	1.3	ASL/ MLS/V
TG12	13	F	C/W	104	No	-	ADHD	1.9	ASL
TG13	11	F	C/W	71	No	-	-	3.7	ASL/V
TG14	12	M	C/W	108	No	-	-	2.9	ASL
TG15	11	M	C/W	120	No	-	-	3.7	ASL
TG16	14	F	AA	109	No	-	-	0.9	ASL/ MLS

AA = African American; C/W = Caucasian/White; LA = Latino; AS = Asian
LD = learning disability; VI = visual impairment; CI = cognitive impairment; DMS = delayed motor skills; OH = other health; EI = emotional impairment; CP = cerebral palsy
EBS = English-based sign; MLS = minimal language skills; V = voice

Table 2

Demographics of Student Participants in Control Group

	Age	M/F	Ethnicity/ Race	Hearing Loss (dB)	Cochlear Implant	Use/ Benefit	Additional Disability	Reading Level	Comm. Method/s
Comparison Group (CG) Participants									
CG1	12	M	C/W	95	No	-	-	0.3	ASL/ MLS
CG2	13	M	C/W	105	Yes	5,5	-	3.7	EBS/V
CG3	14	M	C/W	60	No	-	OH	2.8	EBS/ ASL
CG4	12	M	C/W	105	No	-	-	1.8	ASL
CG5	13	F	C/W	105	Yes	3,2	-	3.5	EBS/ ASL
CG6	13	F	AA	105	No	-	-	1.7	ASL
CG7	12	F	C/W	90	No	-	-	3.3	ASL*
CG8	15	F	C/W	105	Yes	4,4	-	3.8	EBS/V
CG9	12	M	AS	95	No	-	-	2.5	EBS/V
CG10	12	M	C/W	90	No	-	-	6.9	EBS/ ASL/V
CG11	13	F	C/W	90	No	-	-	3.6	ASL
CG12	14	M	C/W	55	No	-	EI	2.5	ASL/V
CG13	14	M	C/W	105	No	-	-	4.5	ASL
CG14	12	M	AA	85	No	-	-	1.3	ASL
CG15	13	F	C/W	-	No	-	-	4.8	ASL
CG16	11	F	AA	110	No	-	CI, CP	0.9	ASL/ MLS
CG17	13	F	AA	83	Yes	1,1	OH	2.9	ASL/ EBS

AA = African American; C/W = Caucasian/White; LA = Latino; AS = Asian
LD = learning disability; VI = visual impairment; CI = cognitive impairment; DMS = delayed motor skills; OH = other health; EI = emotional impairment; CP = cerebral palsy
EBS = English-based sign; MLS = minimal language skills; V = voice
*Student is also a user of Romanian Sign Language

All students have prelingual hearing losses. And, only two students were reported as having deaf parents, TG3 and CG7. Descriptive statistics are provided for all numerical data including age, hearing loss and reading level in Table 3.

Table 3

Descriptive Statistics of Students' Age, Hearing Loss, and Pretest Reading Level

	Treatment Group		Control Group	
	M	*SD*	*M*	*SD*
Age	12.63	1.025	12.82	1.015
Hearing loss (dB)	94.75	22.655	92.69	16.090
Pretest reading level	2.563	1.3495	2.988	1.5968

Furthermore, there were no significant differences between the treatment group and control group regarding the means and variances of any of these variables. See Table 4 for *t*-test statistics and tests of homogeneity of variances.

Table 4

Comparison of Means and Variances for Age, Hearing Loss, and Pretest Reading Level

	Comparison of Means, *t*-test	Comparison of Variances, Levene Statistic
Age	$t = 0.313, p < 0.580$	$0.174, p < 0.680$
Hearing loss (dB)	$t = 0.088, p < 0.769$	$1.594, p < 0.217$
Pretest reading level	$t = .680, p < 0.416$	$0.016, p < 0.901$

To further characterize the groups of students in terms of their literacy backgrounds, the questionnaire available in Appendix A was used to collect data regarding students' perceptions of their language and writing skills as well as their home literacy experiences. Students were instructed to respond to questions using a 5-point scale (i.e., 5 = strong or everyday, 3 = average or once a week, 1 = weak or almost never). Each question was read to students using sign language to avoid any misunderstandings of what was being asked. Prior to handing out the questionnaire, it was emphasized to students that their honest responses were requested. They were told that the questionnaire would not affect their grades in any way, and there were no right or wrong answers; the purpose was to merely learn more about the group's literacy practices, perceptions and histories. Lastly, students were reminded of steps taken to protect anonymity. While individual students could be identified by the researcher via a code applied to the back of the questionnaire, they did not write their names anywhere on the paper. Descriptive statistics for each question by group can be viewed in Table 5. There were no significant differences between the treatment group and control group regarding the means of any question; therefore, both groups of students have similar perceptions of their literacy skills/abilities and have similar home literacy experiences.

Table 5

Descriptive Statistics of Students' Literacy Questionnaire Responses

	Treatment Group		Control Group	
	M	*SD*	*M*	*SD*
Fluency in ASL	3.60	0.910	3.82	1.185
Fluency in English	3.00	1.134	2.94	1.029
Reading skills	3.40	1.352	2.76	0.752
Writing skills	3.13	1.187	3.28	1.125
Read for pleasure	3.07	1.223	2.44	1.413
Write for pleasure	2.13	1.246	2.63	1.544
Availability of print in the home	3.93	0.961	3.56	1.263
Reading frequency of family members	2.93	1.335	3.65	1.222

In conclusion, given a number of variables that were considered, the students in the treatment group and control group were deemed to be highly comparable.

Power Analysis

A power analysis was conducted to justify the sample size (*n*) in this study. To begin, effect sizes (*d*) were estimated on two response variables, revising/editing and reading. The treatment group gains from pre to posttest were projected by using data from a preliminary study that had similar measures and a comparable instructional intervention (Wolbers, 2006). The prior study involved elementary and middle school participants, but the data used here is specific to the middle school participants only. The past data can be viewed in Table 6.

Table 6

Preliminary Study Data

Response Variables	Δ (pre to posttest)	*SD*
Revising/Editing	10.5	6.21
Reading	0.19	.08

Supposing that the comparison group demonstrates gains from pre to posttest half the size of the treatment group, gains on revising/editing and reading (Δ) would be 5.25 and 0.095 respectively. Consequently, the estimated effect sizes (*d*) would be 0.85 for revising/editing and 1.2 for reading, whereby $d = \frac{(\mu_1 - \mu_2)}{\sigma}$ and equal variances are assumed.

Power can then be estimated as a function of δ, where $\delta = d\sqrt{\frac{n}{2}}$ and n is determined by $\frac{2n_1n_2}{n_1 + n_2}$ when dealing with two different sample sizes (Howell, 2002). Table 7 gives the power of a one-sided, two-sample *t* test with an alpha of 0.05 for various levels of δ.

Table 7

Power as a function of δ

δ	2.40	2.50	2.70	3.00	3.40	3.50
Power	0.78	0.80	0.85	0.91	0.96	0.97

When n_1 is 16 and n_2 is 17, δ for revising/editing is 2.44, and power can be interpolated as 79%. When n_1 is 16 and n_2 is 17, δ for reading is 3.44, and power can be interpolated as 96.5%. Since the power analysis indicated there is a moderate-high to high probability that the statistical analysis would detect an effect that is present, the sample size was adequately justified.

Additionally, an adequate sample size was justified by the number of dependent variables not exceeding the number of participants in any one cell.

Informed Consent Procedures

Approval to conduct the research was obtained through the Institutional Review Boards (IRB) at Michigan State University. In order to protect the rights of those participating in the research, strict confidentiality and anonymity was maintained throughout. That is, all collected data such as pre/posttests and videotapes have been kept in a locked office cabinet. After the duration of the project, they will be destroyed. No person other than the researcher has been allowed access to any data that might have revealed a participant's identity. When the data has been shared in writings, presentations, or professional education activities, pseudonyms were given for all students, teachers, schools and administrators. Prior to the start of the intervention, school administrators, teachers, and parents of participating students were asked to give written informed consent of these conditions. Additionally, students gave their written informed assent. The privacy of all participants has been protected to the maximum extent allowable.

Procedures

The research extended over a 10-week period, 2 weeks for the administration of pre and posttests and 8 weeks for the intervention period. During the 8-week intervention period, the students in the treatment group were exposed to the SIWI curriculum while students in the comparison group continued with their typical classroom writing instruction.

Instructional Components of SIWI

Strategic and Interactive Writing Instruction (SIWI) for deaf and hard of hearing adolescents is a curriculum of writing instruction. As the name signifies, SIWI is both strategic and interactive. These two major elements reflect the research-based evidence on effective writing instruction and the associated theories (i.e., cognitive theories of composing, sociocultural theories of learning and theories of dialogue). First, SIWI is strategic in the sense that students are introduced to the approaches of expert writers through apprenticeship and the use of word or symbol procedural facilitators. These facilitators encourage and support intelligent and skilled responses or decision-making. These are temporary supports in place to guide students' planning of successful action around writing processes. It is intended that students become deliberate writers during all parts of the writing process. SIWI is interactive in the sense that cycles of action and reaction occur between participants which influence transformations and construction of knowledge that is reciprocal. There is a two-way flow of information between parties and every additional contribution is contingently responsive. This dynamic process is centrally relevant to the apprenticeship process, for students are actively participating in learning and constructing knowledge for themselves.

SIWI can be used to teach any text structure or any genre of writing. For this particular research intervention, focus was given to expository writing and, more specifically, informative compositions. When writing exposition that informs, the author's purpose is to convey information about a subject, devoid of opinion or persuasion, to an audience with clarity and accuracy (Warriner, 1988). The writer provides proper guidance to the reader by introducing the subject at the start of the paper and explaining in the thesis statement the direction it will take. Information is then organized effectively throughout the report by arranging main ideas and details in the body paragraphs, all of which connect back to the thesis statement. Finally, the author brings the writing to a close in a final paragraph that summarizes the bulk of the information or reemphasizes the main points.

SIWI allows instructional attention to the structural features of text such as organization, coherence and development of ideas. It targets these higher-order skills by apprenticing learners in the strategies for and processes of writing (e.g., planning, organizing and revising). Yet, at the same time, weight is given to lower-order writing skills such as producing syntactically and grammatically correct sentences, using proper spelling, and incorporating increasingly complex language and phrase structures. Thus, in this regard, SIWI has a balanced instructional focus, emphasizing the learning of both high-level and low-level writing skills, all of which are crucial to the writing of effective and clear text.

SIWI is likewise balanced in its instructional approach. It incorporates principles from both whole language and skills-based approaches—students are immersed in authentic writing experiences but are also receiving direct instruction in writing

processes, skills or strategies. Balanced instruction is much more systematic than whole language (Pressley, 2006), and at the same time, it affords more practice of skills in real writing contexts through scaffolded and guided practice than skills-based instruction alone.

SIWI consists of six instructional components: (a) the use of writing process strategies; (b) apprenticeship in writing through guided and interactive practice; (c) NIP-it lessons to introduce new writing skills or strategies; (d) decomposition and evaluation exercises; (e) the use of visual scaffolds; (f) metalinguistic knowledge-building. The first two components represent the foundation of SIWI, signifying strategic and interactive instruction. The other four components further reflect research-based practices used with deaf, L2 or adolescent writers.

Writing process strategies. The mnemonic, POSTER, is an adapted version of the acronym POWER from the Cognitive Strategy Instruction in Writing (CSIW) Curriculum (Englert, Raphael, Anderson, 1989). POSTER (*plan, organize, scribe, translate, edit, revise*) is very similar to POWER (*plan, organize, write, edit, revise*) in that it represents the subprocesses of the writing process, yet it recognizes an additional practice encountered by linguistically diverse or L2 students, that of translation from a primary language or discourse to a secondary one. See Figure 3. Many deaf children similar to those in this study use ASL or contact sign language as their primary means of expression during day-to-day interactions, and English is not a form of expression that comes easily or naturally. Thus, *translation,* for this population of students, is typically a cognitive effort that requires strategic attention. Each subprocess is accompanied by a set of instructional statements and questions that cue writers to action. These are temporary

scaffolds that can be removed once the writer has gained control over the strategies that are utilized during writing and can employ them independently.

During *planning*, writers are prompted to consider who the audience is, to determine the purpose of writing and to brainstorm what they already know about the topic. If there is a need to access additional resources, students are asked to consider what they want to know and how they could find this information. Students participating in the current study accessed books, more-knowledgeable-others and internet resources to locate information for their topics. *Organize* signals for students to group their ideas into categories of information and then sequence them according to an order of presentation for writing. When organizing ideas, students may use a conceptual map like the ones shown in Figures 4 and 5. The map in Figure 4 comes from the CSIW curriculum, where each subprocess has a complementary think-sheet[3] to be completed by writers until they become more automatic with the strategies and can carry them out on their own. Since writers organize their ideas according to a particular text structure such as a story, comparison/contrast or explanation, *organize* comes with different think-sheet options for different styles of writing. The think-sheets in Figures 4, along with Figure 5, are conceptual maps that support organization of ideas for informative writing. In this study, students preferred mapping their information, details and support using *Inspiration 8.0* (Helfgott & Westhaver, 2007); once finished with mapping, they changed the format to an outline that better supported their writing. *Scribe* instructs students to move from their conceptual maps or outlines to text generation by expanding or elaborating on their ideas,

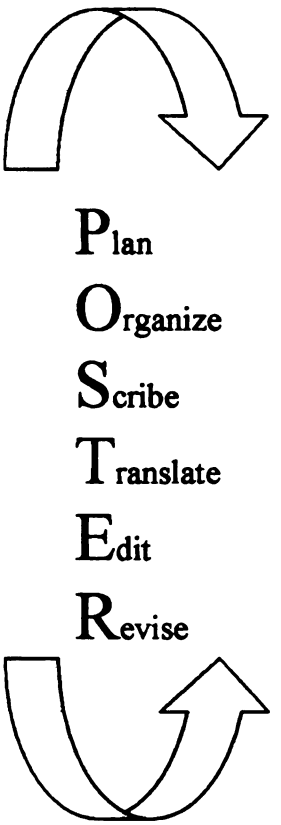
[3] Because the current research focuses on a middle school population of students, think-sheets were not utilized (with the exception of the *organize* conceptual map) as with the CSIW curriculum which was tailored more for an elementary population. Instead, the students kept journals of their brainstormed lists, questions, and/or notes.

following the order they determined. The subprocess, *translate*, encourages students to become more cognizant of the form of their language expressions by asking whether their ideas were produced in English, ASL or some mixture of languages. Once one recognizes when non-English expressions enter the conversation (in the form of inner dialogue or group discussion) or enter one's text, techniques for translation can be administered. *Edit* prompts students to reread and monitor their written text for any ideas that need to be clarified or changed and for any language or grammatical troubles that need to be addressed. Students may additionally use an editing checklist (shown in Appendix B) to monitor one's writing for specific features. For this study, the checklist items reflected those topics emphasized during instruction that were in need of mindfulness. The editing checklist was continually developed during the time of the intervention as the implementer became more knowledgeable of students' writing needs and objectives. *Revise* cues students to produce a clean copy of their work and publish.

The POSTER mnemonic is not meant to be a linear set of procedures. Rather, writing is viewed as a recursive process, with fluid movement back and forth between the subprocesses. Consider for instance how *translation* may happen before writing during a class discussion of ideas, or it may happen after in the occurrence that non-English linguistic features surface in one's text. Additionally, writers may choose to *edit* as they write each sentence or paragraph instead of writing a full draft and then reading through for editing purposes. One might even choose to return to *planning* or *organizing* some additional ideas after they have begun writing. Successful writers engage with the writing strategies and processes as detailed by POSTER but not necessarily in any rigid, inflexible order.

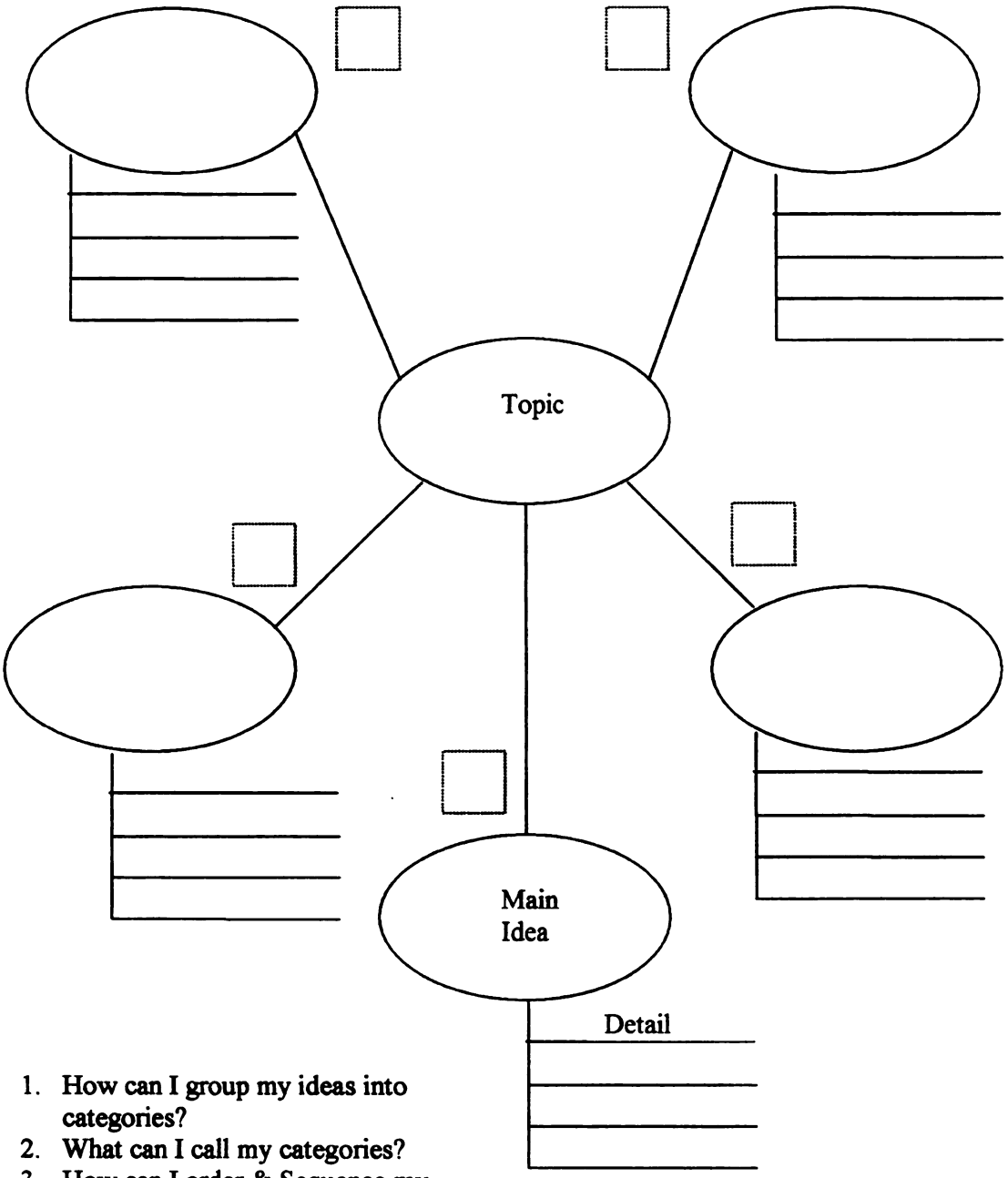
In the intervention classroom, the POSTER acronym was written on a large piece of posterboard and hung on the wall (see Figure 3). Therefore, reference to the writing processes was easily made at any time during instruction. Additionally, each student had a laminated copy of the instructional statements and questions that accompanied each process. This scaffold, referred to as the student cue card, can be viewed in Figure 6. Each writing subprocess on the cue card was given a different color that coordinated with the colors of the classroom posterboard, and each subprocess was enhanced with a visual aid that represented the process.

Figure 3. POSTER mnemonic used for learning writing process strategies.



Adapted version. Original source: C.S. Englert, T.E. Raphael & L.M.Anderson (1989). Cognitive Strategy Instruction in Writing Project, East Lansing, MI: Institute for Research on Teaching.

Figure 4. Organize conceptual map, web



1. How can I group my ideas into categories?
2. What can I call my categories?
3. How can I order & Sequence my ideas?

Original source: C.S. Englert, T.E. Raphael & L.M.Anderson (1989). Cognitive Strategy Instruction in Writing Project, East Lansing, MI: Institute for Research on Teaching.

Figure 5. Organize conceptual map, block

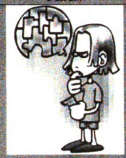
Topic: _____

Main Idea or Category	Details, Notes or Facts
	1. 2. 3. 4. 5.
	1. 2. 3. 4. 5.
	1. 2. 3. 4. 5.
	1. 2. 3. 4. 5.

Original Source: Englert, C.S., Mariage, T.V., Okolo, C.M., Courtad, C.A., Shankland, R.K., Moxley, K.D., Jones, N., Billman, A. (in press). Accelerating expository literacy in the middle grades: The ACCEL Project. In B. Taylor & J. Ysseldyke (Eds.), *Educational interventions for struggling readers*. New York: Teachers College Press.

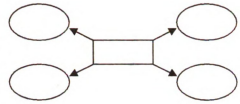
Figure 6. Student cue card with instructional statements and questions for each writing subprocess of POSTER

PLAN



- Choose Topic
- Choose Audience [Who am I writing for?]
- Define purpose [Why am I writing this?]
- List knowledge [What do I know?]
- List questions and resources [What do I need to know about the topic? How will I find this?]

ORGANIZE



- Text structure [What conceptual map can I use?]
- Categorize ideas [How can I group my ideas?]
- Order ideas [How can I order my ideas?]

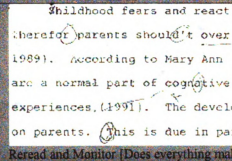
SCRIBE

- Write from map
- Extend, elaborate

TRANSLATE

- Recognize ASL [Is it ASL, English or a mix?]
- Change ASL [How can I write this idea equivalently (=) in English?]

EDIT


childhood fears and react
therefor parents should't over
1989). According to Mary Ann
are a normal part of cognitive
experiences.(1991). The devel
on parents. This is due in pa

- Reread and Monitor [Does everything make sense? Did I achieve my plans? Is it interesting?]
- Editing checklist
- Make changes

REVISE

- Write a clean copy
- Publish paper

Adapted version. Original source: C.S. Englert, T.E. Raphael & L.M.Anderson (1989). Cognitive Strategy Instruction in Writing Project, East Lansing, MI: Institute for Research on Teaching.

Apprenticeship in writing through guided and interactive practice. With the exception of the direct instruction that is necessary for introducing POSTER and conducting NIP-it lessons or decomposition/evaluation exercises (detailed next), SIWI is designed to apprentice students in the construction of text (i.e., guiding both higher-level and lower-level writing skill development) through interactive instruction using an activity format comparable to the adapted version of Morning Message (Wolbers, 2006; Wolbers & Miller, 2006). Therefore, nearly all lessons involve students and a teacher working together to co-construct a piece of text. Ultimately, the collaborative environment of SIWI provides a space for teachers to transfer the control of writing processes and strategies over to students. Such a format of instruction also provides a framework for incorporating all explicit instruction of writing (e.g., instruction of POSTER, NIP-it lessons, decomposition exercises) into a contextualized activity of writing for a predetermined and authentic audience. Writing for authentic audiences establishes real-world purpose for learning and using writing as a way to convey information or ideas to others. It becomes viewed as a skill or trade that is necessary and functional, rather than just an activity done in school (McAnally, Rose & Quigley, 1994).

Through guided practice, students are exposed to the thinking, words and actions of more-knowledgeable-writers and, over time, appropriate the writing strategies and practices they encounter for their own. Student participants may begin SIWI by relying heavily on the more-expert-others to create effective text and may only contribute as peripheral members. Yet, just as in Morning Message (Englert & Dunsmore, 2002; Mariage, 2001), the interactive nature of the writing space makes others' thinking visible and accessible. A teacher, for instance, may purposely model, think-aloud, or prompt

(through the use of guided questions) particular strategies in front of the group to give them access to her thinking and approach. Or, when students offer suggestions, the teacher may ask them to explain why they think a certain approach is necessary, thereby reproducing thoughts in a way that is accessible to and adoptable by their peers. With a gradual transfer of knowledge—as more strategies, approaches and processes are appropriated—participants move from guided and shared practice to independent writing of effective text. A skillful teacher helps facilitate this transfer to independence by using a series of "step back" and "step in" moves during the guided writing activity; stepping back to position the students as the expert decision-makers and evaluators of the quality of text, and stepping in to provide supports or instructional guidance only as necessary (Englert & Dunsmore, 2002). Students, through the use of guided and interactive practice, are apprenticed in ways of writing and thinking about writing.

NIP-it lessons. NIP-it stands for *notice*, *instruct* and *practice*. The teacher must first *notice* what is missing in student writing or contributions. *Noticing* requires the teacher to step back from the day to day guided writing activity and critically examine student progress or lack of progress with both higher-level skills and lower-level skills in mind. This can be done at the end of the day during reflection, or perhaps when observing students work in small groups or independently. Next, there must be *instruction* that directly and explicitly addresses the area in need. Lastly, *practice* is contextualized—students participate in a guided writing activity and the new material is incorporated. This is where NIP-it lessons depart from the traditional writing mini-lessons. Whereas mini-lessons do require *noticing* and *instructing* (Atwell, 1998), they typically fall short of integrating *practice* into authentic contexts and guided writing.

If students are still not making contributions with respect to the targeted area after a NIP-it lesson occurs, the teacher may need to initially guide usage through think-alouds and modeling until this knowledge transfers to students. She may also create a classroom artifact—one that represents the skills and/or strategies addressed by the NIP-it lesson—and refer to it during guided practice, thereby scaffolding or prompting as needed. Lastly, a reminder can be added to the student editing checklist. (See Appendix B for an example of how writing compound and complex sentences was incorporated into the student editing checklist.)

NIP-it lessons are necessary when students are not making complex enough contributions to the collaborative writing. Because the teacher scribes the expressions, ideas and edits offered by students during the co-construction of text, it can be difficult to advance student writing when remaining at the level of student input. New concepts that are above current student knowledge can be introduced and incorporated into practice, as mentioned earlier, when a teacher models or thinks-aloud constructions or processes. This gives students access to the thoughts and actions of a more-expert-writer that are beyond their own, with the expectation that they will begin to take up this knowledge. However, in order to introduce the use of new constructions or processes, the teacher must first recognize that there is a need in a particular area and then make a conscious effort to bring this to the forefront of the activity.

In a previous study using the same apprenticeship approach, students were found to make no gains in the production of compound and complex sentences (Wolbers, 2006). These constructions were, at the same time, the kinds of complexities that were missing from students' suggestions at the time of the guided writing. During the moment to

moment co-construction of text, the teachers in the previous study failed to recognize the lack of sentence variety being offered by students and therefore did not make an effort to introduce these constructions with think-alouds or modeling. NIP-it lessons are designed as an opportunity for teacher reflection and reaction, for during the day to day application of SIWI, teachers are juggling roles and responsibilities, many of which occur on a moment to moment basis in an unscripted fashion (e.g., giving floor time to all students and allowing them to contribute to the interaction at their particular skill level, modeling, thinking aloud, attending to classroom management, following up student contributions with metacognitive probes, etc). Teachers may be cognitively taxed during the instruction and miss opportunities for complicating student contributions to a more sophisticated level of writing.

In the current study, students in the treatment group were exposed to two NIP-it lessons during the intervention phase. The treatment group was composed of three separate classes whereby students were largely clustered according to language and literacy levels. The first group consisted of students with fully developed expressive language skills and average to strong literacy skills. This group received NIP-it lessons targeting sentence combining skills. The other two groups, however, mainly consisted of students having minimal language skills and/or low literacy levels. The lower of the groups received two NIP-it lessons targeting sentence construction (i.e., recognizing fragments and creating full sentences). The higher of the groups received their first NIP-it lesson on sentence construction but a second lesson on the use of determiners.

Decomposition and evaluation exercises. Decomposition and evaluation exercises encourage students to view written text analytically and to become more

metacognitive about characteristics of writing. During decomposition lessons, students are presented with example papers, some good and some non-examples of the type of writing that is the focus of instruction. They analyze the components that either exist or do not exist to the benefit or disadvantage of the author. For instance, when examining a low quality example of informative writing, students examine the text critically, suggesting where the weaknesses exist and how the author might make the text stronger. By examining a high quality example, students discuss and focus on elements of the paper that contribute to its effectiveness. This process of studying examples so that students can read, decompose and emulate models of good writing has been vetted in the literature and is recommended as one element of effective adolescent writing instruction (Graham & Perin, 2007).

During evaluation exercises, students use scoring rubrics to rate their own writing or another's writing. By interacting with the rubrics the teacher also uses for scoring, the quality traits of writing are emphasized for students. This process is similar to 6+1 traits where students are aware of the desired writing traits prior to writing, and use them to evaluate a text after it is written. This activity additionally provides students with a common language for referring to aspects of good writing (Northwest Regional Educational Laboratory, 2005).

In the current study, the students in the treatment group participated in a two-day lesson of decomposition and evaluation exercises. This involved decomposing the structure of an example piece of text and introducing the associated language of informative text. Students read, critically examined and discussed this example of informative text. In the course of this two-day lesson, the implementer often rephrased

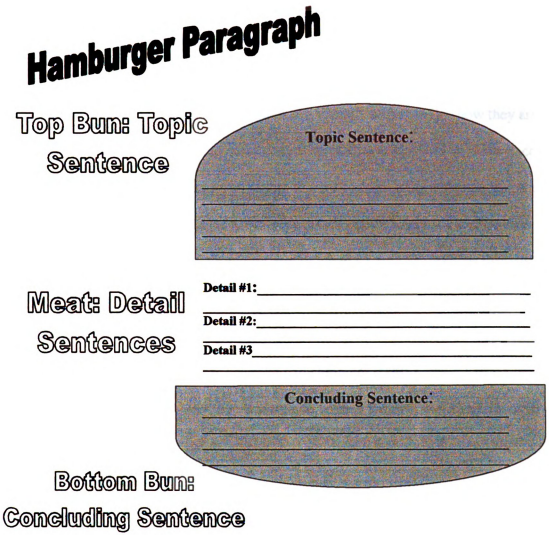
student contributions in order to model the language of informative writing (e.g., introductory sentence, details, main idea, thesis statement). She also explicitly drew students' attention to particular features of the writing that were not noticed. The intervention phase was originally designed to allow one other lesson where students would use rubrics to evaluate text; however, this was eliminated from the lesson plans due to uncontrollable school variables that constrained class time (e.g., fire drills, school assemblies, pull-out time for speech therapy).

Visual scaffolds. Because teaching that has made use of pictorial materials and visual stimulation has been shown to improve the learning of deaf children (Fung, Chow & McBride-Chang, 2005, 92), SIWI incorporates iconic or visually informative scaffolds to aid writing. The scaffolds include but are not limited to the following: representative images, conceptual maps, and different colors (e.g., markers, paper) for different purposes. They are intended to support students in remembering and applying writing skills or strategies. Furthermore, the visuals offer another mode of accessing the knowledge of expert writers; students interact with these tools to actively construct their own understandings.

One scaffold applied in this research is the hamburger paragraph depicted in Figure 7. It is used to demonstrate the construction of a body paragraph, where the top bun indicates the introductory sentence, the meat indicates the detail sentences and the bottom bun indicates the concluding sentence. The hamburger paragraph scaffold was on a large poster board in the classroom and was utilized by the class during the construction of body paragraphs. Another representative image, also used in this research, is a picture of a train, showing the linking of simple phrases or sentences into compound and

complex sentences. This scaffold was mainly used during the editing and revising processes and, therefore, can be viewed as part of the editing checklist in Appendix B.

Figure 7. Hamburger paragraph visual scaffold



Original Source: Englert, C.S., Mariage, T.V., Okolo, C.M., Courtad, C.A., Shankland, R.K., Moxley, K.D., Jones, N., Billman, A. (in press). Accelerating expository literacy in the middle grades: The ACCEL Project. In B. Taylor & J. Ysseldyke (Eds.), *Educational interventions for struggling readers*. New York: Teachers College Press.

Metalinguistic knowledge-building. The last instructional component of SIWI is metalinguistic knowledge-building, a component supported by research on effective writing instruction of linguistically diverse students. There is more than one language being used by and with deaf children, so it is conducive to develop an awareness of the nature and structure of language (both written and visually expressed)—how they are similar and different. By comparing and juxtaposing ASL and English, students become more conscious about the language particulars that make them unique from each other. As their knowledge of the languages grow, they may be more likely to produce them separately and purely, instead of allowing them to blend (e.g., ASL features that surface in one's writing).

In addition, knowing more about how expressions are equivalently represented in English and ASL can result in more accurate and complete translations for those students who conceive an idea in ASL and then translate to written English. For instance, consider the following sentence: "she cleaned the kitchen meticulously". In ASL, one might sign KITCHEN SHE FINISH CLEAN and then show that it was meticulously done with facial expressions that accompany the signs and with the movement of the sign CLEAN by miming the great care and precision involved (cf. Howeverton, 2006). Without knowing that one's body and facial expressions that accompany verb signs also equate to English words, one's translation from ideas to written text are deficient. Class discussions about language differences such as how adverbs are represented in each language can build metalinguistic knowledge and foster growth in both languages. Students can see and discuss the nuances of ASL and how slight changes in position, location, movement or expression may change the equivalent of the expression in English.

The SIWI intervention uses a "two easel" approach during co-construction of text which is necessary to keep the languages separate and help make distinctions between ASL and English features (Wolbers, 2006; Wolbers & Miller, 2006). When a student generates an idea during collaborative writing and the group has agreed to add it to the text, a discussion first ensues regarding the language of the expressed idea—whether is was offered in ASL or a form of English-based sign. If it is produced in English-based sign, and therefore is capable of being written, the teacher scribes the student's idea word-for-word on the English easel. If however, the expression is ASL, the teacher utilizes the ASL easel as an idea holding place while translation discussions take place. She may capture the idea given in ASL the best she can using gloss words, symbols, pictures or any other mechanism, making sure to make a note of movements and expressions used in addition to sign vocabulary.

Procedural Timeline

Strategic and Interactive Writing Instruction (SIWI) was applied to the treatment group for an 8-week intervention period. See Table 8 for a detailed listing of teacher, implementer, student and researcher responsibilities during the research period. During the intervention, each of the treatment classes co-constructed two informative essays. The implementer facilitated the group writing of essays utilizing SIWI techniques, incorporating POSTER, collaborative interactive writing, metalinguistic knowledge building, decomposition activities, etc.

The topics of the essays were chosen based on student interest; students rated their motivation to write on various topics by filling out the form located in Appendix C. The implementer narrowed to one of the areas that evidenced high interest for students in

a particular class; yet, a precise topic, audience and purpose were determined collaboratively. Examples of paper topics chosen by students include: Sites of Washington, DC; Roman Gladiators; The Three Stooges.

The two-essay instructional design was based on theoretical understandings that through collaborative work, legitimate participation and scaffolded discourse, learners would appropriate the knowledge of others over time. Whereas the first paper primarily exposed and involved students in the writing approaches of more-knowledgeable-others, the second allowed students to take more control over the processes. During construction of the second paper, students participated to a greater extent than in the first paper and evidenced greater independence with the writing. The implementer needed to "step in" less.

The lessons as well as student attendance were tracked over the course of the intervention. See Table 9 for a schedule of lessons, student absences and brief descriptions of class lessons. Students were absent an average of 4 times during the intervention period. Those students with excessive absences were T1 (8 absences), T13 (10 absences), T14 (6 absences), and T16 (10 absences).

Table 8

Participant and Researcher Tasks

	Prior to Intervention (Week 1)	Essay I (Weeks 2-5)	Essay II (Weeks 6-9)	After the Intervention (Week 10)
Teacher Tasks (treatment group)	- attend SIWI informational meeting and/or professional development session - distribute & collect signed consent forms - administer pre-tests & literacy questionnaire - attend training for fidelity instrument - score videos to obtain IRA for fidelity instrument	- observe two videotaped lessons (one in week 3, one in week 5) - complete two fidelity checks - discuss observations with implementer - provide student information and background (e.g., severity of hearing loss, communication method, age) for demographics	- observe two videotaped lessons (one in week 7, one in week 9) - complete two fidelity checks - discuss observations with implementer	- administer posttests - compile class artifacts
Teacher Tasks (comparison group)	- distribute & collect signed consent forms - administer pretests (with exception of student interviews) & questionnaire	- maintain typical writing instruction - interview re: instructional practices	- maintain typical writing instruction	- administer posttests (with exception of student interviews) - interview re: instructional practices
Student Tasks	- consent forms to/from parent - take pretests - answer questionnaire	- participate in SIWI - co-construction of essay #1	- participate in SIWI - co-construction of essay #2	- take posttests

Table 8 (cont'd).

	Prior to Intervention (Week 1)	Essay I (Weeks 2-5)	Essay II (Weeks 6-9)	After the Intervention (Week 10)
Researcher Tasks	- obtain IRB approval - obtain district approvals - distribute consent forms to teachers - distribute pretests & student questionnaire to teachers - Schedule and lead SIWI informational meeting and professional development session - collect and check completion of consent forms - collect pre-tests (remove names and type) and student questionnaires - conduct metacognition and motivation interviews - obtain teacher demographics - prepare SIWI class materials (e.g., POSTER, inquiry paper #1 resources)	IMPLEMENT SIWI - introduce POSTER - review examples & non-examples, decomposition &/or evaluation exercises - guide choosing of topic - NIP-it lesson # 1 (compound/complex sentence, or fragments vs. complete sentences) - facilitate guided and shared practice in co-construction of essay #1 - publish essay #1 and distribute to audience for feedback	IMPLEMENT SIWI - review examples & non-examples, decomposition &/ or evaluation exercises - generalizability discourse - guide choosing of topic - NIP-it lesson #2 (compound/complex sentence, or fragments vs. complete sentences, or determiners) - facilitate guided and shared practice in co-construction of essay #2 - publish essay #2 and distribute to audience for feedback - determine second scorer, train, make sure s/he has human research protection training	- conduct post metacognition and motivation interviews - collect posttests (remove names and type) - collect all videotapes and class artifacts - pay $50.00 to treatment teacher - blind scoring of pre and posttests - obtain interrater reliability - determine analysis (MANOVA/ MANCOVA) - data analysis - provide summaries of student writing to teachers - provide intervention summary to teachers/ implementers - interview control teacher - offer SIWI PD to comparison teacher - print pre and posttests and distribute

Table 9

Schedule of Class Lessons and Student Attendance (treatment group only)

Class	Absent	Lesson Description
Prior to intervention		
1	-	Administer pretest – writing sample (informative text) and literacy questionnaire
2	T16	Administer pretest – writing sample (MEAP type prompt)
3	-	Administer pretest –SORT, Pat's editing and revising measure
4	-	Administer pretest – make-up tests, metacognitive and motivation probes
Essay I		
5	T16	Introduce **POSTER**, indicate topic interests
6	T14,T16	Review **POSTER**, Introduce informative writing, review examples/non-examples
7	T14,T16	*Decomposition and evaluation exercise*, guide selection of topic
8	T1,T16	**Plan**, inquire the topic, determine audience and purpose
9	T1,T16	**Plan**, extract information from resources
10	T7, T10,T13, T14,T15,T16	**Organize**, introduce conceptual map
11	T10,T13, T14,T15,T16	**Organize**, finish conceptual map, print outline
12	T1,T2,T13, T14,T15,T16	Co-construct paper #1 (mainly **Scribe, Translate, Edit, Revise**), thesis statements
13	T1,T2,T13, T14,T15,T16	Co-construct paper #1 (mainly **Scribe, Translate, Edit, Revise**), introduce hamburger visual scaffold for body paragraphs
14	T3,T6,T7,T11	Co-construct paper #1 (mainly **Scribe, Translate, Edit, Revise**)
15	T3,T6,T11	*NIP-it lessons*
16	T1,T11,T13	Co-construct paper #1 (mainly **Scribe, Translate, Edit, Revise**)
17	T1,T11,T13	Co-construct paper #1 (mainly **Scribe, Translate, Edit, Revise**)
18	-	Co-construct paper #1 (mainly **Scribe, Translate, Edit, Revise**), introduce editing checklist
19	-	Co-construct paper #1 (mainly **Scribe, Translate, Edit, Revise**), publish
20	T12	Celebration of publication, review feedback from audience
Essay II		
21	T12	Indicate topic interests, guide selection of topic
22	T10,T12,T13	**Plan**, inquire the topic, determine audience and purpose
23	T10,T12,T13	**Plan**, extract information from resources
24	T8	**Organize**, conceptual map
25	T8	**Organize**, finish conceptual map, print outline
26	T13,T14	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**)
27	T13,T14	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**)
28	T1	*NIP-it lessons*
29	T1,T2	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**)
30	-	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**)
31	-	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**)
32	T5	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**)
33	T5	*Decomposition and evaluation exercises*
34	-	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**), edit checklist
35	-	Co-construct paper #2 (mainly **Scribe, Translate, Edit, Revise**), publish
36	-	Celebration of publication, review feedback from audience
Post-intervention		
37	-	Administer posttest – writing sample (informative text)
38	-	Administer posttest – writing sample (MEAP type prompt)
39	-	Administer posttest – SORT, Pat's editing and revising measure
40	-	Administer posttest – make-up tests, metacognitive and motivation probes

Professional Development Components

The teacher of the treatment group served as an evaluator of implementation for fidelity purposes. Therefore, she underwent professional development as if she were to teach SIWI. The treatment group teacher did participate in an earlier study that utilized a similar instructional approach (see Wolbers, 2006 for details regarding the corresponding training module). The earlier study had professional development components related to the apprenticeship of writing through guided, interactive practice and metalinguistic knowledge-building. SIWI, however, utilizes four additional instructional components and thus, required the teacher get further training in regards to these components: (a) the use of writing process strategies; (b) decomposition and evaluation exercises; (c) *NIP*-it lessons to introduce new writing skills or strategies; (d) the use of visual scaffolds. Moreover, the earlier study involved the writing of a different text structure—personal experience essays instead of informative expository essays. Consequently, the teacher was given the new scoring rubrics and genre writing objectives. The professional development occurred on two half-day sessions with the teacher. See Appendix D for an outline of the professional development.

Now that the intervention period is complete and the posttests are collected, the comparison group teacher has access to all the intervention materials and professional development.

Treatment Fidelity

To ensure that the implementer carried out the instruction of SIWI faithfully, there were four videotaped observations during the intervention for the purpose of rating instructional fidelity. Originally the researcher intended to serve as the evaluator of

fidelity for the classroom teacher; however, as mentioned earlier, the teacher of the treatment group was away from the classroom on a leave of absence during the planned implementation period. Therefore, the original roles were reversed, for the researcher became the implementer of SIWI while the teacher, having already received training with SIWI, accepted the role of evaluator.

Prior to the start of the intervention, the teacher became acquainted with the fidelity rating instrument provided in Appendix E. The instrument is a listing of the instructional procedures relevant to SIWI's six components. The instrument, however, is divided into subcategories that illuminate the daily instructional processes and the teacher's role associated with the six components rather than a description of the components themselves. The subcategories include: strategy instruction and procedural facilitators; interactive instruction and apprenticeship; building metalinguistic knowledge; curriculum and content; instructional procedures; audience; positive feedback. Each item was rated on a 5-point scale from strongly disagree to strongly agree. The teacher first watched an example video along with the researcher and practiced scoring the faithfulness of instruction. They compared their ratings within each subcategory, spending time discussing any differences that existed and the rationale for those differences. They watched a second video and used these ratings to obtain interrater reliability for the instrument. A reliability coefficient was calculated using the Pearson product-moment correlation (r = .912), and this indicated high reliability.

The implementer's faithfulness to the instruction of SIWI is described quantitatively by averaging all items of the fidelity instrument, whereby 1 = strongly disagree and 5 = strongly agree. See Table 10.

Table 10

Reporting of Treatment Fidelity

Observation #	Rating of Implementation
1	$M = 4.32$
2	$M = 4.72$
3	$M = 4.88$
4	$M = 4.93$

The implementer received high overall ratings for all observations, yet she became increasingly more faithful throughout the implementation period. During the first and second observations, most items on the instrument were given high ratings (i.e., 4 or 5); however, there were a few instructional principles that were not being enacted consistently (e.g., numbers 24, 25 and 27). During the third and fourth observations, the problems that had existed for the specified numbers had been rectified, and all items received high ratings.

Instruction in the Comparison Classroom

The comparison group consisted of three classrooms of students who were categorized by language and literacy levels, low to high. Information was gathered about the instruction occurring in each of these classes during the intervention phase. This was accomplished primarily through two semi-structured interviews with the teacher of the control group, one interview occurring at the midpoint and the other at the end. During the interviews, questions included the following:

- How many minutes per day do students receive literacy instruction or practice? Approximately how much of this time is writing instruction or writing-related activities?
- What kinds of writing are students doing?
- What classroom activities lend themselves to writing development or practice?
- How do you teach writing?
- How do you teach language and grammar?
- What reading activities and reading instruction contribute to students' development in writing?

Additionally, one observation of instruction took place during the first couple weeks of the intervention period. And, after the description of each class was written, the comparison group teacher read and validated that the classroom instruction had been accurately represented in writing.

The first group of students, categorized as having low language and literacy skills, received approximately 30 minutes a day of writing instruction or writing-related practice (out of 1.5 hours of class per day). Students in this class were given penpals at a different school; they wrote approximately 4 to 5 emails to their penpals with the understanding that they would eventually meet. The authentic nature of this activity motivated students to write substantially longer text (i.e., ½ page to ¾ more with later emails as compared to beginning emails). After drafting their letters, students worked one on one with the teacher to discuss an agenda for revisions and edits. For this step, students utilized the feature of track changes in Microsoft Word. Then, students worked to ready their final drafts.

In addition, students of this first group received reading instruction that may have contributed to students' writing development. Students read from leveled readers (fiction and non-fiction) and then responded to questions, oftentimes using writing to give short and extended responses or to complete comprehension worksheets. There was also much attention given to vocabulary building. Students would highlight unfamiliar words while reading. Then, they would participate in activities that allowed exposure to new words and that provided opportunity for learning vocabulary words (e.g., vocabulary bingo). Lastly, students practiced retelling and sharing text in ASL, thereby building literacy connections with the dual languages present in the classroom.

The second class of students was considered a mid-level group in regard to language and literacy skills. They spent more time on writing-related activities compared to reading. Of a 45-minute daily class, the majority of time was allocated to writing. As with the first class, students read from leveled readers and then responded to questions in writing. They also wrote penpal letters as did the first class. One difference was that students in this second class received explicit instruction with English grammar. This instruction evolved from a focus on parts of speech (i.e., nouns, verbs, adjectives, adverbs) to the construction of sentences and paragraphs. Multimedia and hands-on activities were incorporated in the teaching of grammar (e.g. use of a smartboard to incorporate physical touch). On a regular basis, they also wrote in journals to open-ended prompts or to topics of their choice.

The third class of students had average to high language and literacy skills, which was evident in their reading of grade-level literature and novels. In ways, literacy instruction was similar to the other groups. For instance, this class also read from the

leveled readers and responded to questions in writing. They received explicit English grammar instruction, wrote journals, and spent time on vocabulary building activities. A difference, however, was they completed more out-of-class reading and writing assignments and completed assignments at a level of greater sophistication. They also received instruction regarding idioms and multiple meaning words. Approximately 25 minutes out of the 75 minutes of literacy instruction was writing-based.

Data Sources and Scoring Protocol

It was hypothesized that students who were exposed to the SIWI curriculum would make significantly greater gains in writing and reading skills than those who were not. Therefore student participants in the treatment and control group were compared on four tests to measure skill in (a) writing informative text, (b) generalizing one's writing to a novel text structure, (c) editing/revising, and (d) reading. These assessments were given at the onset and conclusion of the research period. In addition, qualitative data was collected for the treatment group through interviewing. Table 11 indicates which data sources were utilized in answering each research question.

Table 11

Sources of Data by Research Question

Research Questions	Data Sources
a. Do students receiving the SIWI intervention make significantly greater gains with high-level informative writing skills compared to those students not receiving SIWI?	1. Informative Writing Measure, primary traits scores
b. Do students receiving the SIWI intervention make significantly greater gains in reading compared to those students not receiving SIWI?	1. SORT-R reading measure
c. Do students receiving the SIWI intervention make significantly greater gains with high-level generalized writing skills compared to those students not receiving SIWI?	1. Generalization Writing Measure, primary traits scores
d. Do students receiving the SIWI intervention make significantly greater gains with low-level generalized writing skills compared to those students not receiving SIWI?	1. Generalization Writing Measure, contextual language scores 2. Generalization Writing Measure, convention scores
e. Do students receiving the SIWI intervention make significantly greater gains with revising and editing informative text compared to students not receiving SIWI?	1. Editing/Revising Measure
f. Do students receiving the SIWI intervention make significantly greater gains with length of composition compared to those students not receiving SIWI?	1.Generalization Writing Measure, total word count
g. Do students exposed to SIWI evidence greater metacognitive skills in regard to writing, and/or do students evidence greater motivation for writing at the conclusion of the intervention as opposed to the beginning?	1. Student interviews 2. Videotaping and Observations

Informative Writing Measure

All students in the treatment and comparison groups were administered the informative writing measure prior to the intervention period and afterwards. Directions for administering the measure along with other testing materials can be found in Appendix F. There were two different informative writing topics, both of which were wild animals (i.e., the grizzly bear and the gray wolf). To control for content knowledge, half of each group received the grizzly bear topic at pretest and the other half received the gray wolf topic. At posttest, students took the alternate test. Additionally, each student

received an animal fact sheet on either the grizzly bear or the gray wolf to support their writing on these topics and to control for background knowledge. Typically when writing informative papers, one must first gather resources or data prior to writing. This measure, however, was designed to assess organization and writing skills associated with production of informative text, not students' content knowledge or ability to read and extract information from resources.

The teachers read the directions to students and handed out the animal facts (see Appendix F). The directions asked students to write a paper that informs an audience about the particular animal they were given. The audience consisted of persons from different countries such as New Zealand where grizzly bears or gray wolves are not typically found. Students were told that facts about the animals had already been gathered for them, and their next step should be to organize the information and convey this information through writing. In the directions, they were given additional reminders to (a) use the fact sheet but also write ideas in complete sentences and in their own way, (b) reread their stories once they are finished to see if they make sense, (c) not worry about spelling words correctly, and (d) not be afraid of making the paper messy as they edit.

Students were given approximately one class period to write their papers (i.e., 45 to 50 minutes); however, it was estimated that the writing took 30 minutes on average. If students asked questions (i.e., about spelling, conventions, etc.) during the assessment, the teachers responded by telling them to do the best they can. When they finished writing, students raised their hands so the teacher could pick up their papers. Illegible or non-interpretable words were dictated to the teacher so s/he could write the intended meaning underneath the students' attempt.

This writing measure as well as the next measure detailed in this section have been altered from similar measures used in previous studies (Englert et al., in press). Since it was the first time these adapted measures were applied, they were first reviewed by a panel of experts to determine their content validity. The panel examined whether the tests and evaluation tools appear to measure what they purport to measure. Feedback was obtained from four university professors, two experts on conducting writing research with special education students, one expert who specializes in deaf education and one expert who specializes in disability studies and urban education.

Informative writing rubrics. The rubrics used to score the writing samples can be viewed in Appendix G. There are three main components of the evaluation tool: the rubric for the primary traits of informative writing; the rubric for contextual language; the rubric for conventions. Because many students borrowed language from the fact sheets during writing (making it hard to distinguish students' own language productions from the phrases and constructions provided to them), the informative essays were not rated for contextual language and conventions. As mentioned earlier, the scores on primary traits were used to determine higher-level writing skills. The contextual language and conventions rubrics, although explained here as part of the larger writing evaluation tool, were only utilized for the generalization writing probe. Skills were rated on a 4-point rubric scale, 3 points indicating fluency in the skill or trait and 0 points indicating no emergence of the skill or trait at this time. The internal reliability coefficient for the primary traits subcomponent ranged from .788 to .836. The internal reliability coefficients for contextual language and conventions were .802 and .717 respectively.

The evaluation tool was designed after (a) considering other writing or language measures that have been used with deaf students such as the TOWL-3 (Hammill & Larsen, 1996) and the Test of Syntactic Abilities (Quigley, Steinkamp, Power & Jones, 1978) and (b) reviewing several research articles with analytical scales (Englert, Conway, Gover, & Dunsmore, 2000; Heefner & Shaw, 1996; Isaacson, 1996; Schirmer & Bailey, 2000; Schirmer, Bailey & Fitzgerald, 1999; Warriner, 1988). More specifically, the primary traits rubrics were heavily influenced by the work of Englert (2000) and Warriner (1988); the contextual language and convention rubrics were derived in large part from the TOWL-3 (Hammill & Larsen, 1996) and the Test of Syntactic Abilities (Quigley, Steinkamp, Power & Jones, 1978).

Revising/ Editing Measure

Next students were given an assessment called Pat's Newspaper Story (c.f., Mariage, 2001) which can be viewed in Appendix H. This is a fictitious student paper that is in need of revising and editing before it can be published in a special newspaper for teenagers. The story contains mechanical errors as well as coherence, text structure and sense-making problems.

Revising/ editing scoring. Pat's Newspaper Story contained 44 possible revisions which were each assigned a particular point value based on their difficulty to notice and correct (view scoring key in Appendix H). The scoring protocol allotted one to two points for each surface-level correction (i.e., conventions and language) and three to five points for what were considered higher-level corrections. There were a total of 28 conventional errors worth one point each; 14 were spelling mistakes and 7 were capitalization, punctuation, and indentation mishaps. There were a total of 7 contextual language errors

(e.g., usage of determiners, commas, verb tense, etc.) at 2 points each. Two sentences required students to use prior knowledge. For instance, one sentence stated, "You can rent shoes at the bowling ally for a hundred dollars." If students read for meaning, they would determine that rental shoes costing 100 dollars is nonsensical. By editing this part, they earned 3 points. There were three coherence errors in Pat's paper worth 4 points apiece. For instance, it was mentioned that "Jill wears an arm brace so her wrist stays straight while releasing the ball." This statement was devoid of any real explanation about who Jill was and how she relates to the overall message. Lastly, there were 4 text structure errors at 5 points apiece. The last sentence of the introductory paragraph reads, "Before going for the first time you should know how to play". However, the contents of the paragraphs to follow were the necessary materials and equipment of a bowler. To revise and allow an effective introduction of the paper, a corrected thesis statement is necessary.

Generalization Writing Measure

Students were additionally administered a generalization probe at pre and posttesting to examine their ability to transfer knowledge of informative writing to a different type of writing, namely personal narrative or personal experience writing. The test prompts were purposefully designed to mirror previous Michigan standardized writing assessments given at the 7th grade level (See Michigan Educational Assessment Program, 2004). It was hypothesized that students exposed to SIWI would simultaneously make gains on the state standardized test, extending and applying the skills and strategies they have learned from informative writing to personal narrative/experience writing.

The directions for this measure were similar to those given to students for administration of the informative writing measure. The directions and writing prompts can be viewed in Appendix I. As with the informative writing measure, there were two paper themes. The themes were divided among students in each group at pretest and posttest in order to control for any differences in writing that might be influenced by the topic itself.

To evaluate the written papers students produced, the raters used the informative writing rubrics in Appendix G. As mentioned earlier, the scores on primary traits were used to determine higher-level writing skills, and the scores on contextual language and conventions were used to determine lower-level writing skills. The only subcategory that did not directly apply to this type of writing was topic development (breadth) since a personal experience paper is less prone to organization by distinct categories. However, the other categories and subcategories were usefully extended. The evaluation tool (i.e., the writing rubrics) used in this research is comparable to the holistic rubric provided by the state of Michigan to score the MEAP writing assessments. A perfect score is described as the following:

> The writing is exceptionally engaging, clear, and focused. Ideas and content are thoroughly developed with relevant details and examples where appropriate. The writer's control over organization and the connections between ideas moves the reader smoothly and naturally through the text. The writer shows a mature command of language, including precise word choice that results in a compelling piece of writing. Tight control over language use and mastery of writing

conventions contribute to the effect of the response (Michigan Educational Assessment Program, 2004).

These statements roughly match onto the categories/subcategories of the evaluation tool in the following order: introduction, paragraph development, coherence, tone, and contextual language. The evaluation tool used in this research, however, gives attention to skills separately to provide a more descriptive analysis of students' writing.

Publishing Student Writing

The writing that students did during testing was given an authentic context as much as possible. While teachers were giving directions, they provided students with the purpose and audience for the writing. For example, during the expository measure, students were told to assume an audience of readers from a different country where grizzly bears or gray wolves do not exist and to write a paper meant to inform about these animals. In addition, students were told at pretest and posttest that their writing would be typed, printed on quality paper and given back to them in a published form. They would then have the option of sharing their writing with others. Thereby, strong attempts were made to provide students with a purpose for writing and strengthen the validity of the measure.

Rating Procedures

Both the writing measures and the revising/editing measure were scored using the abovementioned evaluation tools. All student pre and posttests were submitted to a blind rating. They were typed and had all identification information such as name, teacher and school removed so that the rater would not know any specifics that could potentially sway the scoring (i.e., which classroom, when was the test taken). A second rater

randomly selected and scored approximately 10 to 20% of the papers from each assessment in order to obtain interrater reliability.

Just above 10 percent of the informative pre and posttests were randomly selected and scored by a second rater. The interrater reliability was calculated for primary traits on a cell-by-cell basis across subjects. Reliability scores ranged from 0.93 to 1, with an average overall agreement of 0.98. The raters were accurate or within one point of each other 100% of the time. For the revising/editing measure, interrater reliability was based on a random selection of approximately 12% of the pre and posttests and was 0.986. Lastly, approximately 20% of the generalized writing pre and posttests were scored to obtain interrater reliability. For primary traits, scores ranged from .93 to 1, with an average overall agreement of .976. The raters were accurate or within one point of each other 100% of the time. For contextual language, scores ranged from .964 to 1, with an average overall agreement of .985. The raters were accurate or within one point of each other 100% of the time. For conventions, the raters achieved accuracy at 100%.

Reading Measure

Because of the interconnectedness of writing and reading skills, this study also warranted the use of a reading measure. The SORT-R or Slosson Oral Reading Test – Revised (Slosson & Nicholson, 1990) was used by teachers to obtain students' reading levels prior to and after the intervention period. The SORT-R is a norm-referenced test that has achieved high reliability ratings on test/retest measures (e.g., Kuder-Richardson was 0.98) and criterion validity scores (e.g., 0.83 correlation with Peabody Individual Achievement Test). The teacher in the treatment group was familiar with this measure and had tested previous groups of students, using the SORT-R as a quick indicator of

reading ability. A short reading measure such as the SORT-R was preferred for the current research because writing measures alone were consuming 3 class periods.

The SORT-R was administered to students individually and lasted typically 5 to 10 minutes. The test contained 200 words arranged in order of increasing difficulty, and students were told to read all the words they could. Since each group of 20 words approximated one grade level, a participant's raw score could be converted to a grade-equivalent score that was indicative of the student's reading level.

It is acknowledged that the SORT-R may not be an accurate indicator of reading level for deaf students because it is based on word calling and pronunciation skills. Deaf students who rely heavily on contextual clues for word decoding are at a disadvantage. In the context of the current research, however, the SORT-R was utilized as a way of detecting change in reading ability from pre to posttest. The gains reported from pre to posttest, rather than the reading levels, were the important indicators of growth and were the outcome data of focus.

Qualitative Data Collection

In order to represent the understandings students constructed in relation to the writing process and to describe the experience of student writers more richly, just under 40% of the treatment group students were randomly selected to participate in interviews. The interviews were conducted prior to and after the intervention period, questioning (a) metacognition regarding writing and (b) motivation to write. The interviews were semi-structured with questions including the following:

- What do good writers do before writing? During writing? After writing?
- What are your thoughts or feelings about writing? Do you enjoy writing?

Because the second set of questions on motivation relates more to one's affective response to writing rather than one's knowledge of writing, they may be more susceptible to falsified answers. For instance, students may offer responses they assume the teacher/implementer would like to hear. Therefore, the data collected on motivation through the interview was triangulated with the student's response on the demographic survey in Appendix A (i.e. How often do you write outside of school (not including homework) for pleasure? What do you write?) to ensure comparability.

Data Analysis

A one-way multivariate analysis of variance (MANOVA) was performed to detect whether there were group differences regarding a set of variables. The independent variable in this analysis was a 2-level group factor (i.e., receives SIWI instruction vs. no SIWI instruction). The set of dependent variables, included in the analysis as gain scores, were primary traits score for informative writing, editing/revising score, primary traits score for generalized writing, contextual language score for generalized writing, conventions score for generalized writing, total words, and reading level.

Approximately 3% of the data was not collectible due to student absences on assessment days. To prevent the elimination of student data on other collected measures, the mean score of the group (i.e., treatment or control) was utilized for the data of the missing measure.

MANOVA was utilized instead of separate ANOVAs in order to prevent the inflation of type I error that can result from running multiple univariate tests. This becomes an important concern when there are several correlated dependent variables. In the current study, correlations between dependent variables were moderate to high (r =

.427 to .856). MANOVA provides a single overall test of group differences regarding a set of means but does not indicate which variables are responsible for any difference that was detected (Carey, 1998). Therefore, MANOVA was the omnibus test in the current research, yet follow-up analyses such as univariate analyses were also provided, when necessary.

The Qualitative interview data was subjected to a content analysis. Student responses were translated by a certified interpreter and written in English. A running list of main ideas was generated for each question at pre and post interview. Frequency counts were tallied when the same ideas were expressed by more than one student. The lists of student responses at pre and post interview were compared to note how the patterns and themes of the data had changed over time.

CHAPTER 4

RESULTS

This chapter contains the results of the study and is reported in four main sections. First, a preliminary examination was conducted to ensure the data met a set of assumptions associated with the statistical analysis, MANOVA. Next, the results of MANOVA are provided along with the follow up univariate analyses and descriptive statistics, as necessary, for dependent variables. This section largely responds to research questions A through F. The quantitative data was analyzed using SPSS 14.0 statistical software. For all statistical analyses, the significance level was set at $p < .05$, unless otherwise indicated. In the third section, the qualitative findings from student interviews regarding metacognition and motivation are presented; this relates to research question G. Lastly, a summary of the findings is provided.

MANOVA Assumptions

A set of assumptions were tested prior to running the analysis (MANOVA): (a) normality of variable distributions; (b) homogeneity of variances and covariances; (c) independence of observations. First, all dependent variables were examined for skewness and kurtosis. Statistics were not significant unless their absolute value exceeded two times the standard error (Brown, 1997). With this method of inspection, all variables except the editing/revising scores were considered normal. The editing/revising data was both positively skewed and leptokurtic. For the current study's sample size, MANOVA is still robust when encountering such violations. However, two outliers were additionally found in the editing/revising data which consequently caused the analysis to be highly

sensitive. As a result, the editing/revising variable was removed from the multivariate analysis. Second, the variances and covariances were examined for homogeneity using two indices, Box's M and Levene's Test. Since MANOVA is robust to violation of this assumption (with significance at $p < .05$) and because there are unequal sample sizes (which heightens sensitivity of the indices and the possibility of violation), alpha was set at $p < .001$ (Tabachnick & Fidell, 2001). Neither of the two tests of homogeneity was significant, indicating that the assumption was met. Dependent variables exhibited equal levels of variance for the group factor, and covariances were equal across cell. Lastly, in studies of repeated measures, consideration must be given to the third assumption, independence of observation. The current study collected pretest and posttest data for the same participants and, therefore, needed to consider either using MANOVA for repeated measures or gain scores (i.e., the difference when pretest scores are subtracted from posttest scores). This analysis utilized the latter.

Presentation of Quantitative Data

A one-way MANOVA was calculated to examine the effect of Strategic and Interactive Writing Instruction (SIWI) on six dependent variables: primary traits of informative writing, reading level, primary traits of generalized writing, contextual language, conventions, and total words. A significant effect was found, *Wilks' Lambda* $F(6,26) = 21.26$, $p < .000$, *partial-eta squared* = .83.

Follow-up univariate ANOVAs were calculated for each of the dependent variables and are presented according to research question. When significant, the effect size is provided to show the magnitude of the difference between group means. Effect size (d) is computed as the difference in gain divided by the pooled standard deviation

and multiplied by *c*, whereby *c* denotes the Hedges (1981) bias correction. Morris (2005) presents the effect size calculations of a pretest-posttest control group design as follows:

$$d = c_P\left[\frac{\left(M_{post,T} - M_{pre,T}\right) - \left(M_{post,C} - M_{pre,C}\right)}{SD_P}\right]$$

$$SD_P = \sqrt{\frac{(n_T - 1)SD^2_{pre,T} + (n_C - 1)SD^2_{pre,C}}{n_T + n_C - 2}}$$

$$c = 1 - \frac{3}{4(n_T + n_C - 2) - 1}$$

Following Cohen's effect size guidelines, 0.20 is small yet meaningful, 0.50 is a medium effect (i.e., half of a standard deviation difference in means) and 0.80 or above is large (Howell, 2002).

Research Question A

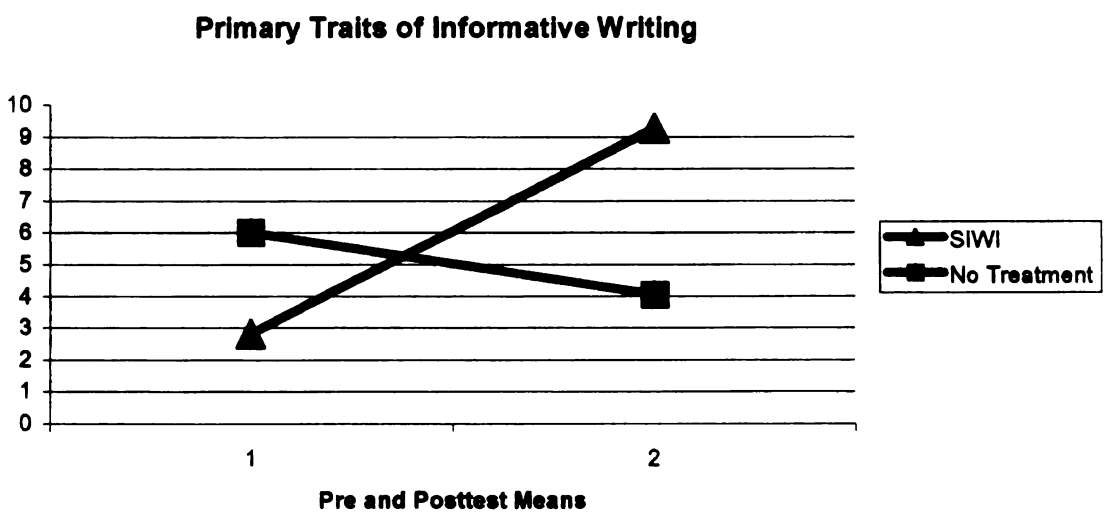
Research question A asked: Do students receiving the SIWI intervention make significantly greater gains with high-level informative writing skills compared to those students not receiving SIWI? To answer this question, a one-way ANOVA was calculated, using the total primary traits score of informative writing as the dependent variable. The univariate statistic indicated that high-level informative writing skills were influenced by instruction, $F(1,31) = 34.44$, $p < .000$, *partial-eta squared* = .53, d = 2.65. Descriptive statistics of the pre and posttest data for each group are provided below in Table 12. Further, a graphical depiction of pre and posttest data is provided in Figure 8.

Table 12

Descriptive Statistics for Primary Traits of Informative Writing

	Pretest		Posttest	
	M	*SD*	*M*	*SD*
SIWI	2.81	1.83	9.25	5.63
No Treatment	6.00	3.92	4.06	2.63

Figure 8. Display of pre and posttest means for primary traits of informative writing.



Student examples of informative writing at pre and posttest can be viewed in Appendix J. Samples are provided for three various students, representing the below average, average and above average reader. Students' individual scores on each primary trait are additionally provided in Appendix K.

Research Question B

Research question B asked: Do students receiving the SIWI intervention make significantly greater gains in reading compared to those students not receiving SIWI? A

one-way ANOVA indicated that reading was influenced by instruction, $F(1,31) = 11.2$, $p < .002$, *partial-eta squared* = .27, d = 0.39. Students in the SIWI treatment group evidenced an average gain of 0.45 reading level from pre to posttest while students in the control group did not show any gains.

Research Question C

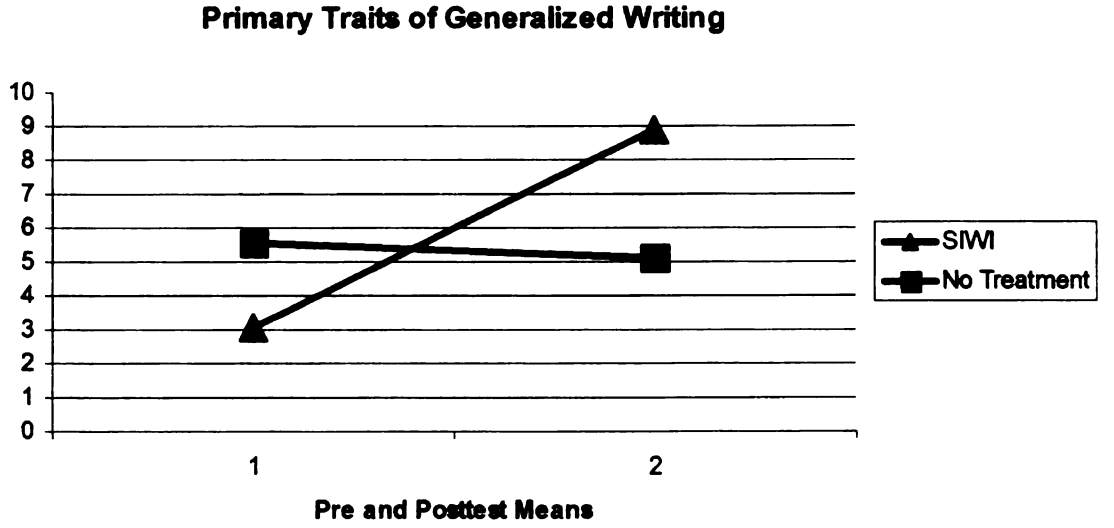
Research question C asked: Do students receiving the SIWI intervention make significantly greater gains with high-level generalized writing skills compared to those students not receiving SIWI? To answer this question, a one-way ANOVA was calculated, using the primary traits score of generalized writing as the dependent variable. The univariate statistic indicated that high-level generalized writing skills were influenced by instruction, $F(1,31) = 77.002$, $p < .000$, *partial-eta squared* = .71, d = 2.07. Descriptive statistics of the pre and posttest data for each group are provided below in Table 13. Further, a graphical depiction of pre and posttest data is provided in Figure 9.

Table 13

Descriptive Statistics for Primary Traits of Generalized Writing

	Pretest		Posttest	
	M	*SD*	*M*	*SD*
SIWI	3.06	2.86	8.88	4.29
No Treatment	5.53	3.00	5.12	2.69

Figure 9. Display of pre and posttest means for primary traits of generalized writing.



Student examples of generalized writing at pre and posttest can be viewed in Appendix L. Samples are provided for three various students, representing the below average, average and above average reader in the treatment group. Students' individual scores on each primary trait are additionally provided in Appendix M.

Research Question D

Research question D asked: Do students receiving the SIWI intervention make significantly greater gains with low-level generalized writing skills compared to those students not receiving SIWI? To answer this question, two one-way ANOVAs were calculated, using the gain scores for contextual language and conventions[4] as the dependent variables. The univariate statistic for contextual language indicated that low-level generalized writing skills were influenced by instruction, $F(1,31) = 50.001$, $p <$

[4] Scores on contextual language represent a total score of 15 variables, and scores on conventions represent a total score of 6 variables. To obtain students' individual scores for each variable, please contact the author.

.000, *partial-eta squared* = .62, d = 1.38. The univariate statistic for conventions additionally showed that low-level generalized writing skills were influenced by instruction, $F(1,31) = 41.72$, $p < .000$, *partial-eta squared* = .57, d = 1.27. Descriptive statistics of the contextual language data for each group are provided below in Table 14, and descriptive statistics for conventions are provided in Table 15. Further, graphical depictions of pre and posttest data are provided in Figures 10 and 11.

Table 14

Descriptive Statistics for Contextual Language of Generalized Writing

	Pretest		Posttest	
	M	*SD*	*M*	*SD*
SIWI	12.31	7.88	19.94	7.97
No Treatment	17.12	7.42	13.94	7.57

Figure 10. Display of pre and posttest means for contextual language.

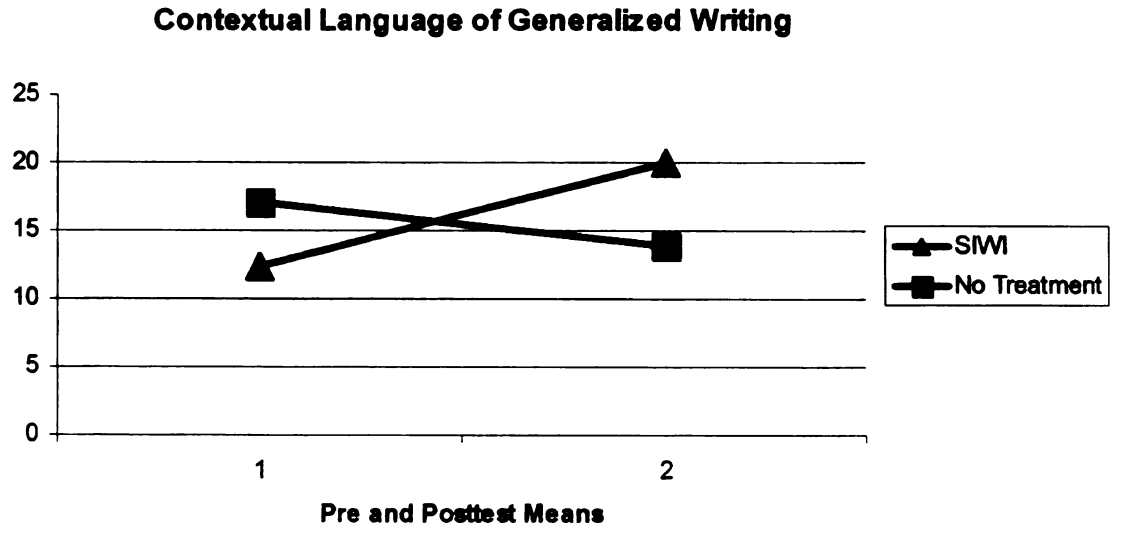
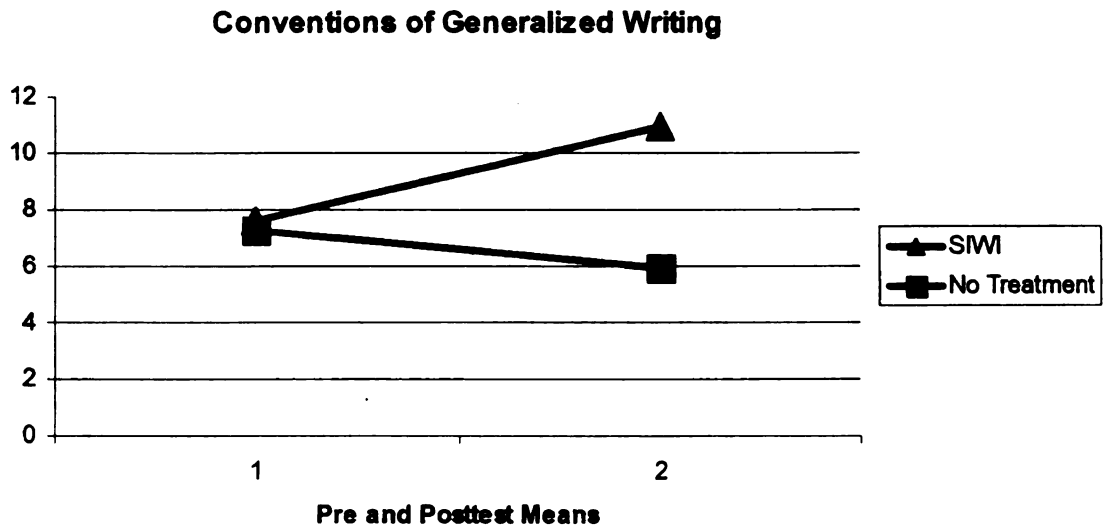


Table 15

Descriptive Statistics for Conventions of Generalized Writing

	Pretest		Posttest	
	M	*SD*	*M*	*SD*
SIWI	7.63	3.14	10.94	3.32
No Treatment	7.29	3.97	5.94	4.09

Figure 11. Display of pre and posttest means for conventions.



Furthermore, students in the treatment group received two NIP-it lessons during the intervention time period that targeted lower-level writing skills. The first class consisted of students having fully developed expressive language skills and average to strong literacy skills. Both NIP-it lessons for this group targeted sentence combining. Pre and posttest differences regarding their production of compound and complex sentences can be viewed in Table 16. On a four-point rubric scale, student made mean gains of 0.5 on compound sentences and 1.5 on complex sentences. The other two classes mainly

consisted of students having minimal language skills and/or low literacy levels. The lower of the groups, class 2, received two NIP-it lessons targeting sentence construction (i.e., recognizing and reducing fragments and run-on sentences). The higher of the groups, class 3, received the first NIP-it lesson on sentence construction but a second lesson on the use of determiners. Pre and posttest differences can also be viewed for these classes in Table 16. Both classes reduced their fragment sentences and run-on sentences, thereby showing mean gains of 0.8 to 1.8 points on the 4-point rubric scale. In addition, class 3, showed a positive mean gain on correct use of determiners (i.e., 0.4 on pretest to 1.2 on posttest).

Table 16

NIP-it lesson outcomes

Class	Contextual Language Item	Mean Pretest Score	Mean Posttest Score
1	Compound Sentences	0.75	1.25
1	Complex Sentences	0.5	2
2	Fragment Sentences	0.8	2
2	Run-on Sentences	0.6	1.4
3	Fragment Sentences	1	2
3	Run-on Sentences	0.6	2.4
3	Determiners	0.4	1.2

Research Question E

Research question E asked: Do students receiving the SIWI intervention make significantly greater gains with revising and editing a piece of informative text compared to those students not receiving SIWI? During a testing of the assumptions, this data was declared non-normal due to skewness, kurtosis, and the presence of outliers. The data was removed from the multivariate analysis and, therefore, may not be analyzed using

ANOVA. Descriptive statistics of the editing/revising data for each group are provided below in Table 17, and a graphical depiction of pre and posttest data is provided in Figure 12. Furthermore, pre and posttest data is also given according to individual students in Table 18.

Table 17

Descriptive Statistics for Editing/Revising

	Pretest		Posttest	
	M	*SD*	*M*	*SD*
SIWI	6.94	7.41	11.41	12.30
No Treatment	7.59	9.52	6.21	8.19

Figure 12. Display of pre and posttest means for editing/revising.

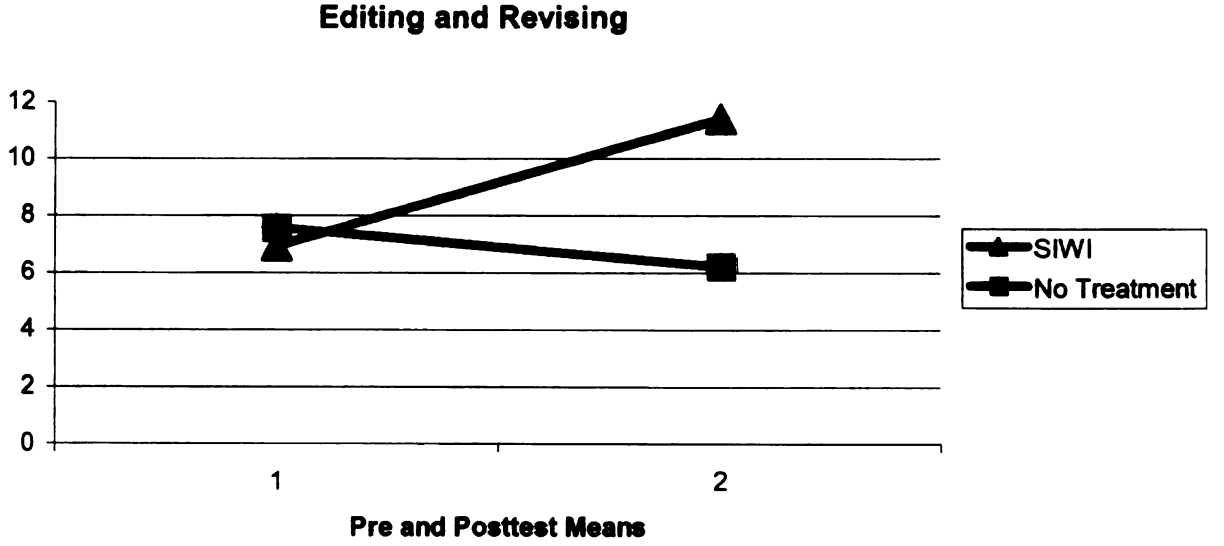


Table 18

Individual Student Data for Editing/Revising

Student	Class	Pretest Score	Posttest Score
TG1	1	16	13
TG2	1	10	12
TG3	1	27	43
TG4	1	15	17
TG5	1	10	12
TG6	2	0	3
TG7	2	3	2
TG8	2	0	2
TG9	2	0	0
TG10	2	6	3
TG11	3	1	1
TG12	3	2	9.5
TG13	3	8	36
TG14	3	4	10
TG15	3	7	15
TG16	2	2	4
CG1	1	0	0
CG2	2	5	5
CG3	1	1	0
CG4	1	0	0
CG5	3	21	15
CG6	2	2	1
CG7	2	2	2
CG8	3	14.5	12
CG9	2	0	3
CG10	2	22	13
CG11	3	22.5	21.5
CG12	2	0	0
CG13	3	15	8
CG14	1	1	0
CG15	3	23	25
CG16	1	0	0
CG17	2	0	0

Research Question F

Research question F asked: Do students receiving the SIWI intervention make significantly greater gains with length of composition compared to those students not receiving SIWI? To answer this question, a one-way ANOVA was calculated, using the total word count as the dependent variable. The univariate statistic indicated that length of composition was influenced by instruction, $F(1,31) = 20.55$, $p < .000$, *partial-eta*

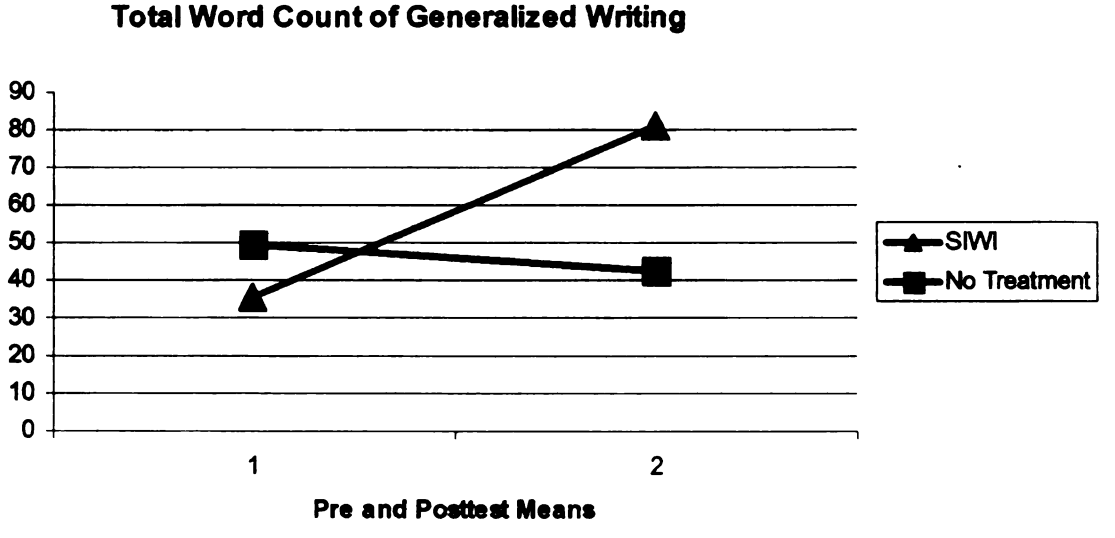
squared = .40, d = 1.53. Descriptive statistics of the pre and posttest data for each group are provided below in Table 19. Further, a graphical depiction of pre and posttest data is provided in Figure 13.

Table 19

Descriptive Statistics for Total Word Count of Generalized Writing

	Pretest		Posttest	
	M	*SD*	*M*	*SD*
SIWI	35.38	34.27	80.94	51.35
No Treatment	49.53	32.84	42.35	36.19

Figure 13. Display of pre and posttest means for total word count.



Ad Hoc Analysis

An ad hoc analysis was performed to determine whether students made differential gains based on their reading levels. Although students in the treatment group were parsed into three different classes indicative of low, medium and high literacy levels, a comparison of the three groups could not be made because of the small *n* in

each. However, students could be separated into two fairly equal groups: those reading above a 2.9 reading level and those reading below. There were no significant differences in the amount of gain experienced by low readers compared to high readers with respect to the dependent variables.

Presentation of Qualitative Data

Research Question G

Research question G asked: Do students exposed to SIWI evidence greater metacognitive skills in regard to writing, and/or do students evidence greater motivation for writing at the conclusion of the intervention as opposed to the beginning? Six students in the treatment group (two from each class) were randomly selected for pre and post interviews. During the interviews, students were asked three questions that were revealing of metacognitive skills: What do good writers do before writing? What do they do during writing? What do they do after writing? The content of student interviews at pre and posttests are shown in Table 20. The parentheses indicate the number of students providing a similar response.

Table 20

Student Interview Responses to Metacognitive Questions

	Pre Interview Responses	Post Interview Responses
Before writing?	• Outline using numbers • Get question from the book • Get a piece of paper	• Choose topic (3) • Determine audience • Plan (3) • Brainstorm ideas for paper (4) • Gather information from internet or books • Organize information into categories • Order ideas, decide what comes first, second, etc. (2) • Write introduction using general statements and a thesis
During writing?	• Write (2) • Respond to question • Teacher maybe will help • Indent	• Scribe • Write so that people can understand • Write introduction using opening statements and a thesis statement • Write the body • Give specific details of your topic (i.e., meat) • Indent and capitalize • Reread the text • Study vocabulary • Translate ASL to English
After writing?	• Edit work • Print from the computer and edit with teacher • Have mom fix what is wrong • Save work and put in a folder	• Make sure you have a concluding paragraph that is opposite of the intro, restate what was in the body (2) • Make sure you have an end • Edit and revise mistakes • Print • Give to your audience to read (2)

At posttest, students evidenced greater knowledge about what good writers do during the writing process. They mentioned more about planning, organizing/categorizing and ordering ideas for writing. Students considered audience at all stages of the writing

process (e.g., the audience is determined up front, they write with the audience in mind, and they allow the audience to read the finished product). At posttest, one student indicated that good writers review and reread their text while writing. Another indicated that good writers need to consider language and translation. Finally, students in general expressed more about the structure of good informative writing (e.g., introduction with a thesis sentence, body with details, and a concluding paragraph).

Students were also asked to respond to motivation-related questions: What are your thoughts or feelings about writing? Do you enjoy writing? Responses at the pre and posttest interviews were very similar in that students expressed instances of dislike and like for writing. A consistent response from students was they preferred choosing their own topic for writing. Students conveyed an interest for learning and writing about certain topics like football or dolphins. At the same time, students expressed a lack of enjoyment when they are required to respond in writing to a teacher's topic or to questions in the textbook.

Summary

This study examined the effect of Strategic and Interactive Writing Instruction (SIWI) on students' writing and reading skills. For the statistical analysis, the independent variable was the group factor (i.e., SIWI or no treatment). The dependent variables were the gains from pre to posttest for primary traits of informative writing, reading level, primary traits of generalized writing, contextual language, conventions, and total words. The data from the editing/revising measure was removed from the statistical analyses due to its non-normality. The multivariate statistic and all follow-up univariate statistics were significant. Furthermore, R squared for writing gains ranged from .53 to

.71, meaning that much of the variation can be attributed to the writing intervention. The effect sizes (d) were large to very large, with numbers ranging from 1.27 to 2.65. R squared for the dependent variable of reading was .27, indicating some of the variation can be explained by the intervention—an intervention that focused primarily on writing. The associated effect size was small to moderate at 0.39. Analysis of student interview data additionally revealed that students at posttest were able to express more knowledge about what good writers do before, during and after they write. Motivation for writing was a matter of topic choice.

CHAPTER 5

DISCUSSION AND CONCLUSION

Summary and Discussion of the Findings

The present study was designed to investigate the impact of Strategic and Interactive Writing Instruction (SIWI) on the writing performance of middle school students with hearing loss. The research extended a previous study that examined the effects of interactive writing instruction (Wolbers, 2006). Whereas the earlier study focused on the instruction of personal narrative and personal experience text, this study targeted instruction of expository text, and more specifically, informative text.

The prior study was a 21-day intervention whereby teachers and students co-constructed a piece of personal narrative text everyday of the intervention. The published products were typically a paragraph or two in length and were accomplished within a 20 to 30-minute time frame. When the focus of instruction was changed to informative text (a genre of writing typically expected at this age), a strategy instruction component was added to the approach to support students in the process of writing a text structure with greater complexity. The entire writing process was more involved, from the extraction of pertinent detail from various resources to the revising of multi-paragraph and multi-page text. During the 8-week SIWI intervention involving 32 lessons of instruction at 30 to 45 minutes a lesson, teacher and students co-constructed a total of two informative essays.

The set of writing strategies offered by POSTER provided a broad curriculum framework for proceeding through the writing process. Students were introduced to the actions skilled writers take when constructing text and were also engaged in the practice

of these actions. The interactive format, then, provided a space for collaboration, knowledge-sharing and apprenticeship of writing strategies and skills. Other components of SIWI included: the use of text models for decomposition and evaluation exercises, metalinguistic knowledge building activities, NIP-it lessons, and the use of visual scaffolds.

The study was driven by multiple purposes. First and foremost, SIWI was designed and implemented with the intention of developing the writing skills, both higher-level and low-level, of deaf middle school students. For pre and posttests, students wrote an essay of informative text (i.e., the instructed genre) and also responded in writing to a personal narrative prompt (i.e., an untaught genre). The personal narrative prompt was modeled after the state's standardized assessment of middle school writing. On both of these measures, students who had received SIWI made significantly greater gains with the primary traits or higher-level writing skills compared to control group students. Thus, students gained in their ability to produce informative writing after receiving instruction in this area but also evidenced an ability to generalize writing skills and strategies to an untaught text structure, that of personal narrative writing.

This has implications for writing instruction in the middle grades, especially in the face of high-stakes testing pressures. Students entering the middle grades typically have a more developed repertoire for writing narrative rather than expository texts (Applebee, 2000), yet there are increased expectations at this level for students to exhibit content knowledge through writing and to write research papers or argument-based essays. The results of this study indicate that expository writing can be the center of instruction and not simultaneously stall student growth in the area of writing that is

tested. In fact, students in the treatment group made similar amounts of gain with each of the text structures; scores tripled on both measures while the scores of control group students stayed the same or slightly declined on both. The effect sizes for both informative and generalized writing were very large (i.e., > 2.0). As can be seen in Appendices J and L, students—although at various pretest levels—showed gains over time with production of text structure, organization of information and coherence of written ideas. They further became more considerate of audience, which is evident in their efforts to present information in an organized way and use a language that readers can understand.

SIWI, additionally, had a significant impact on students' lower-order writing skills. This was a somewhat projected, yet surprising, outcome. The current study allowed fewer days for the co-construction of text than the previous study of interactive writing, 15 days compared to 21 days. Many class lessons during the intervention time involved non-writing or prewriting activities such as planning, organizing, and evaluating text models, which allowed for little apprenticeship in the areas of contextual language or conventions. Even more, when the class was involved in writing, translating, editing and revising, much time was allocated to discussion of higher-level writing skills (e.g., the structure of a body paragraph or organizing ideas) because students lacked experience with constructing informative text. Substantially less attention was given to the discussion and practice of contextual language skills or conventions; however, students still made significant gains in these areas from pre to posttests. Effect sizes were, in fact, quite large (i.e. 1.38 for contextual language and 1.27 for conventions). At the same time, students in the control group did not show gains, yet their classroom instruction

incorporated the explicit teaching of grammar. This further supports the assertion that grammar instruction alone may provide no real benefit (Hillocks, 1986), but contextualized learning of language, on the other hand, has potential to produce meaningful results.

The NIP-it lessons proved to be a beneficial way of identifying constructions not readily used by students and then targeting these writing practices or skills through tailored instruction. The teacher, while outside the interactive space of co-constructing text, evaluated the level of student contributions and recognized those areas of language or conventions for which students were not making suggestions and, as a result, might benefit from direct instruction.

Prior to the inclusion of NIP-it lessons, students were not only lacking the use and knowledge of particular constructions, but teachers were also missing opportunities for instruction during the co-writing of text. For instance, in a similar study (Wolbers, 2006), the middle school students did not show any gains from pre to posttest with the production of compound or complex sentences. The teachers, juggling multiple responsibilities and discourse moves, may have been cognitively taxed during co-construction and unable to notice such sentences were missing from the shared text and from student contributions. In fact, there was little attempt to model, teach, think-aloud or incorporate compound or complex sentences. Therefore, the published pieces contained very few of these constructions.

During the current study, classes in the treatment group varied in their need for NIP-it lessons. The students in the first class, consisting of those at near-average or average language and literacy levels, had mastered many basic writing skills but were

nonetheless producing simple sentences. This class received NIP-it lessons that targeted sentence combining skills. On posttest, students nearly doubled the amount of compound sentences they were using in their writing and quadrupled the amount of complex sentences. The other classes received different NIP-it lessons (e.g., forming complete sentences, recognizing fragments and run-ons, and distinguishing when to use "a" or "the") and, in response, also showed the ability to double, triple and quadruple the correct production of these constructions.

The key to effective NIP-it lessons, I believe, lies in the "P", for, as a former teacher, I taught these same contextual language lessons but did not have similar success. Students learned the rules and could complete worksheets or textbook exercises with great accuracy (which I deemed adequate practice); however, they did not transfer their knowledge to writing, in-class or otherwise. At that time, this was a very peculiar occurrence, for I did not understand the importance of students being involved with a community of writers and applying knowledge to writing that has a purpose. With NIP-it lessons, the use of various constructions is practiced in the context of real writing events after the direct instruction occurs. That is, teacher reflection to "Notice" the area in need as well as the direct "Instruction" of the area takes place outside the realm of co-constructing text but is later contextualized through "Practice" of authentic writing experiences. Only 2 of the 32 lessons were allocated for direct instruction of contextual language through NIP-it lessons. After a lesson, however, the construction became an infused part of the classroom writing. Posters were hung in the collaborative writing area that represented and supported the writing lessons. The constructions were also added to

the editing checklist. And, the teacher and students made an increased effort to incorporate discussion and practice of the constructions when writing together.

Another area of writing that SIWI intended to impact was students' editing and revising skills. Because students were actively involved in the processes of editing and revising the collaborative text, it was anticipated that students would appropriate the actions of skilled writers in that respect. Yet, as mentioned prior, there were fewer days in the current study allotted to the co-construction of text—which meant less time for the editing and revising of text—as compared with a similar and earlier study (Wolbers, 2006). The results of the editing and revising data were, in fact, mixed. Some students in the treatment group evidenced tremendous progress from pre to posttest in this area (e.g., TG3 with a pretest score of 27 and a posttest score of 43, TG13 with a pretest score of 8 and a posttest score of 36). Nevertheless, these few students were the exception to the rule. Other students showed little or no growth with editing and revising skills (e.g., TG7 with a pretest score of 3 and a posttest score of 2). Overall, the mean gain of the treatment group was approximately 4.5 points which was indeed more than the control group; however, it was peculiar that great variability existed in the treatment group.

One viable explanation is that each of the three classes in the treatment group had different instructional needs and therefore had substantially different foci during writing. The third class consisting of students TG11 to TG15, for instance, showed the most gain from pre to posttest with an average of a 10-point increase. Unsurprisingly, this class spent considerably more time than the other two with editing and revising. This was the case because students in this class had very strong opinions and expressive personalities, especially when saying how something should be written to be effective or correctly

stated in English. In particular, students often had incorrect conceptions but were adamant in their correctness. When "stepping in" and directing the writing by thinking-aloud, modeling or guiding, the teacher often met student resistance to alternate ideas. As a result, a greater amount of class discussion ensued to tackle students' preconceived notions, which may provide reason for these students having greater gains compared to the other two classes.

Additionally, the students in the three classes were parsed according to level of language and literacy which may be another reason for the variability in student performance. The second group (students TG6 to TG10 and TG16 having the lowest literacy and language levels) performed the lowest on the editing and revising assessment, showing virtually no growth. This may indicate one of two things. Students in this group had the least amount of prior experience with writing, and therefore the instruction of the writing process as well as the construction of text was much slower. Students were working to develop some very rudimentary editing and revising skills in time that was additionally constrained by other necessary tasks. Most students in this group, for example, had difficulty expressing ideas in visual or written language. During the construction of text, students spent the majority of time collaboratively building ideas in ASL, thinking about language translation and then forming complete English sentences. Students, thus, may have been impacted by the lesser emphasis placed on revising and editing. Second, because students were reading at an early primary level, they may have found the assessment to be too arduous and overwhelming. Even though the text could be interpreted and read to them, students may have presumed the task to be unapproachable.

One more key finding of the current study is that students of SIWI made significant gains in reading. Students in the treatment group made an average gain of 0.45 years in reading while the students in the control group exhibited no gains. If students in the treatment group continued to make the same rate of growth over the course of an entire school year, the average reading gain would approximate 2 years. This would be a dramatic result given the history of failed attempts to positively impact reading outcomes of deaf students. Further, in the case of the lowest readers at pretest (e.g., TG8 reading at a 0.6 level, and TG16 reading at 0.9), gains during the 8-week intervention were double the average growth—1 year of gain. Therefore, students most in need of an effective reading intervention were those most impacted by SIWI.

It goes without saying, however, that SIWI is a writing intervention and does not provide specialized attention to the reading needs or goals of students. At the same time, the presence of SIWI in the middle school language arts classroom, indeed, had a positive effect on reading. This may point to the fact that reading and writing share commonalities in respect to kinds of knowledge and processes (Fitzgerald & Shanahan, 2000). For instance, in the practice of reviewing and revising, students are prompted by the teacher to read and reread the constructed text. The intention is that students learn the process of monitoring their writing for meaning making. Yet, the repeated readings of students' own ideas may additionally aid in building vocabulary identification skills as well as word meaning.

In an era of high-stakes testing in which teachers are facing pressures to improve the reading outcomes of their students, writing is more commonly an instructional afterthought rather than an integral component of literacy teaching and learning. The

results of this study contradict the conception that reading must dominate literacy instruction, for it evidences an approach to quality writing instruction that will boost both writing and reading achievement. This does not downplay the need for reading and writing to be recognized as having cognitively separate aspects. In fact, the current writing intervention accounts for 27% of the variability in reading gains, suggesting that writing instruction does not directly translate into reading gains. However, SIWI does impact areas of knowledge or processes in both reading and writing, resulting in overlapping benefits. Teachers can be more efficient with their instructional time by utilizing literacy activities that allow for dual benefits and then secondarily incorporating separate instruction as needed (Fitzgerald & Shanahan, 2000).

Lastly, analysis of the length of essay showed that students in the SIWI group more than doubled their number of words (i.e., the pretest mean of ~35 to the posttest mean of ~81 words). Conversely, students in the comparison group did not write longer pieces on their posttests compared to their pretests. There are a number of plausible explanations for the increased length of student writing in the treatment group. One reason that warrants credit is that students evidenced greater metacognitive knowledge for the process of writing and for the text structure of informative essays at the conclusion of the intervention. The majority of pretests were unorganized listings of details. During the pre interviews, students discussed writing in terms of homework assignments and responses to the teacher's questions. There was no indication that students experienced authentic audiences and authentic purposes for writing. At the post interviews, however, they mentioned giving attention to the audience before writing, during writing and after writing. This had an impact on how students planned and

organized their writing, but, in terms of length, it affected how they wrote. As one student puts it, he "write(s) so that people can understand". This thought, I believe, led to greater explanation and clarity in student writing. It additionally made students more cognizant of producing a text structure that is comprehensible to the reader. During the posttest, students constructed considerably longer papers by writing introductory paragraphs with thesis statements, topic sentences, sentences that provided coherence between ideas, or concluding statements and paragraphs.

The results of the analyses are fairly straightforward for the treatment group—SIWI had a significant and positive impact on students' writing and reading outcomes. What is less understandable is the lack of literacy progress in the comparison group—or in some cases—the decline of literacy skills. During the 8 week intervention period, students in the control group showed little variation between pre and posttest in respect to reading level, primary traits of generalized writing, length, and editing/revising skills. While discouraging, a plateau in literacy achievement is characteristic of middle school students in general (Bereiter, 1980). Students, however, showed a negative decline with primary traits of informative writing, contextual language and conventions. This brings reason for concern, particularly with the area of contextual language.

Whereas informative writing was not the center of instruction in the control group, contextual language was one area given considerable time and focus. Such a result could potentially signify student regression instead of progression when the approach to teaching language is largely "part to whole". The language instruction in the comparison group initially focused on parts of speech (i.e., nouns, verbs, adjectives, adverbs) and increasingly added greater complexity (i.e., construction of sentences and paragraphs). In

contrast, SIWI engaged students in writing essays, whereby learning about contextual language was embedded. Students learned about subjects and predicates but within a context of revising fragments in the collaborative text. Students discussed adverbs but in the context of how an adverb expressed in ASL translates to written English. Indeed, structured skill building was an instructional element that was present in both groups; however, there were differences in the practice of these skills. SIWI allowed for skills to be embedded in actual practice whereas students taught in the comparison group using a "part to whole" approach studied language and grammar under simplified and decontextualized conditions.

Furthermore, in the treatment group, the teacher acknowledged the level of students' current understandings rather than assuming a "blank slate". An approach starting with very basic language instruction at the beginning of the year, in contrast, discounts students' previous knowledge. Thus, instruction in the comparison group may have led students to regress back to use of simple and less varied constructions in their posttest writing even though they were capable of more. During SIWI, the co-constructed text, in addition, was written at a level beyond what students could accomplish independently but could achieve through scaffolding and support provisions. Therefore, there was exposure to complex and varied usages of grammar, and there was also opportunity to practice language not normally attempted, all within the context of a meaningful activity.

Theoretical Implications

The instructional principles and procedures of Strategic and Interactive Writing Instruction (SIWI) were supported largely by three theoretical perspectives: cognitive

theories of composing, sociocultural theories of learning, and theories of dialogue. Although seemingly a wide range of perspectives that are poles apart, together they formed a theoretical framework that comprehensively supported writing instruction and learning, in all its complexity. That is, instead of viewing the theories as competing, a framework was conceived that welcomed the insight and distinct contributions of each theory, for one theory alone may have been insufficient in designing such an effective instructional approach and subsequently explaining the complex learning phenomena. As Stone (2004) argues, interventions in the area of language and literacy are best conceptualized from multiple perspectives when concern is given to both the process and the practice. With respect to the current research, the three strands of theory stated above together motivate the strategic instruction of skills and processes within communities of practice or collaborative and interactive environments.

Cognitive theories of composing, sociocultural theories of learning and theories of dialogue are delineated as broad-based theories, for they provide broad understandings of human capability applicable to multiple circumstances, conditions, and persons. Whereas the current study investigates the literacy learning of deaf middle school students in specific, the main instructional components associated with SIWI (i.e., strategic instruction and interactive writing) are generalizable to other classrooms, teachers and students outside this focus. In fact, interventions informing parts of SIWI such as Cognitive Strategy Instruction of Writing (Englert, 1990; Englert et al., 1991; Englert, Mariage, & Dunsmore, 2006) and Morning Message (Englert & Dunsmore, 2002; Mariage, 1995, 2001) are likewise based on broad theoretical foundations that have wide application.

At the same time, SIWI has other components that are based on a more narrow set of conceptions. The component of metalinguistic knowledge building, for instance, is relevant to linguistically diverse populations of students. When designing SIWI, insight was largely sought from the field of L2 writing because of the limited resources available in the field of deaf education with respect to language and literacy learning. Theorizing in this area (i.e. the contextually specific condition of deaf learners of language and literacy), for the most part, has been the result of conceptual papers more tied to opinion and philosophy than study and research (cf. Luckner et al., 2006). With the results of this study, I provide theoretical implications for the field of deaf education, for it is essential that studies advance beyond their own research and give attention to the theoretical insights that can be derived, especially in needed areas (Curcic, Wolbers, Pu & Juzwik, 2006).

A long-standing theoretical question in the field of deaf education asks how deaf students best form an internal representation of the English language that will aid them in reading and writing. Deaf and hard of hearing students are wide-ranging in respect to many factors (i.e., residual hearing, access to a language and fluent models, exposure to print), and it would do no justice to the field to simplify the varied and independent experiences of many into one sweeping generalization. While, at the same time, the results of this study can help us consider the experiences of some deaf students—those primarily having severe to profound losses, using ASL as their primary language, and having associations with the Deaf community and culture. These are students who baffle researchers and theorists when they achieve average or above average literacy rates, for

their ability to write and read a language not used for daily communication and social purposes is surprising.

Some would claim such an occurrence is explained by the interdependence theory of bilingual education (Enns, 2006) which purports that there is a common underlying proficiency to language that allows skills whether cognitive or literacy-related to transfer across languages (Cummins, 1979). High levels of proficiency in L1 lead to greater L2 literacy skills, provided there is adequate exposure to L2 and motivation to learn L2; and, L2 proficiency, in turn, leads to greater skill in L1. Few dispute that Cummins's model of interdependence has some applicability to the deaf learner, for proficiency in ASL as a first language can lay a cognitive foundation that supports language learning of English and academic learning in general. However, when it comes to the development of reading or writing skills in English, the experience of the ASL user is unique and somewhat mysterious. First, there is no written language for the L1 (i.e., ASL). Second, among deaf persons with profound losses, a foundation for writing in English is often not developed through the use of speaking English. The interdependence theory of bilingual education rests upon the assumptions that students are developing spoken and written language proficiency in both L1 and L2. Thereby such a theory may only account for part of the deaf person's experience.

Mayer and Wells (1996) draw on the work of Vygotsky and Halliday to further express this point. They discuss four distinct but overlapping phases of linguistic activity, with the mastered forms serving to bridge the development of others: (a) learning the language of the community; (b) internalizing the language into a form of inner speech that governs one' thinking and behavior; (c) using the written mode as an alternative

communication route; (d) expanding one's mastery of the written language to allow facility over various genres, including formal and academic kinds. They reason that using ASL as one's first language or the language of the community can naturally serve as a bridge to developing an internal representation of ASL via egocentric talk occurring in ASL; however, an internal representation of ASL or use of ASL for communication means are unlikely to serve as bridges for the development of written English. Even more, Mayer and Wells (1996) suggest that the L2 learner typified by the interdependence theory has two routes to obtaining proficiency in written English. She may transfer the underlying linguistic and conceptual understandings from her spoken L1 to the development of spoken English, which, in turn, becomes internally represented and supports writing. Or, she may transfer similarities of writing in L1 to writing in L2. With such routes unavailable to the deaf user of ASL as L1, the bridging of literacy-related skills must be questioned. And, since simply achieving proficiency in ASL will not automatically result in written English proficiency, greater consideration must be given to a pathway that will.

This line of reasoning has led to claims that English-based sign language or natural sign languages (e.g., contact or pidgin sign) could provide a bridge to literacy learning in English (Mayer & Akamatsu, 1999) that cannot be provided through ASL. That is, students using English-based sign for communication within a community of users would then have access to a means of constructing an internal representation of English supportive of writing. One oversight in this logic is the assumption that all complexities of English grammar and English constructions are fully represented in English-based sign when, in reality, that is not the case. English-based signing (with the

exception of manually coded systems which have fallen out of favor) often consists of a naturally-produced version of sign. It is widely used by members of the Deaf community when communicating with non-users of ASL or when specifically emphasizing the expression of something English-based through sign. Such a method of English-based sign is termed pidgin or contact sign, for it has developed spontaneously from two languages as a method of communication between speakers of different tongues. In fact, by definition, a pidgin or contact language has simplified grammar and restricted vocabulary. Unsurprising, research has yet to validate the ability of deaf children to acquire proficiency in English solely through English-based signing (Stewart, 2006).

In the current study, students can be divided roughly into three groups with respect to use of language: those who use ASL as their primary language and naturally switch to contact sign based on the demands of a situation; those who use ASL as their primary language but do not switch to contact sign without support; those with minimal language development. Students in the first group (treatment class 1) were those with near average to average literacy levels. They also evidenced an understanding that written English and ASL have distinct and distinguishable characteristics. Students of this group when communicating with each other for purposes of discussion or meaning-making would use ASL. Yet, when amidst the co-construction of text, ideas offered as additions to the collaborative essay were given using English-based sign or contact sign. This was not a prompted action; rather, students naturally made the switch to contact sign when wanting to write. Although students' expressions in contact sign were lacking in grammatical complexity and precision, they were close enough approximations of English that they could be written and subsequently revised, reworked or further

complicated. Because students were operating in this fashion, there was little need for the ASL thinkpad, discussion of translation, or the use of explicit contrastive procedures. Instead, students were in need of practicing English in its fully complex form and adding greater complexity to their internalized repertoire of English.

The approaches taken with this first group was to provide explicit instruction of English, model constructions and also think aloud the rationale and reasoning for decisions. Additionally, students would repeatedly read back through the constructed text along with the teacher. The sign used while reading could be characterized as a more nuanced form of contact sign that was further supported with print, hereinafter referred to as print-based sign. While reading, the teacher used one hand to point to the printed text and one hand to sign, or she pointed to the word/s first and then signed. Some students also preferred to voice as they read through the text. Every attempt was made to represent the English of the essay visually while avoiding conceptual inaccuracies. This entailed fingerspelling words that did not have meaningful equivalents. Also, because of the lack of one to one correspondence between languages, it involved, at times, signing one word that equated to more than one written word or signing multiple words that equated to one word in text. Yet, the reading was always supported with the English printed word through referencing and pointing to the text. Such a method would be deemed too cumbersome for the purpose of communication; however, it was useful in accessing, reading and practicing English. What was additionally important in this approach was that the text itself had meaning to students, for it was constructed using their ideas.

The fact that students grew in their abilities to correctly use English contextual language in their writings warrants reason to speculate that these students were

developing an increasingly accurate and complicated internal representation of English. Such a feat was not previously accomplished by being proficient users of ASL or English-based sign. Rather, it is conjectured that repeated readings using print-based sign along with explicit instruction, modeling and thinking aloud made a difference. However, for these students, it cannot be denied that both ASL and English-based sign played instrumental roles in developing written English. Students used ASL as their primary means of communication and meaning-making. When struggling with difficulties in the process of writing, students preferred discussing, questioning, sharing, defending or rationalizing in ASL, perhaps because it is a fully complete and accessible language to them. Today, few deny the importance of ASL, especially with increasing value placed on ASL as a first language for many deaf children (Stewart, 2006). Even proponents of English-based signing (Mayer & Wells, 1996; Mayer & Akamatsu, 1999) do not discount that ASL holds an important place in the education of deaf children, but how they have conceived its use is less certain. Similarly, English-based sign was also utilized by students in the process of writing. When students wanted to construct text, they switched to contact sign and wrote according to how they expressed something via this method. What is less clear is how students developed an ability to switch from ASL to English-based sign when the situation requires it.

Nonetheless, the results of the current study provide theoretical implications that, in the case of the deaf user of ASL as L1, proficiency in written English (L2) comes as a result of developing an internal representation of English. For the students in this first group, such a process was supported by first having a fully developed L1 through which a cognitive foundation and a common underlying proficiency for language was established,

and, as a result, linguistic and cognitive-related skills could transfer to learning English. Next, there was recognition that ASL and English are two distinct languages having separate characteristics and forms. When faced with a situation needing English use (e.g., writing, communicating across languages with non-ASL users), students had an ability to switch to an English-based version of sign. Finally, writing initially stemmed from writing students' productions offered in English-based sign but was then revised to an accurate and more complicated expression of English. In the process of reviewing the constructed text, students engaged in repeated readings using print-based signing which retained the complexities of the language. Lastly, writing events were meaningful and had social or communicative purpose. Thus, the process of developing a deeper representation of inner English, for this group, was more than simply using spoken English, English-based sign, or ASL.

The next group of students (treatment class 3), those using ASL as a primary language and not having a natural inclination to switch to English-based sign when writing, were students with near average or below average literacy levels. In addition to the techniques used in the first group, an approach used with these students was to build metalinguistic awareness. Students' writing commonly consisted of ASL-like productions, which would indicate that students either did not recognize English as a separate language or they had not yet developed even a simplified internal representation of English (as the first group had). When students offered ideas to be added to the written text, a frequent question posed to this group was, "Is that expression more like ASL or more like English and why?" This prompted them to think about and discuss the structural differences under guidance, and also encouraged them to attempt some

translation as time went on. Much instructional time with this group was spent discussing ways of transforming a visually and spatially expressed idea into a linear English statement. Therefore, another recurrent question posed to this group was, "How can we change that ASL expression into something that is more like English?" When doing this, the ASL thinkpad was utilized. By the end of the intervention, students in this group made significant gains in their use of English language, grammar and constructions when writing. Thus, the technique of building metalinguistic awareness was useful in helping students distinguish ASL from English or helping students obtain a basic understanding of English in general, which may have established the starting point (and, perhaps the need) for a distinct internal language.

The last group (treatment class 2) consisting of those students with minimal language development in both English and ASL was predictably the group with the lowest literacy levels. With this group, there was a continual attempt to engage students in conversation or discussion using ASL. At the same time, students were learning about English and its structure. Yet, language learning in ASL and English were clearly regarded and labeled as being separate, and having distinct uses and characteristics. Naturally, this group of students faced substantial challenges in participating in the activity. The interactive and dialogic format of SIWI required students to express their ideas or questions, give attention to others, and build meaning with others through interweaving talk. This was no small task for students with minimal language skills and very little history with two-sided or multi-sided conversations. Students used gesturing, drawing, and any other feasible method of relaying meaning when they did not have sufficient sign ability. The teacher or other students, by revoicing or reconceptualizing

the expressions, would then share and use the sign vocabulary, which allowed ASL learning to be contextualized and meaningful. In addition, students needed much direction and guidance with conversation principles (i.e., looking at the speaker when s/he is talking, attempting to understand what s/he is saying, providing related responses, turn taking, asking questions when meaning is not clear, etc.). Throughout the course of the intervention, students visibly became more able to express themselves using ASL and were in need of less language scaffolding and support from the teacher. In essence, students were growing in their ASL abilities while learning about writing and English. Similarly, students made gains with English contextual language in their writing.

Near the end of the intervention, students were adept at offering ideas to the group in ASL, albeit using typically simple expressions. Others would ask questions and make sure they understood the expressed meaning. The idea would then get reworked by the group, adding to and complicating the ASL. Notes would be made on the ASL thinkpad to retain the ideas expressed in ASL. Students would then discuss methods of translating their expression into a form of English. By the end of the intervention, students could create simple but complete sentences in English (i.e., having a subject and a predicate), without the teacher stepping in much. Therefore, students began to develop an understanding and use of English. The main approach used with this group was to further develop the primary language so students had a fully accessible way of expressing, understanding, and mediating learning. At the same time, students were exposed to English and use of English through metalinguistic knowledge building, reading and reviewing text using print-based sign, explicit instruction, modeling and thinking aloud, and writing with an authentic audience and purpose.

In summary, students with varying language abilities took part in the SIWI intervention and all showed significant growth in their knowledge of written English structure and principles. According to language learning theory, students were developing inner speech or an increasingly complex and accurate internal representation of English. The instructional approaches varied for each group by responding to students' natural language abilities at the start of the intervention. While specific theoretical conjectures have been made, I will restate the broad implications. Proficiency in ASL alone is not sufficient in producing proficiency in written English; however, all classes in the current study used ASL as their primary mode of communication, for it provided a means of carrying out the most elaborate discussions. And, the value of accepting a language into the classroom that not only represents personal identity but has cultural and community ties cannot be underestimated. Second, those students with near average or average literacy levels naturally switched to English-based sign when writing. Yet, it is not clear how students developed an ability to simplify their expressions and change the grammatical order of their ideas to meet the demands of certain situations. Finally, whereas English-based sign provided students with a starting point for writing English, it was not accurate or complicated enough. I have detailed the methods and instructional approaches of the study that I believe aided students in developing an internal representation of English. One approach, however, that I believe warrants special noting is the use of print-based signing when reading and reviewing collaboratively constructed text. When designing SIWI, little thought was given to how rereading the text using print-based sign could aid students in developing inner speech. Rather, the instructional element was intended to apprentice students in the process of reviewing, revising and

editing one's work. However, during the intervention, it occurred to me that students were not only seeing and using English in its fully complex and written form, but they were also becoming more comfortable with the flow, the manner of expression and the "sound" of the language through the repeated readings.

Instructional Implications

One important implication for instruction that comes directly from the theoretical discussion of students' language development in both ASL and English is that teachers' knowledge of language is central to the instructional objectives. When working with deaf students similar to those in this study, teachers need a deep understanding of the linguistic principles of both ASL and English when modeling language, when working to build students' metalinguistic knowledge or when using explicit contrastive procedures. In particular, this knowledge can aid teachers in direct instruction of language or use of think-alouds during the co-construction of text, for they can emphasize certain principles or distinguish language rules (Enns, 2006).

As fluent and natural users of either English or ASL as a first language, teachers may not have a linguistic-based or rule-governed understanding of their own language. Take for instance a hearing teacher who uses English as his first language. He is a fluent user of the language but may not be able to explain the reasons behind or rules underlying particular constructions; rather, this teacher, like many, operates on sound-based principles (i.e., what sounds correct in English or seems right). This teacher is not likely to have the necessary instructional tools when, for instance, faced with a deaf student who does not understand the difference between writing "interesting" versus "interested" or when another student expresses that written text with the construction "had had" is

wrong or mistyped. A teacher committed to the SIWI approach, rather, will continually build his or her own metalinguistic knowledge of the L1. And, this is most likely an ongoing endeavor involving the collection of multiple resources—printed-based or person-based experts—one can refer to when in need of furthering language understanding.

Additionally, there are many teachers of the deaf who have yet to reach proficiency in their second language, whether ASL or English. Instruction of language or communication of instruction in general may then be constrained by teachers having limitations in their own language abilities (Stewart, 2006). In order for teachers of the deaf to be responsive to students' specific language and literacy needs, s/he must have a thorough understanding of the students' expressive language as well as English principles.

Limitations of the Study and Future Directions

The present study has certain limitations that should be taken into consideration with future research. First, there were no measures given to students at pre and posttest that assessed expressive language ability in ASL. In the midst of the intervention, it became apparent that students—especially those starting with minimal language skills—were displaying growth with expression using ASL. Because of the interactive and collaborative nature of SIWI, students were frequently participating through the air using ASL or sign-based expressions. Future research might investigate the extent to which involving students as active participants in learning or involving students in inquiry-based and dialogic learning supports the language growth of deaf students. Further, studies might also explore the use of ASL, English-based sign and print-based sign

during the writing process. In the current study, writing was published for an authentic audience. It may be additionally fruitful to rework and revise the parallel ASL productions into a publishable version for a meaningful purpose (e.g., presenting a topic to an audience, videotaping narratives and sharing with others). Such an approach could bolster greater proficiency in both languages and could result in greater distinction of situational uses.

Second, future directions in research might inquire how teachers appropriate an understanding and an ability to use discourse in the classroom as a pedagogical tool. Whereas it has been shown that exemplary teachers of the deaf are skillful users of dialogic inquiry (Mayer, Akamatsu and Stewart, 2002), it is less certain how these teachers have developed such a skill. Working within an interactive environment, such as that of SIWI which values student participation, can be a complicated instructional venture for teachers. Certainly, there is less teacher control over the lesson, for discussion can take learning in unexpected directions or reveal students misconceptions. As Schoenfeld (2002) articulates, such an approach requires a:

> . . . substantial amount of understanding and flexibility on the part of the teacher—the willingness to explore ideas as they come up, the ability to make judgments about what might be productive directions or not, and the ability to provide the 'right' level of support for students individually and collectively (p. 157).

Research questions might ask how pre-service teachers or teachers not currently employing much classroom interaction can appropriate the skills of facilitating classroom discourse. And, since SIWI's interactive component, I believe, are the basis for its

effectiveness, it must be questioned how teachers come to appreciate and use dialogic techniques.

In the current study, the implementer of the intervention (the participant researcher) was a capable user of the SIWI instructional components, including dialogic inquiry, prior to the onset of the research. It can be reasoned that similar outcomes may not have resulted during the 8-week intervention had the implementer been a teacher who was newly exposed to the theoretical underpinnings and the instructional principles of SIWI. Prior research investigating teacher learning of literacy practices that are based on sociocultural theories (e.g., instruction that is discursive, scaffolded, purposeful and allows transfer of control to students) has found that full implementation is an ongoing endeavor (Englert, Raphael & Mariage, 1998). Implementation is considerably different after a couple years rather than at the time of learning, for teachers evidence a deeper understanding of the theoretical and instructional principles over time; expert teachers are more able to construct responsive instruction for their particular students and contexts having this understanding, whereas novice teachers merely focus on enacting the activity (Englert, Raphael & Mariage, 1998). Future research may examine the nature of teachers' learning and change over time and its' impact on implementation and students' outcomes.

Lastly, further study might investigate long-term interventions that move beyond the co-construction of text as a full class to more independent handling of writing. When introducing a new genre of writing, students may begin learning the text structure and genre-specific strategies through supported, collaborative and guided writing. During the co-construction of text, increasing control over the writing is transferred to students, at which point greater student independence and management of writing naturally occurs.

As students appropriate more knowledge, strategies, and skills for a particular type of writing, the teacher might provide students with more independence in the form of small-group, partnered or solo writing projects. Teachers might also use the varied settings to assess students' independent writing abilities; s/he may then, after observing more independent kinds of writing, have a need to reconvene the collaborative writing given new understandings of students' thinking or performance. Thus, studies can investigate how SIWI could be incorporated over the course of a school year to best result in improved student writing.

Conclusion

In summary, the current study investigated the effectiveness of writing instruction used with deaf middle school students that is both strategic and interactive. The positive results of the study indicate that students in the treatment group made significantly greater gains with writing and reading compared to the control group. Thereby, Strategic and Interactive Writing Instruction (SIWI) may be one productive method of tackling the historically low literacy levels of deaf students. Also, another important recognition of the study is that deaf and hard of hearing students are wide-ranging, and instructional approaches need to be responsive to students' understandings and needs. With respect to students having severe to profound losses, using ASL as their expressive language and having connections to the Deaf community and culture, there has been a dearth of research and theorizing that is able to provide explanation of language or literacy learning. Through application of L2 learning theory combined with the findings of the current study, I have continued and elaborated discussions regarding how some deaf students may form an internal representation of English that is supportive of writing. Yet,

there is need for both replication of study and additional research to clarify and deepen theoretical understandings. As Edison once worked by endlessly testing assumptions, the field of deaf education must also persist to scientifically validate ideas.

APPENDICES

APPENDIX A

STUDENT LITERACY QUESTIONNAIRE

How do you rate your fluency with ASL?

5	4	3	2	1
Strong		Average		Weak

How do you rate your fluency with English?

5	4	3	2	1
Strong		Average		Weak

How do you rate your reading skills?

5	4	3	2	1
Strong		Average		Weak

How do you rate your writing skills?

5	4	3	2	1
Strong		Average		Weak

How often do you read for pleasure outside of school (not including homework)?

5	4	3	2	1
Everyday		once a week		almost never

What do you read?_____

How often do you write outside of school (not including homework) for pleasure?

5	4	3	2	1
Everyday		once a week		almost never

What do you write?_____

How available are books, newspapers or magazines in your home?

5	4	3	2	1
Always available	Mostly	Somewhat available	Infrequent	Almost never available

How often do your family members (i.e., parents, siblings) read?

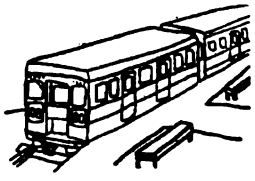
5	4	3	2	1
Everyday		once a week		almost never

APPENDIX B

STUDENT EDITING CHECKLIST

Editing Checklist

_____ Did I use million dollar vocabulary?



_____ Did I use introductory phrases, compound sentences and complex sentences?

APPENDIX C

STUDENT RATING FORM OF POSSIBLE WRITING TOPICS

Possible Topics for Writing:

Circle ☺ to show approval. Circle ☺/☹ to show no opinion. Circle ☹ to show disapproval.

Sports ☺ ☺/☹ ☹
If ☺, which sports?_____

Movie/ TV ☺ ☺/☹ ☹
If ☺, which movies or TV shows?_____

School ☺ ☺/☹ ☹
If ☺, which subjects or parts of school?_____

Deaf culture ☺ ☺/☹ ☹
If ☺, say more._____

Hearing loss ☺ ☺/☹ ☹
If ☺, say more._____

Nature/ The outdoors ☺ ☺/☹ ☹
If ☺, say more._____

Travel ☺ ☺/☹ ☹
If ☺, where?_____

Hobbies ☺ ☺/☹ ☹
If ☺, which hobbies?_____

Acting/ Performing ☺ ☺/☹ ☹
If ☺, say more._____

Teen life ☺ ☺/☹ ☹
If ☺, say more._____

Technology ☺ ☺/☹ ☹
If ☺, say more._____

List any other favorable topics:

_____ _____ _____

_____ _____ _____

APPENDIX D

OUTLINE OF PROFESSIONAL DEVELOPMENT SESSION WITH TREATMENT GROUP TEACHER

Professional Development Session

I. Expositions that inform
- A. What are the higher-order writing objectives?
- B. Sharing of example/non-example materials
- C. Become familiar with the scoring rubrics

II. Pre and Posttests
- A. Directions and materials for administering the informative writing measure
- B. Directions and materials for administering the revising/editing measure
- C. Directions and materials for administering the generalization writing measure
  1. use of statements and written prompts to generalize to other forms of writing during instruction (e.g.,"The approach is slightly different for persuasive writing because...", "If you were given a question like..., how might you plan and organize your writing?)
- D. Directions and materials for administering the reading measure

III. Consent Forms

IV. SIWI Instructional Components
- A. The use of writing process strategies
  1. discuss the strategies that POSTER supports
  2. share materials (i.e., class posterboard, organize think-sheet, student cue-card, editing checklist)
  3. using POSTER as a temporary support
  4. how POSTER may be used for a variety of text structures
  5. that the writing processes are recursive
  6. introducing and utilizing POSTER during the intervention
- B. Decomposition and evaluation exercises
- C. Apprenticeship in writing through guided and interactive practice (same as earlier study)
- D. NIP-it lessons to introduce new writing skills or strategies
  1. discuss each component: *notice*, *instruct* and *practice*
  2. share example of compound and complex sentences
- E. The use of visual scaffolds
  1. share examples of visual representations (i.e., hamburger paragraph, train, conceptual maps)
  2. share examples of use of color (i.e., POSTER, *scribe* pen vs. *edit* pen)
- F. Metalinguistic knowledge-building (same as earlier study)

V. Fidelity Check/ Evaluation Sheet
- A. Share and discuss the evaluation sheet
- B. Watch video of instruction, practice evaluation and debrief

VI. SIWI procedural timeline and plan of lessons

APPENDIX E

FIDELITY INSTRUMENT/ SIWI EVALUATION SHEET

Evaluation Sheet for Strategic and Interactive Writing Instruction (SIWI)

Strategic Writing Instruction & Procedural Facilitators

1. Skills and strategies are taught in the context of producing text.

Strongly Disagree Disagree Neutral Agree Strongly Agree

2. The teacher utilizes symbolic tools or visual scaffolds to represent particular notions or teach writing strategies, skills or content. (e.g., diagrams, different colors, text structure prompts).

Strongly Disagree Disagree Neutral Agree Strongly Agree

3. When teaching a strategy (i.e., mnemonic or routine), the teacher first develops background knowledge and teaches necessary vocabulary words.

Strongly Disagree Disagree Neutral Agree Strongly Agree

4. Supports such as mnemonics are a temporary scaffold, and students use them less and less over time.

Strongly Disagree Disagree Neutral Agree Strongly Agree

5. The teacher discusses or thinks-aloud how strategies may be used with other text structures or writing activities – she models how to generalize.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Interactive Writing Instruction & Apprenticeship

6. Students are invited to participate in the construction of text.

Strongly Disagree Disagree Neutral Agree Strongly Agree

7. The teacher allows enough wait time for students to think and come up with ideas before stepping in.

Strongly Disagree Disagree Neutral Agree Strongly Agree

8. The teacher finds a way for all children to enter the text, even if at different levels. E.g.) clears a space for students who are entering at a very low level

Strongly Disagree Disagree Neutral Agree Strongly Agree

9. The teacher "takes up" students' ideas (right or wrong) and uses contingently responsive discourse.

Strongly Disagree Disagree Neutral Agree Strongly Agree

10. Students are asked what they think, asked to evaluate text and asked to problem-solve. The teacher uses step back moves by asking, "What do we do here? Why? How?"

Strongly Disagree Disagree Neutral Agree Strongly Agree

11. The teacher uses metacognitive questioning: 1) What is the problem? 2) What is the name of the problem? 3) How do we fix it? 4) When do we do that? 5) Why is that important?

Strongly Disagree Disagree Neutral Agree Strongly Agree

12. The teacher uses a moment to moment assessment method that gages students' individual understandings. E.g.) thumbs up/ thumbs down

Strongly Disagree Disagree Neutral Agree Strongly Agree

13. The teacher transfers control of the meaning making process to students as soon as possible.

Strongly Disagree Disagree Neutral Agree Strongly Agree

14. As the intervention progresses, students are taking up more of the collective work, the thinking and the problem solving.

Strongly Disagree Disagree Neutral Agree Strongly Agree

15. The teacher models, thinks aloud and explains "why" with the learning of new skills.

Strongly Disagree Disagree Neutral Agree Strongly Agree

16. The teacher leads slightly in advance of what the students are able to do individually (i.e., ZPD).

Strongly Disagree Disagree Neutral Agree Strongly Agree

Building Metalinguistic Knowledge

17. When ideas are offered in ASL, there is an established way of recording the ideas in a separate space.

Strongly Disagree Disagree Neutral Agree Strongly Agree

18. When ideas are offered in ASL, there is an established way of translating the ideas to the English easel.

Strongly Disagree Disagree Neutral Agree Strongly Agree

19. Students are actively involved in building metalinguistic knowledge for ASL and English. E.g.) They discuss which expressions are ASL, which are English, and what are the distinguishing elements.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Curriculum & Content

20. The teacher is knowledgeable about the grade level curriculum and embeds this in instruction.

Strongly Disagree Disagree Neutral Agree Strongly Agree

21. The interactive space is used for more than the teaching/ learning of conventions and grammar (e.g., teaching/ learning text structure, problem solving, organization, coherence, audience, etc.)

Strongly Disagree Disagree Neutral Agree Strongly Agree

Instructional Procedures

22. Text is agreed upon by a class consensus or a class majority.

Strongly Disagree Disagree Neutral Agree Strongly Agree

23. The teacher writes the ideas that students give and the exact language students offer (i.e., when writing on the English easel).

Strongly Disagree Disagree Neutral Agree Strongly Agree

24. The class rereads the text on the English easel often and exactly how it is written.

Strongly Disagree Disagree Neutral Agree Strongly Agree

25. The teacher employs a method of rereading that shows the correspondence between the written text and the sign or fingerspelled expressions. E.g.) one hand pointing at each word while reading

Strongly Disagree Disagree Neutral Agree Strongly Agree

Audience

26. Students are aware that the text will be published and shared with a specified audience.

Strongly Disagree Disagree Neutral Agree Strongly Agree

27. The audience becomes a focus when constructing text. E.g.) "Will Jill's mom understand who 'I' is?"

Strongly Disagree Disagree Neutral Agree Strongly Agree

Positive Feedback

28. The teacher offers positive feedback for more than knowing the correct answer – s/he praises use of strategies, attempts at deep thinking or problem-solving, level of participation, group collaboration, etc.

Strongly Disagree Disagree Neutral Agree Strongly Agree

APPENDIX F

INFORMATIVE WRITING MEASURE DOCUMENTS

Informative/ Expository Writing Sample

Hand out two sheets of blank lined paper. Ask students to complete the heading with their name, their teacher's name, and the date (put on board first) on both papers.

Directions to be read to students:

For this paper, I want you to write to inform your audience about an animal that has been selected for you. Assume that your readers are from a different country such as New Zealand where grizzly bears or gray wolves are not typically found. You will help the reader to better understand the animal. The paper you write will later be typed and readied for publication. You will receive a copy and may choose to share this with others.

Normally when writing an informative paper, you would brainstorm your ideas and/or would gather data from resources prior to writing. Imagine that information about your animal has already been collected from different sources such as books or articles, and this information has been compiled into the list of facts given to you. You may decide to use these facts in your writing. However, some facts may not nicely fit into your writing. You may choose to do your own brainstorming and use your own ideas. Or, you may do a combination of both--use some of the facts from the sheet and use some of your own brainstormed ideas.

Please note that the facts on the fact sheet are not in complete sentences. YOUR WRITING SHOULD BE MORE THAN JUST COPYING THE FACTS. You should write ideas for your paper in complete sentences, and you should also write these in your own way. You can ask me the definition of any word that appears on your fact sheet at any time.

Your next step is to organize your ideas and then clearly convey the information through writing. Remember your objective is to inform your audience about your animal. In case you wish to do some planning, you may use one of the pieces of paper given to you.

When you are finished with your paper, read it again to see if it makes sense. Make changes and edit your writing. Don't be afraid to make your paper 'messy' as you edit it. Also, don't worry about spelling words correctly. Just do the best you can so that your paper is easy to read and informs others.

When you are done with your paper, raise your hand and I'll make sure I can read everything that you intended to say. You may take out a book (or assignment) and work quietly at your desks until everyone is finished.

Questions that students may ask or that may come up:

a. How to spell a word. Tell them to write it the best way they know how.

b. How long does it have to be? If they need another sheet of paper, they should just ask, or they can write on the back of their paper. There are no special length requirements and we don't want to tell students how much or how little they should write.

c. Illegible papers? If students' papers are illegible, have them dictate their papers to you and transcribe their dictation at the bottom of the page (below students' writing). Record their responses exactly as they are dictated.

Information about Gray Wolves

- Preys on large, hoofed mammals (e.g., white-tailed deer, moose, elk, caribou, bison, Dall sheep, oxen and mountain goat)
- Territory size can range from 300 to 1,000 square miles in Alaska and Canada
- Length of 4.5 to 6.5 feet
- Tracks of 4 ½ inches long and 3 ½ inches wide
- Lives in areas of the United States (e.g., Michigan's Upper Peninsula, northern Minnesota, Wisconsin and Alaska)
- Weight of 50 and 130 pounds (fully grown)
- Preys on medium sized mammals (e.g., beaver and snowshoe hare) and small mammals and birds
- Lives 6 to 8 years
- Home range is in forested areas
- Is carnivorous (meat eaters)
- Inhabit parts of the world (e.g., Canada, Europe, Middle East and Asia).
- Is gray, black or all white
- 6 to 8 wolves in a wolf pack
- May travel 10 to 30 miles a day searching for food
- 42 teeth
- Marks its territory with urine and feces
- Runs up to 25 to 35 miles per hour when chasing prey
- Litter size is 4 to 6 wolf pups
- Can eat up to 22.5 pounds in one sitting
- Territory size can range from 25 to 150 square miles in Minnesota
- communicates through howling, body language and scent
- Height of 26 to 32 inches
- Looks like a German shepherd or a husky

Information about Grizzly Bears

- Preys on large, hoofed mammals (e.g., moose, elk, mountain goats, mountain sheep) and their calves
- Weight of 270 to 770 pounds (fully grown)
- Lives in subalpine mountain areas
- Feeds on berries, roots, bulbs of plants, and whitebark pine nuts
- Lives 20 to 30 years
- Lives in areas of the United States (e.g., Alaska, Idaho, Wyoming, Washington and Montana)
- Long, curved claws
- Home range is forested or shrub covered
- Dark brown color
- Litter size is 1 to 4 bear cubs
- Feeds on carrion and ground rodents
- Home range is inland (i.e., away from large bodies of water)
- Tracks of 6 to 16 inches long and 7 to 10 ½ inches wide
- Is active during the mornings and evenings
- Is omnivorous (meat and plant eaters)
- Length of up to 7 feet
- Runs up to 35 miles per hour when chasing prey
- Inhabits parts of Canada (e.g. provinces of British Columbia, Alberta, Yukon and Northwest Territories)
- Hairs on shoulders and back tipped white
- Eats insects such as ants and moths
- Territory size can range from 10 to 380 square miles
- Shoulder hump (i.e., a mass of muscle that gives the front legs extra strength)
- Lives alone, with the exception of a female with her cubs

APPENDIX G

RUBRICS FOR INFORMATIVE WRITING MEASURE

Rubric for Primary Traits

Title

2 Adequate title

1 Inadequate title or title can be inferred from a solid introductory paragraph
Too narrow to reflect all the details in the paper or too broad and nondescript.

0 No title is given

Introduction

3 Fluency of trait
Accomplishes all of the following: (a) attracts the attention of the reader; (b) includes a thesis statement that clearly states the direction the paper will take; (c) declares the purpose or intent.

2 Near fluency of trait
Could accomplish a, b & c with minor revisions. Thesis statement may be too vague or general. May not have one well-defined statement of the thesis. May not make any attempt to engage the reader in the topic.

1 Limited fluency of trait
In need of substantial revisions to accomplish a, b & c. No explicitly stated thesis, but there is an attempt to open the topic. May have a descript title with no other introduction.

0 No emergence of trait
A topic or purpose of the text cannot be inferred. Writing may be a string of associative details.

Topic Development (breadth)

3 Fluency of trait (For the informative essay, author represents 3 categories/paragraphs.)
Accomplishes all of the following: (a) includes adequate breadth of information to support the thesis that is stated in the introduction; (b) develops the thesis with the use of categories or paragraphs of organized information; (c) organizes and introduces categories or paragraphs with topic sentences; (d) discusses one main idea per body paragraph.

2 Near fluency of trait (For the informative essay, author represents 2 out of 3 categories.)
Could accomplish a, b & c with minor revisions. May not fully develop the thesis statement with breadth of information. May have only two categories of organized information. May not use clear or explicit topic sentences to introduce each category or body paragraph of the paper. May have more than one idea per body paragraph.

1 Limited fluency of trait (For the informative essay, author represents 1 out of 3 categories.)
In need of substantial revisions to accomplish a, b & c. May provide narrow information. May only have one category of organized information. May not use topic sentences to introduce categories of the paper.

0 No emergence of trait (For informative essay, author does not use categories/paragraphs)
There are no categories of information. There may be one repeated idea or fact.

Paragraph Development (depth)

3 Fluency of trait (For informative essay, uses at least 3 details to represent each category.)
Accomplishes all of the following: (a) includes adequate depth of information to explain topic to an uninformed audience; (b) uses specific details to support each main idea or category (i.e., each body paragraph has sufficient details); (c) uses no extraneous information.

2 Near fluency of trait (For informative essay, uses 2 details to represent each category.)
Could accomplish a, b & c with minor revisions. May have nearly adequate depth of information and can nearly explain topic to an uninformed audience. May provide details to support each main idea but needs additional ones. May include some extraneous or unrelated details.

1 Limited fluency of trait (For informative essay, uses 1 detail to represent each category.)
In need of substantial revisions to accomplish a, b & c. May have limited attempts to inform the audience. May provide few details in support of main ideas. May include many unrelated details.

0 No emergence of trait
There are no details, only main ideas. Or, all details are unrelated.

Conclusion

3 Fluency of trait
Accomplishes the following: (a) summarizes the information or reemphasizes all the main points of the paper; (b) brings the composition to a satisfactory close for the reader.

2 Near fluency of trait
Could accomplish a, b & c with minor revisions. May bring composition to a close but may not adequately revisit the topic by summarizing or reemphasizing all the main points.

1 Limited fluency of trait
In need of substantial revisions to accomplish a, b & c. May signal closure to the composition but is often abrupt. May not have a well-defined concluding paragraph but may have the sound of finality.

0 No emergence of trait
No conclusion. The paper ends on a detail.

Coherence

3 Fluency of trait
Accomplishes the following: (a) arranges paragraphs of the body in an order that is clear to readers; (b) uses transitional devices to link ideas within paragraphs; (c) uses transitional devices to show the connectedness of ideas and to show the relationships among different paragraphs. All parts of the paper work together and "hang together" to develop the topic.

2 Near fluency of trait
Could accomplish a, b & c with minor revisions. May have one or two pieces of disconnected information but, for the most part, information "hangs together". May be missing part of the paper (e.g., introduction, details, conclusion, etc.) and is therefore less able to develop the

1 topic.
Limited fluency of trait
In need of substantial revisions to accomplish a, b & c. May have several pieces of disconnected information. May be missing parts of the paper (e.g., intro, details, or conclusion).

0 The information rarely "hangs together".
No emergence of trait
No connectedness between ideas, sentences or different paragraphs.

Tone & Consideration of Audience

3 Fluency of trait
Uses language that is appropriate for the intended audience and for the purpose of the composition. Attends to the prompt and purpose of writing.

2 Near fluency of trait
Mostly appropriate use of language.

1 Limited fluency of trait
Some appropriate use of language.

0 No emergence of trait
No consideration of language that is appropriate for the audience or purpose of the paper.

Rubric for Contextual Language

Fragmentary Sentences

If no verb in sentence, count as a fragment.

3 Zero fragmentary sentences
2 One
1 Two
0 Three or more

Run-on Sentences

3 Zero run-on sentences
2 One
1 Two
0 Three or more

Compound Sentences

Two independent clauses joined *appropriately.* When joining the independent clauses with a conjunction, the comma may be missing. Do not count run-on sentences. Commonly used conjunctions include: and, but, or, nor, for, so, yet. Count the number of sentences that are correctly crafted.
e.g., I studied all night, but the test was still a struggle.
e.g., Should I go to the office myself, or will the principal call me down?

3 Three or more
2 Two
1 One
0 Zero compound sentences

Complex Sentences

One independent clause and at least one subordinate clause are joined appropriately. Subordinate clauses cannot stand alone as sentences. Subordinate clauses at the beginning of the sentence may be missing the comma. In the following are examples, the subordinate clauses are italicized.
e.g., She practices *whenever she has time.* [Subordinate clause is used as an adverb.]
e.g., Whoever wins the election will have many problems.
e.g., We learned *that she is a physicist.* [Subordinate clause is used as a noun.]
e.g., She is someone *who has shown remarkable courage.* [Subordinate clause is used as an adjective.]
Commonly, subordinate clauses begin with the following conjunctions or relative pronouns: after, although, as, as if, as long as, because, before, if, in order that, provided that, since, so that, than, that, though, unless, until, when, whenever, where, wherever, whether, while, who, whom, whose.
e.g., *Unless Bob earns one hundred dollars tonight,* his car will be repossessed.

3 Three or more
2 Two
1 One
0 Zero compound sentences

Introductory Phrases or Clauses

A phrase or clause begins the sentence, is dependent, and is offset by a comma. Commas may be missing. Count the number of introductory phrases or clauses that are correctly crafted.
e.g., *In the morning,* we will pack.
e.g., *Well,* what do you think?
e.g., *Giggling like a child,* he wrapped the last present.
e.g., *The next day,* we went swimming.

3 Three or more
2 Two
1 One
0 Zero introductory phrases or clauses

Prepositional Phrases

Commonly, prepositional phrases begin with the following prepositions: about, above, across, after, against, along, amid, among, around, at before, behind, below, beneath, beside, between, by, down, during, except, for, from, in into, like of, off, on, over, past, since, through, throughout, to, toward, under, underneath, until, unto, up, upon, with, within, without. Count the number of prepositional phrases, including phrases for which the author has selected the incorrect preposition for use. If a preposition is used in multiple, similar phrases, count only once (e.g., to the store, to the post office, to Chicago).
e.g., We are both *in the play* that will take place *on Monday*.

3 Seven or more
2 Six, five, four
1 Three, two, one
0 Zero prepositional phrases

Negation

3 Uses negation correctly
2 Uses negation, sometimes correctly and sometimes incorrectly
1 Uses negation incorrectly
0 Does not use negation

Subject-Verb Agreement

Consider entire verb. Misspelled verbs are not counted as subject-verb agreements. If a word is dictated, it is also not counted as an agreement.
e.g., My group *is went* in the woods. [No agreement because of second verb.]
e.g., I cont (count) 25 trucks. [No agreement because of a misspelled verb.]

3 Nearly all (> 95% of subject-verbs agree)
2 Mostly subject-verb agreement, and no fragments (>80%)
1 Some subject-verb agreement, and may have a fragment (>50%)
0 Mostly no subject-verb agreement, and may have fragments

Verb Consistency

consistency of present, past or future

3 All verbs are consistent
2 One inconsistent verb tense
1 Two inconsistent verb tenses
0 Three or more inconsistent verb tenses, or no consistency, or no event

Infinitives

3 Uses infinitives correctly
2 Uses infinitives, sometimes correctly and sometimes incorrectly
1 Uses infinitives incorrectly
0 Does not use infinitives

Conjunctions

Uses conjunctions other than "and" (but, or, nor, for, yet, so) to link subject phrases, verb phrases, independent clauses, etc. Count only those conjunctions that are correctly used. Conjunctions used to join independent clauses may be missing the comma.
e.g., I ran *but* was caught.
e.g., Should I do this *or* that?

3 Three
2 Two
1 One
0 Zero

Determiners

Determiners include: a, an, the, one of the, some of the.

3 Uses determiners correctly , does not omit any essential determiners
2 Uses determiners, sometimes correctly and sometimes incorrectly, may omit essential determiners occasionally
1 Uses determiners incorrectly or omits essential determiners
0 Does not use determiners

Prepositions

If a preposition is used incorrectly in multiple, similar phrases, count only once.
I enjoyed it *in* Camp Chris. [incorrect use] vs. I enjoyed it *at* Camp Chris [correct].

3 All prepositions are appropriate to the context.
2 One incorrectly used preposition.
1 Two incorrectly used prepositions.
0 Three or more incorrectly used prepositions, or no use of prepositions.

Pronominalization

Uses any of the following words appropriately: we, you, he, she, it, they, his, her, its, their, him, mine, yours, his, hers, ours, theirs, himself, myself, yourself, herself, itself, ourselves, themselves. If the same word is used multiple times, count it only once. Do not count: me, my, I.

3 Uses three or more
2 Uses two
1 Uses one
0 Zero

Vocabulary

Proportion of words that are unique (not on the list of 99 Most Frequent Words) in relation to total # of interpretable words. Count unique words only once. Plural versions of words are not counted separately. Distinct conjugations of verb forms are counted as unique. (Singleton et. Al, 2004)

3 = or >50%
2 40-49%
1 30-39%
0 Below 30%

99 Most Frequent Words

(Hillerich, 1978, as cited in Singleton, Morgan, DiGello, Wiles and Rivers, 2004)

Verbs: come, came, get, got, go, going, went, make, play, put, said, saw, see, write
Nouns: day, friend, home, house, mother, school, time, one, two
Adjectives: good, little, dear
Articles: a, an, the
Prepositions: about, after, as, at, back, by, down, for, from, in, of, on, out, over, up, to, with, like
Pronominals: he, she, me, you, us, we, they, I, it, his, her, him, my, your, their, our, them, this, that
Connectives: and, because, but, if, or, then, so, well
Adverbials: here, how, just, now, there, very, what, when
Auxiliaries: can, could, will, would
Copula (to be): am, are, is, was, were
Verb Auxiliaries: had, has, have, do, did
Quantifiers: all, some
Negation: not

Rubric for Conventions

Contractions

3 Uses 3 or more contractions correctly
2 Uses 2 or more contractions correctly
1 Uses 1 or more contractions correctly
0 Does not use contractions or does not use contractions correctly

Making Sentences – Capitalization

Apply this to what the author considers to be sentences. The sentences may be distinguishable by one's use of punctuation, spacing or capitalization. Author can only earn points for the # of sentences s/he has.

3 All sentences begin with a capital letter
2 One sentence does not begin with a capital
1 Two do not begin with a capital
0 Three or more

Making Sentences – Punctuation

Do not penalize run-ons. Count sentences as those phrases separated by a larger space, a capital to begin the next phrase or punctuation at the end. Author can only earn points for the # of sentences s/he has.

3 All sentences end with punctuation (. ! ?)
2 One sentence does not end in punctuation
1 Two do not
0 Three or more

Capitalization – Proper Nouns

3 All proper nouns are capitalized, including "I"
2 One mistake (Either doesn't capitalize a noun that should be...or mistakenly capitalizes a common noun in the middle of the sentence.)
1 Two mistakes
0 Three mistakes

Punctuation

Uses quotation marks, commas, apostrophes, colons, periods showing abbreviations, dashes, semi-colons and other punctuation marks appropriately. Do not consider punctuation at the ends of sentences.

3 Uses at least three or more marks in different but accurate ways.
2 Uses two marks in different but accurate ways.
1 Uses only one type of punctuation appropriately.
0 Uses no punctuation within sentences.

Spelling

Proportion of incorrectly spelled words or non- interpretable words in relation to total # of words.

3 Less than 3% inaccurate spellings
2 3-9%
1 10-19%
0 20% or more inaccurate spellings

Word Counts:

Count total number of words in story (including words dictated to teacher)

Count contractions as two words. Count numbers.

Count total number of interpretable words produced by child

Only count if the word can be understood out of context (e.g., trtle for turtle). If a writer makes an accurate word but clearly intends another, count as non interpretable (e.g., writes "heat" but meant "hurt").

APPENDIX H

REVISING/EDITING MEASURE DOCUMENTS

Revising/ Editing Assessment

Directions for Pat's Paper:

Prior to giving students the revising/ editing assessment (Pat's paper), please read the following:

> You will be given a paper that was written by another middle school student by the name of Pat. The paper is to be published in a special newspaper about sports and activities that teenagers might try. Pat is an expert on bowling and wants to share this knowledge with others. Copies of the newspaper will be made for all the middle and high school students at Pat's school, and copies will also be sent to other nearby schools. Pat is not sure that the paper makes sense or if any changes need to be made. Pat needs an editor to help correct any errors before the paper is printed. (Discuss what an editor does if necessary.)
>
> You are going to be the editor for Pat. You will fix errors and help the paper to make better sense. I will read you the story once, you will read it once to yourself, and then I will read it to you a second time. You will then take a pencil and make your changes. You can make changes directly on this copy and/or use a blank sheet of paper to rewrite Pat's work. This is your choice. If you need additional assistance, I can help you.

Notes to Assessment Administrators:

1) Read Pat's paper to your students. Give each student a copy and tell them to read it to themselves once. Read Pat's paper a second time. You can say, "I'll read the story a second time for you before you begin to help Pat with the editing and revising."

2) Ask the students to either: 1) make the corrections directly on Pat's paper, 2) make corrections on Pat's paper and then write the final draft on a clean piece of paper (if corrections on Pat's paper are difficult to read), or 3) rewrite Pat's paper using a clean sheet.

3) If students have questions about what certain words mean, you may provide a definition and/or reread the sentence for them.

4) If students finish early, ask them to remain quiet and read a book or work on another activity while the rest of the class finishes Pat's paper. Students may take between 20 and 45 minutes to complete the task.

Author's name __Pat_____ Date_____

Editor's name_____ Teacher's name_____

how to Bowl

If you have never been bowling, you are realy missing a good time. You can join an league, or you can jus go with freiends. Before going for the first time[1] you shuold know how to play.

The most imprtant piece of eqiupment is a bowling ball. You must selects a ball that is just right for you. For instance, the finger holes must neither be too tight nor too lose. The ball should be too heavy or too lite. When Jill purchased a ball, it was made to fit her hand perfectly. Jill wears an arm brace so her wrist stays straight.

The fourth piece of eqiupment a bowler needs was shoes. Speical shoes with non-stick soles are a must the bowling alley willn't allow persons to wear their regular tennis shoes for bowling. You can rent shoes at the bowling ally for a hundred dollers. Hovewer, it may be worth it to buy your own shoes if you plan to bowl often.

Lastley, there are other items that you will find useful. When playing soccer, you will need shin guards to protect your legs.

If you have the proper eqiupment. So, start looking for the perfect ball, shoes, and other bowling items. Then, you can began to learn how to play. See you around at the bowling alleys at michigan.

how[1] to Bowl

If[2] you have never been bowling, you are *realy* missing a good time. You can join an[3] league, or you can *jus* go with *freiends*. Before going for the first time[4] you *shuold* know how to play.

The most *imprtant* piece of *eqiupment* is a bowling ball. You must selects[5] a ball that is just right for you. For instance, the finger holes must neither be too tight nor too *lose*. The ball should be too heavy or too *lite*. When Jill purchased a ball, it was made to fit her hand perfectly. Jill wears an arm brace so her wrist stays straight.

The fourth piece of *eqiupment* a bowler needs was[6] shoes. *Speical* shoes with non-stick soles are a must[7] the[8] bowling alley willn't[9] allow persons to wear their regular tennis shoes for bowling. You can rent shoes at the bowling ally for a hundred *dollers*. *Hovewer*, it may be worth it to buy your own shoes if you plan to bowl often.

Lastley, there are other items that you will find useful. When playing soccer, you will need shin guards to protect your legs.

If you have the proper *eqiupment*[10]. So, start looking for the perfect ball, shoes, and other bowling items. Then, you can began[11] to learn how to play. See you around at the bowling alleys at[12] michigan[13,14]

Type of Error	Examples	Value or Weight	Total Possible
Conventions	*Spelling (mistakes italicized)* really, just, friends, should, important, equipment, light, loose, special, however, dollars, lastly *Capitalization, punctuation, etc. (mistakes numbered)* capitalization[1, 8, 13] punctuation[7, 14] contractions[9] indention[2]	X1 X1	14 7
Language	Determiner[3] Comma (complex sentence)[4] Subject-verb agreement[5] Verb tense[6, 11] Fragment[10] Preposition[12]	X2	14
Prior Knowledge/ Sense Making	"The ball should be too heavy or too lite." "You can rent shoes at the bowling ally for a hundred dollers."	X3	6
Coherence	Who is Jill? Fourth item? Playing soccer?	X4	12
Text Structure and Extraneous Information	Text Structure: Thesis sentence does not introduce text to follow Provide support for main idea in paragraph 4. Extraneous Information: Title is not adequate "Jill wears an arm brace..." does not adhere to main idea of paragraph	X5	20
Total			73

A sample expert paper with revisions and edits.

The Things a Bowler Needs

If you have never been bowling, you are really missing out on a good time. You can join a league that bowls weekly or you can just go occasionally with friends. Before going, though, you should know that bowlers need to have special equipment in order to participate.

The most important piece of equipment is a bowling ball. You must select a ball that is just right for you. For instance, the finger holes must neither be too tight nor too loose. The ball should neither be too heavy nor too light. When purchasing a ball, it should be made to fit your hand perfectly.

The second piece of equipment a bowler needs is shoes. Special shoes with non-stick soles are a must. The bowling alley will not allow persons to wear their regular tennis shoes for bowling. You can rent shoes at the bowling alley for a couple dollars. However, it may be worth it to buy your own shoes if you plan to bowl often.

Lastly, there are other small items that bowlers find useful. It is sometimes helpful to wear an arm brace so your wrist stays straight while releasing the ball. A towel can be used to clean your ball. In addition, a bowling bag can be a practical thing to have because it gives you a way to carry all of your equipment.

If you have the proper equipment, you can enjoy the game of bowling. So, start looking for the perfect ball, shoes, and other bowling items. Then you can begin to learn how to play. See you at the bowling alley.

APPENDIX I

GENERALIZATION WRITING MEASURE DOCUMENTS

Generalization Writing Sample

Hand out two sheets of blank lined paper. Ask students to complete the heading with their name, their teacher's name, and the date (put on board first) on both papers.

Directions to be read to students:
For this paper, I want you to write to an audience of interested adults. You will write about a theme that has been given to you. You may choose one of the suggested topics or write about the theme in your own way. Write the paper from your knowledge and experience. You may use examples from real life, from what you read or watch, or from your imagination.

In case you wish to do some planning, you may use one of the pieces of paper given to you. You may use it to write down ideas, organize your thoughts or write a rough draft.

You can ask me the definition of any word that appears in the theme prompts at any time.

When you are finished with your paper, read it again to see if it makes sense. Make changes and edit your writing. Don't be afraid to make your paper 'messy' as you edit it. Also, don't worry about spelling words correctly. Just do the best you can so that your paper is easy to read and informs others.

When you are done with your paper, raise your hand and I'll make sure I can read everything that you intended to say. You may take out a book (or assignment) and work quietly at your desks until everyone is finished.

Your writing will be typed, printed on quality paper and given back to you in published form. You may choose to share this with others.

Questions that students may ask or that may come up:
a. How to spell a word. Tell them to write it the best way they know how.

b. How long does it have to be? If they need another sheet of paper, they should just ask, or they can write on the back of their paper. There are no special length requirements and we don't want to tell students how much or how little they should write.

c. Illegible papers? If students' papers are illegible, have them dictate their papers to you and transcribe their dictation at the bottom of the page (below students' writing). Record their responses exactly as they are dictated.

Write about the theme:

Encountering Challenges

Everyone faces challenges, either minor obstacles on a day to day basis or major life difficulties. Write about encountering challenges and overcoming them.

Do ONLY ONE of the following:

Tell about a time when you faced a challenge and overcame it

OR

Describe someone who has overcome great life difficulties

OR

Tell about a time when you challenged yourself to reach a goal and did

OR

Tell about a time when people worked together to face a great challenge

OR

Write about the theme in your own way

Write about the theme:

Giving to Others

Often, giving to others who are in need is very satisfying. At the same time, those of us who have received gifts of kindness may feel appreciation and thankfulness. Write about giving or receiving.

Do ONLY ONE of the following:

Tell about a time when you have helped someone in need

OR

Describe someone who has given support to others

OR

Explain a time when you were on the receiving end of kindness

OR

Describe how you volunteer or give to your community

OR

Write about the theme in your own way

APPENDIX J

STUDENT EXAMPLES OF INFORMATIVE WRITING

Treatment group, Student 8 (age 12, reading, 0.6)
Pretest

1. Bear is where live in usa. And have baby too. have a bear 1,000.

Wolver have too Love food what! Meat. And Love moon. Shak have 42 teeth. wolf have 1,000.?

Treatment group, Student 8 (age 12, reading 1.6)
Posttest

Information about Gray Wolves.

you know where live wolves?? I know where wolves live in tree and live U.S.A. too. wolves lives 6 to 8 year. 6 to 8 wolves in a wolf pack and tend under in tree. food metaeta deer too. wolves love food meta. now wolve have thick fur warm. Wolves only Holw to moon, and if people look wolves will away run!!! and fun fast How mph? mph 30 wolves can get Deer eta or quiet can get Deer ok. I see wolve pack 10 look Food Deer. many wolves about 2,500. you see bfore wolves? No or yes. you like stoy about wolves.

Treatment group, Student 13 (age 11, reading 3.7)
Pretest

Gray Wolves

All wolves loves to prey large, hoofed mammals (white-tailed deer, moose, elk, caribou, bison, Dall sheep, oxen, and mountain goat). Wolves live in areas of the United State (Michigan's Upper Peninsula, northern Minnesota, Wisconsin and Alaska). Gray wolves weights about 50 to 130 pounds (fully grown). Wolves have 42 teeth in their's mouth. Wolve's born wolf pups size about 4 to 6. Wolf looks like a German shepherd or a husky. Wolves may travel 10-30 miles a day prey for food. Wolf can live 6 to 8 years. Wolf is gray, black or all white.

Treatment group, Student 13 (age 11, reading 4.3)
Posttest

"Information about Grizzly Bears"

The Grizzly bears are very interesting animal ever! They are lovely bears. They live in beautiful places. In addition, sometime they are mean to people its depend if they are hungry.

The Grizzly bear is dark brown. They have hairs on their back and front too. Also, they have long, curved claws. The cubs size is as one litter of bottle. The Grizzly bear weight 270 to 770 pounds (fully grown), and length of up to 7 feet tall. The Grizzly bear are furry.

The Grizzly bear prey on large, hoofed mammals like moose, elk, mountain goats, mountain sheep also their calves. They feed to their calves berries, roots, bulb of plants, and whitebark pine nuts. In addition, they also eat insects such as ants and moth. The

Grizzly bears is omnivorous mean they only eat meat and plants. The Grizzly bears eat human too, and its depend if they are very so hungry.

The Grizzly bear lives in areas of United State (Alaska, Idaho, Wyoming, Washington). They lives in subalpine mountain areas. The home range is forested or shrub covered. They lives alone, with the exception of a female with her cubs. They lives 20 to 30 years. They lives in a interesting place.

The Grizzly bear is active during the mornings and evenings. They run up to 35 miles per hour when they are chasing prey.

This story is all about: a) what they look like, b) how they live, c) where do they live in position, and d) what they do. The Grizzly bear are interesting, curious mammal. They eat many different animals plus people.

Treatment group, Student 3 (age 13, reading 5.1)
Pretest

Gray Wolves

The gray wolves can live up to 6 to 8 years. They about weight 50 to 130 pounds. The gray wolves are about 4.5 to 6.5 feet long and about 26 to 32 high. They have about 42 teeth. The gray wolves are gray, black or all white and they look like a German Shepherd or a husky. Their tracks are about 4.5 inches long and 3.5 inches wide. They communicates through howling, body language and scent. There are 6 to 8 wolves in a wolf pack. Their litter size is 4 to 6 wolf pup.

The gray wolves live in Canada, Europe, Middle East, Asia, and United States. Their home range is in the forested areas. Their territory size can range from 25 to 150 square miles in Minnesota, and 300 to 1,000 square miles in Alaska and Canada. They marks its territory with urine and feces.

The gray wolves are carnivorous. Their preys are large, hoofed mammals or medium sized mammals. They can eat up to 22.5 pounds in one sitting. They can run up to 25 to 35 miles per hour chasing a prey or travel 10 to 30 miles a day searching for food.

Treatment group, Student 3 (age 13, reading 6.0)
Posttest

The grizzly bears are mammals that are very cool animals. They are active during the mornings and evenings in Spring. They all looks the same, eats a lot of foods and also they lives in many different places.

The grizzly bears looks the same. They all have dark brown hair on the shoulders and back tipped white. They have long, curved claws. All grizzly bears have a shoulder hump. They mostly weighs 270 to 770 pounds with the height to 7 feet tall. The grizzly bears tend to live 20 to 30 years. They all looks the same but have different sizes.

The grizzly bears lives in variety of places in United States and Canada. Their home ranges are inland, forested or shrub covered, and away from oceans. They mostly live in mountain areas within 10 to 380 square miles. They tend to live alone, depending the exception of a female with her cubs. The grizzly bears mostly live in North America.

The grizzly bears are omnivorous, meat and plant eaters. They always eat berries, roots, bulbs of plants, whitebark pine nuts, carrion, and ground rodents. They also eat a lot of insects such as ants and moths. Their prey are large, hoofed mammals, for example, moose, elk, mountain goats, mountain sheeps. After they see their prey, they run up to 35 miles per hour leaving tracks of 6 to 16 inches long and 7 to 10 ½ inches wide. The grizzly bears eat variety of foods.

You recently learned about what grizzly bears look like, where they live, and also, what they eat. They are really friendly so don't be afraid of them. The grizzly bears are a huge mammal that hibernates.

APPENDIX K

STUDENTS' PRIMARY TRAITS SCORES ON INFORMATIVE WRITING MEASURE

Treatment Group Students' Primary Traits Scores on the Informative Writing Measure

	Pre Title	Post Title	Pre Intro	Post Intro	Pre Topic Devel	Post Topic Devel	Pre Parag Devel	Post Parag Devel	Pre Concl	Post Concl	Pre Coher	Post Coher	Pre Tone	Post Tone
TG1	0	2	0	2	0	1	1	2	0	0	1	2	0	2
TG2	0	2	0	1	0	1	1	2	0	1	1	2	0	2
TG3	2	1	0	3	2	3	2	3	0	3	1	3	0	3
TG4	0	2	0	3	0	2	1	3	0	3	1	3	0	3
TG5	2	2	0	0	1	2	2	3	0	1	1	2	0	2
TG6	0	2	0	0	0	1	1	1	0	0	0	1	0	0
TG7	0	2	0	0	0	1	1	1	0	0	0	1	0	2
TG8	0	2	0	0	0	1	1	1	0	1	1	1	0	3
TG9	0	0	0	0	0	1	0	1	0	0	0	1	1	0
TG10	0	2	0	0	0	1	1	1	0	0	0	1	1	0
TG11	2	0	0	0	0	1	1	1	0	0	0	1	0	0
TG12	2	2	0	1	1	2	1	1	0	0	1	1	0	0
TG13	2	2	0	2	0	2	1	3	0	3	0	3	0	3
TG14	2	2	0	0	0	1	1	2	0	0	0	1	0	0
TG15	2	1	0	1	0	2	1	2	0	1	0	2	1	3
TG16	0	2	0	0	0	0	1	1	0	0	0	0	0	0

Control Group Students' Primary Traits Scores on the Informative Writing Measure

	Pre Title	Post Title	Pre Intro	Post Intro	Pre Topic Devel	Post Topic Devel	Pre Parag Devel	Post Parag Devel	Pre Concl	Post Concl	Pre Coher	Post Coher	Pre Tone	Post Tone
CG1	0	0	0	0	0	0	1	1	0	0	0	0	0	0
CG2	0	2	0	0	1	1	0	1	0	0	0	0	0	0
CG3	1	0	0	0	1	0	2	1	0	0	1	0	0	0
CG4	2	2	0	0	0	0	1	1	1	0	0	0	0	0
CG5	2	2	0	0	2	1	2	1	0	0	2	1	0	0
CG6	2	2	1	0	1	1	2	1	1	0	1	1	3	0
CG7	2	2	1	1	1	0	1	1	0	0	1	0	0	0
CG8	0	2	2	0	2	0	2	1	2	0	2	0	3	0
CG9	2	2	0	0	0	1	1	1	1	0	0	1	1	0
CG10	0	2	0	0	1	0	1	1	0	0	1	0	0	0
CG11	2	2	0	0	3	1	2	2	1	1	2	1	3	3
CG12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG13	0	2	1	1	1	1	1	1	1	1	1	1	1	1
CG14	0	0	0	0	1	0	1	1	0	0	1	0	2	0
CG15	2	2	0	0	2	1	3	2	0	0	2	2	1	0
CG16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CG17	2	2	0	1	0	0	2	1	0	0	0	0	1	1

APPENDIX L

STUDENT EXAMPLES OF GENERALIZED WRITING

Treatment group, Student 9 (age 12, reading 1.0)
Pretest

I Want be need do Know.

Treatment group, Student 9 (age 12, reading 1.2)
Posttest

last I go play in game basketball see many shall boys, MSD is not win is lost! Boss Tell more run'ed Than go water, I is hard! Work for practice is basketball, I go basketball again boys is shall, again MSD is lost.

Treatment group, Student 14 (age 12, reading 2.9)
Pretest

"it about to get the goal"

i try the best a A+ 100% a goal.

Treatment group, Student 14 (age 12, reading 3.2)
Posttest

If someone need helped then I talk tell them. to helped, and tell how you feel or need money to given to poor people, and food, and need house, and chothes. to keep them warm when during winter. for an support. that for poor people need something. it for them. some people need home, and money, and food. giving to other that mean charity. We giving an prestent parent and kids. Kids and parent need US for helping them and giving to them. They need us giving to to them, and food, an home, clothes, money. When you be nice to them then they will like you, and we will like them too. I like to giving them an clothes, and shoe, and toys, and money, and food. thanks you for supports to helping poor people and kids and adult.

Treatment group, Student 3 (age 13, reading 5.1)
Pretest

One day, Scott was walking the school. He saw many kids were picking on a boy named Brain. They called Brain in many bad ways. He oftenly went into bathroom and cried. One time, he threated them that he'll bring guns and bombs to kill and blow the school buildings. Scott saw him threating the school. He went up to Brain and talked with him.

Scott took Brain to counseling center. The counselor helped Brain. Brain calmed down. Few weeks later, Brain went to school and had a talk with those who picked on him. They had a long talk and became friends. All thanks to Scott.

Treatment group, Student 3 (age 13, reading 6.0)
Posttest

My parents was divorced in 2003. They told me and my sister while we was having fun in KFC. My sister and I cried a lot when they told us. I'll tell you why my parents were divorced and how I felt about it.

My mom, Nancy, and my dad, Alan, was fighting (not physically) about money. My dad tend to be on the computer right after he arrived from work. But my dad always do chores. My mom tend to cook, take us shopping, etc. My mom thought that my dad pay NOTHING at all. So my parents was fighting, but they still love each other.

My sister and I felt really desperate when they told us. I thought that my life would be over. But in a year, I feel okay, probably better. We had to go to my mom's then to dad's every week, which was tough to do, and have time together. At first, you will feel really desperate when your parents are divorced but you will feel fine in a year or two.

I just told you why my parents are divorced and how I felt about it. When I hear the word, "divorced", I think of my parents. It's just that it's tough. If your parents are divorced, don't feel bad about it, and your life will not be over.

APPENDIX M

STUDENTS' PRIMARY TRAITS SCORES ON GENERALIZATION WRITING MEASURE

Treatment Group Students' Primary Traits Scores on the Generalization Writing Measure

	Pre Title	Post Title	Pre Intro	Post Intro	Pre Topic Devel	Post Topic Devel	Pre Parag Devel	Post Parag Devel	Pre Concl	Post Concl	Pre Coher	Post Coher	Pre Tone	Post Tone
TG1	2	2	1	2	1	2	1	2	0	2	1	2	1	2
TG2	0	2	0	2	1	1	1	0	0	1	1	1	1	1
TG3	1	1	1	3	2	2	1	2	1	3	1	2	1	3
TG4	1	1	0	2	2	1	2	1	0	1	1	1	1	2
TG5	0	2	0	2	1	2	1	3	0	2	1	2	1	2
TG6	0	0	0	0	0	1	0	1	0	0	0	1	0	0
TG7	0	0	0	0	0	1	0	1	0	0	0	1	0	1
TG8	0	0	0	0	0	1	0	1	0	0	0	1	0	0
TG9	0	1	0	0	0	1	0	2	0	0	0	1	0	1
TG10	0	1	0	1	1	1	1	3	0	1	1	2	0	2
TG11	2	0	0	0	0	1	0	1	0	0	0	1	0	0
TG12	0	2	0	1	0	1	0	1	0	1	0	1	0	1
TG13	0	2	0	0	1	2	0	2	0	1	1	1	0	2
TG14	2	0	0	1	0	1	0	3	0	1	0	1	0	2
TG15	1	1	0	2	1	1	3	2	0	2	1	2	1	3
TG16	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Control Group Students' Primary Traits Scores on the Generalization Writing Measure

	Pre Title	Post Title	Pre Intro	Post Intro	Pre Topic Devel	Post Topic Devel	Pre Parag Devel	Post Parag Devel	Pre Concl	Post Concl	Pre Coher	Post Coher	Pre Tone	Post Tone
CG1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CG2	1	1	1	0	1	1	1	2	0	0	1	1	0	0
CG3	1	1	0	0	1	1	0	0	1	0	1	1	0	0
CG4	1	1	0	1	1	1	2	1	0	0	1	1	0	1
CG5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG7	2	0	1	1	1	1	3	3	1	1	1	1	1	1
CG8	1	1	1	0	1	1	2	2	0	0	1	1	1	1
CG9	0	1	0	0	1	1	2	1	0	0	1	1	0	1
CG10	1	1	1	0	1	1	2	1	0	0	1	1	1	1
CG11	2	1	1	0	1	2	2	2	1	0	1	1	1	1
CG12	1	1	1	1	1	2	2	2	0	0	1	1	1	1
CG13	1	1	1	1	2	1	1	2	3	2	2	1	1	2
CG14	0	2	0	0	2	0	0	0	0	0	1	0	0	0
CG15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CG17	1	1	1	0	1	1	1	2	1	1	1	1	1	1

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